Appendix A

Landscape context

APPENDIX A-1
Landscape features – IBRA bioregions, subregions, LGAs and Mitchell landscapes



BDAR - Figure A-1a

Landscape Features - IBRA Bioregions, Subregions, LGAs and Mitchell Landscapes

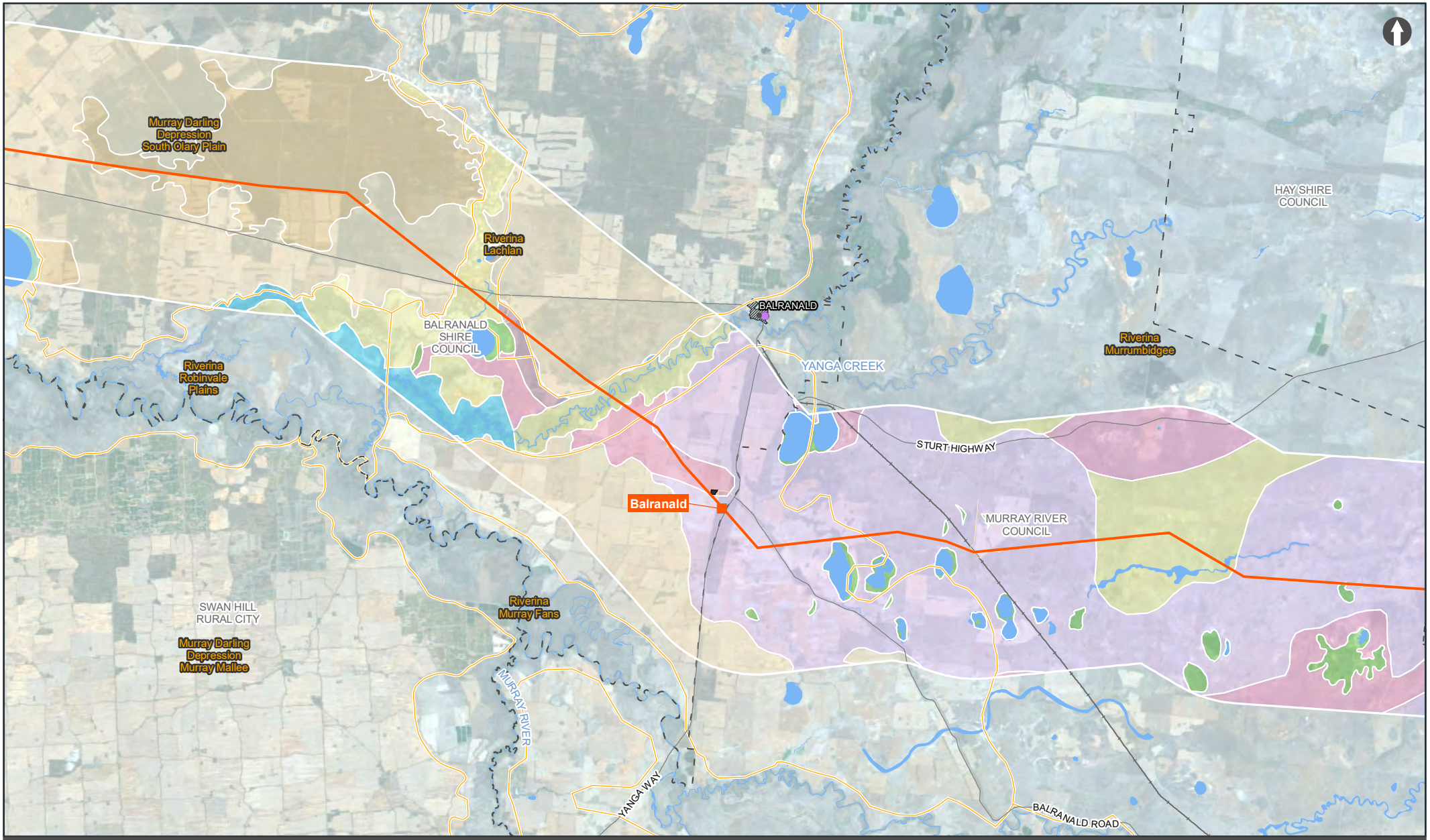
(Page 1 of 5)

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Built Up Areas
- Waterbody
- Local Government Areas
- IBRA Regions and Subregions

Mitchell Landscapes
- Mallee Cliffs Dunes
- Mallee Cliffs Linear Dunes
- Mallee Cliffs Sandplains
- Murray Channels and Floodplains
- Murray Lakes, Swamps and Lunettes
- Murrumbidgee Channels and Floodplains

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure A-1b

Landscape Features - IBRA Bioregions, Subregions, LGAs and Mitchell Landscapes

(Page 2 of 5)

Project Components

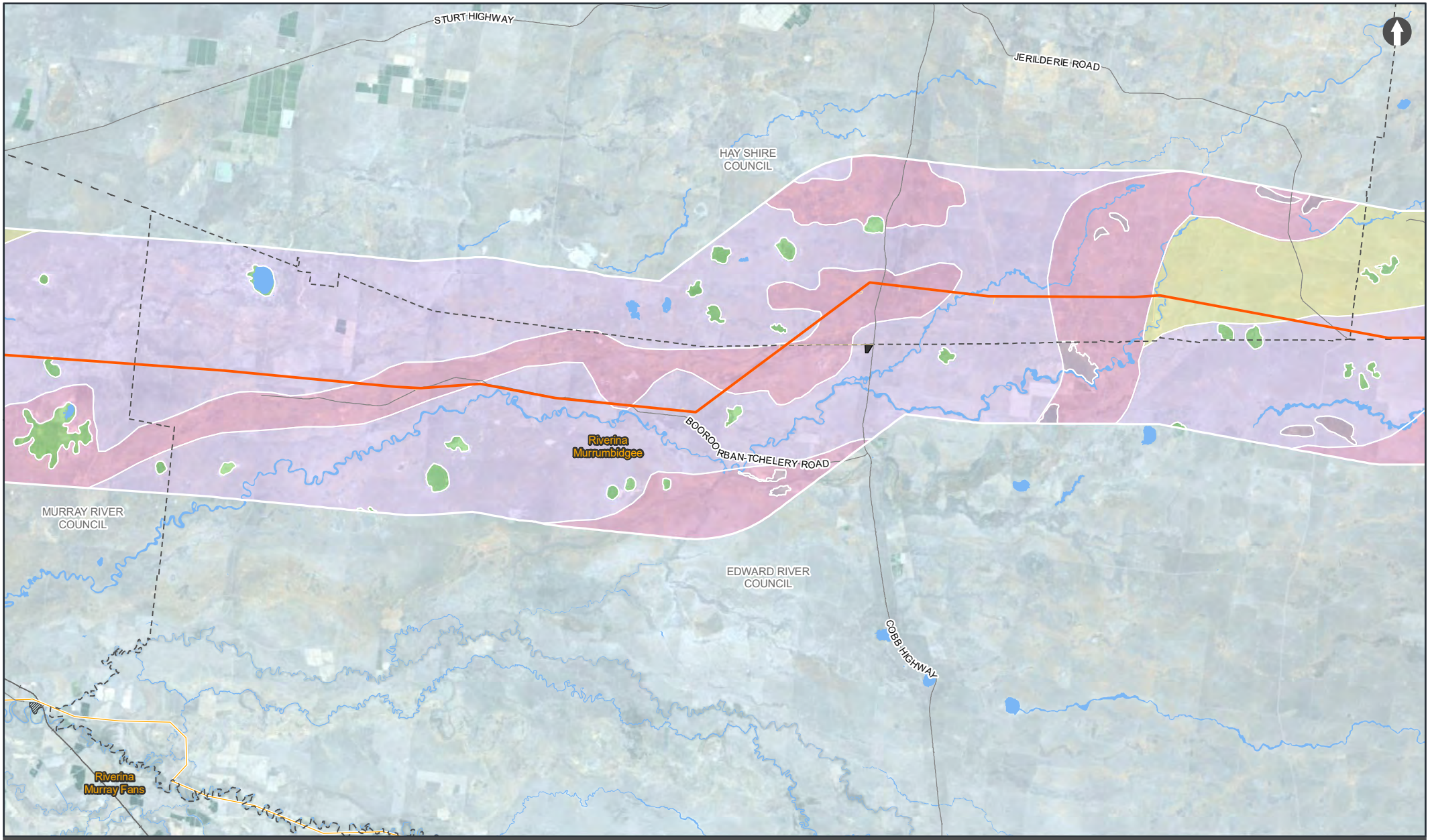
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Built Up Areas
- Waterbody
- Local Government Areas
- IBRA Regions and Subregions

Mitchell Landscapes

- Lachlan Lakes, Swamps and Lunettes
- Mallee Cliffs Linear Dunes
- Mallee Cliffs Sandplains
- Murray Channels and Floodplains
- Murray Lakes, Swamps and Lunettes
- Murrumbidgee Channels and Floodplains
- Murrumbidgee Depression Plains
- Murrumbidgee Lakes, Swamps and Lunettes
- Murrumbidgee Scalded Plains
- Murrumbidgee Source-bordering Dunes

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure A-1c

Landscape Features - IBRA Bioregions, Subregions, LGAs and Mitchell Landscapes

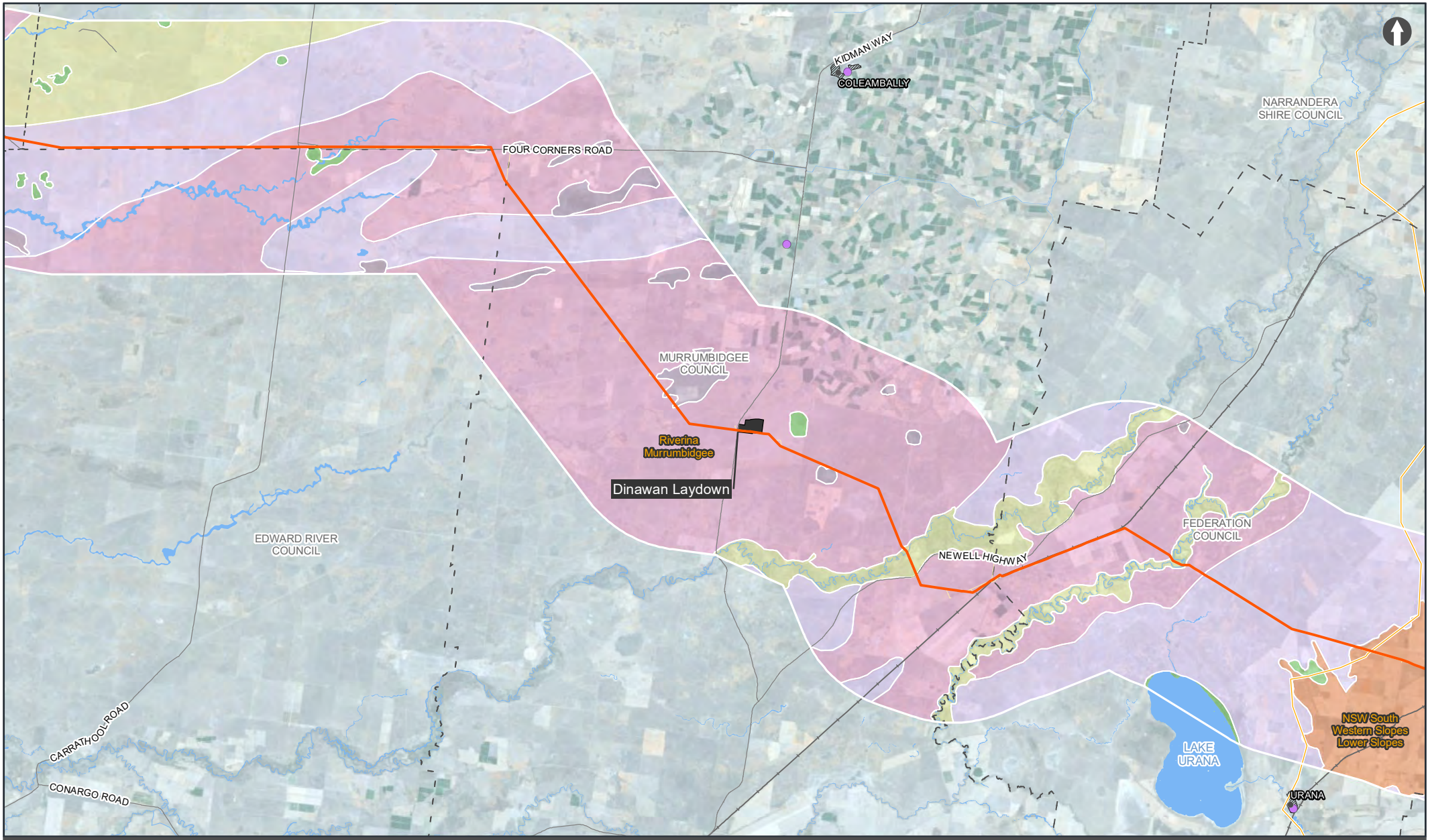
(Page 3 of 5)

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Built Up Areas
- Waterbody
- Local Government Areas
- IBRA Regions and Subregions

Mitchell Landscapes
- Lachlan Lakes, Swamps and Lunettes
- Murray Channels and Floodplains
- Murray Lakes, Swamps and Lunettes
- Murrumbidgee Channels and Floodplains
- Murrumbidgee Depression Plains
- Murrumbidgee Lakes, Swamps and Lunettes
- Murrumbidgee Scalded Plains
- Murrumbidgee Source-bordering Dunes

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure A-1d

Landscape Features - IBRA Bioregions, Subregions, LGAs and Mitchell Landscapes

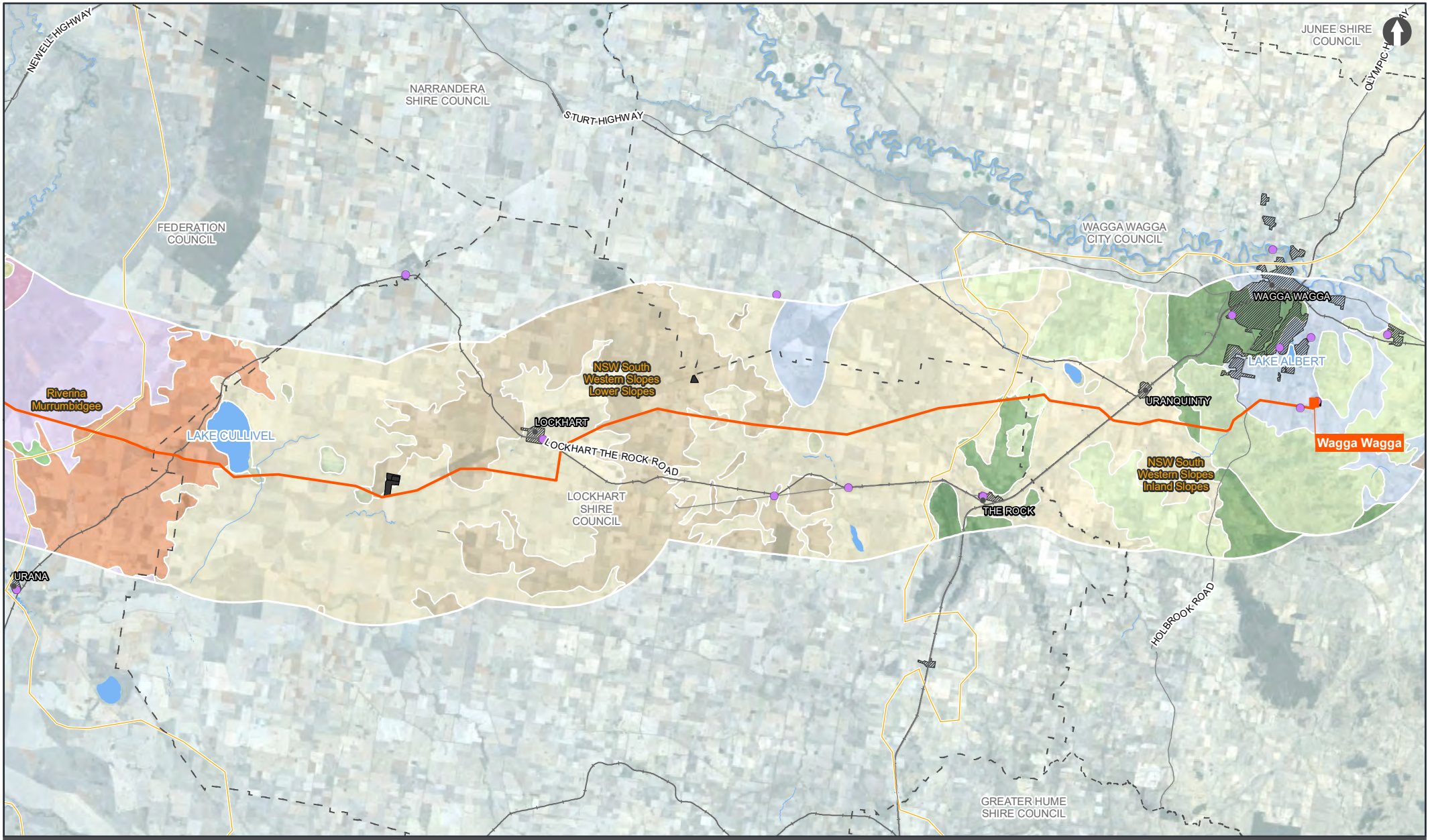
(Page 4 of 5)

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Built Up Areas
- Waterbody
- Local Government Areas
- IBRA Regions and Subregions

Mitchell Landscapes
- Brokong Plains
- Buckingbong Gravels
- Murray Channels and Floodplains
- Murray Lakes, Swamps and Lunettes
- Murrumbidgee - Tarcutta Lakes, Swamps and Lunettes
- Murrumbidgee Channels and Floodplains
- Murrumbidgee Depression Plains
- Murrumbidgee Lakes, Swamps and Lunettes
- Murrumbidgee Scalded Plains
- Murrumbidgee Source-bordering Dunes

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure A-1e

Landscape Features - IBRA Bioregions, Subregions, LGAs and Mitchell Landscapes

(Page 5 of 5)

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Built Up Areas
- Waterbody
- Local Government Areas
- IBRA Regions and Subregions

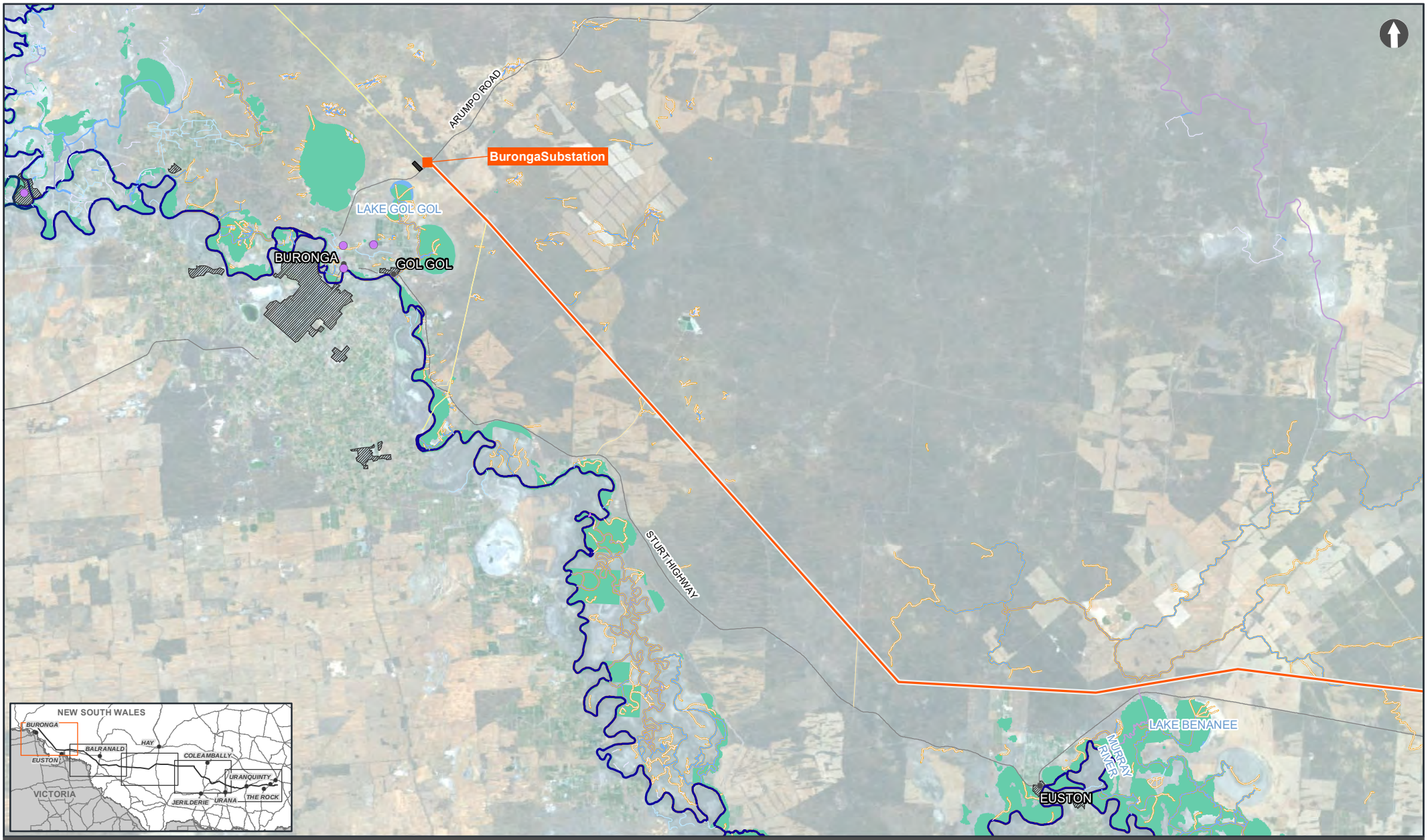
Mitchell Landscapes

- Adrah Hills and Ranges
- Brokong Plains
- Buckingbong Gravels
- Coffin Rock Granite Hills
- Lockhart Hills and Footslopes
- Murray Channels and Floodplains
- Murray Lakes, Swamps and Lunettes
- Murrumbidgee - Tarcutta Channels and Floodplains
- Murrumbidgee - Tarcutta Lakes, Swamps and Lunettes
- Murrumbidgee Channels and Floodplains
- Murrumbidgee Depression Plains
- Murrumbidgee Lakes, Swamps and Lunettes
- Murrumbidgee Scalded Plains
- Murrumbidgee Source-bordering Dunes
- Wonga Hills and Ranges

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Source: NSWSS, ESRI, Transgrid, WSP

APPENDIX A-2
Landscape features – rivers, streams, wetlands and connectivity features



BDAR - Figure A-2

Landscape Features - Rivers, Streams, Wetlands and Connectivity Features

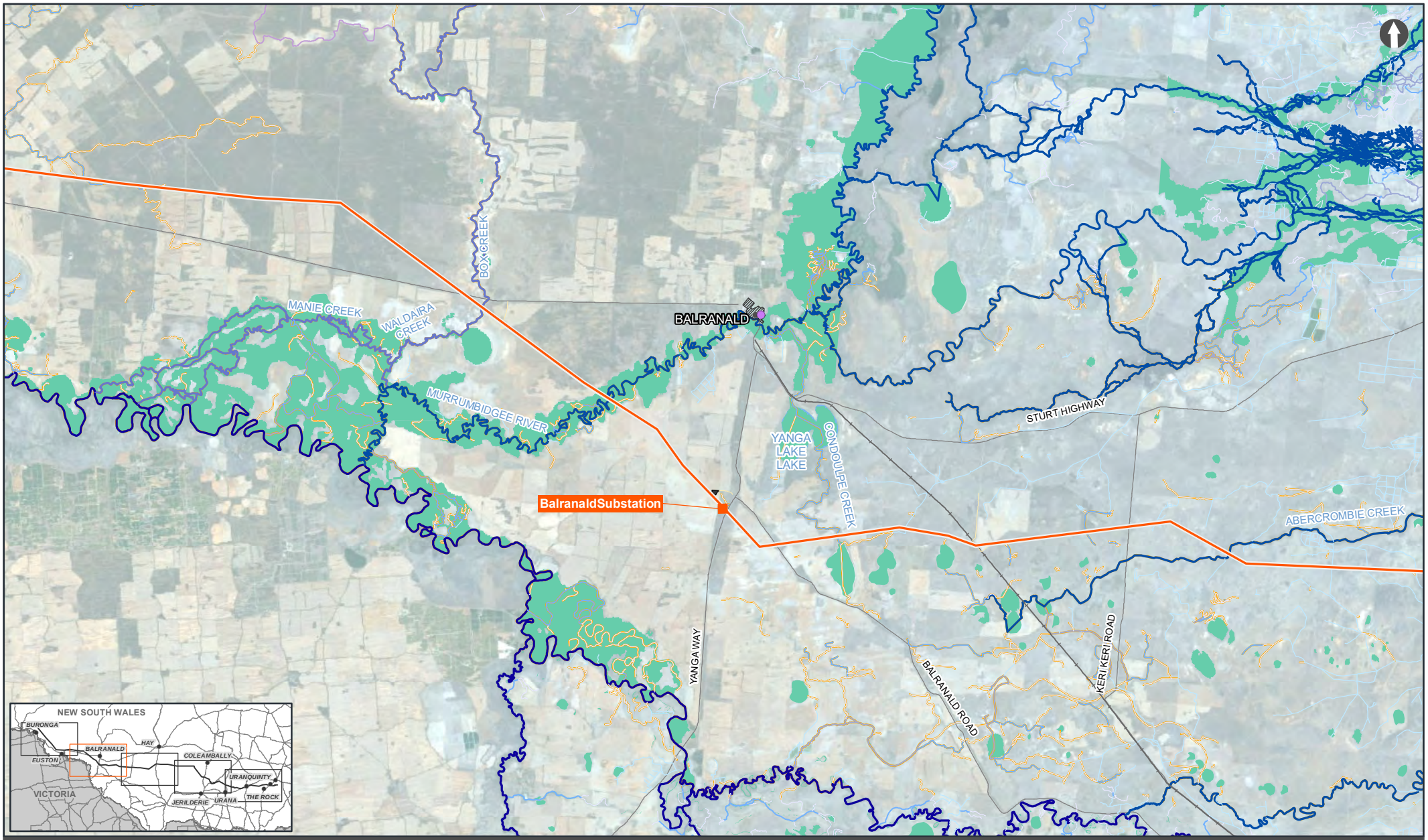
Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Existing Transmission Line Infrastructure
- Built Up Areas
- Waterbody

Strahler Stream Order
- Strahler Stream Order - 0
- Strahler Stream Order - 1
- Strahler Stream Order - 2
- Strahler Stream Order - 3
- Strahler Stream Order - 4
- Strahler Stream Order - 5
- Strahler Stream Order - 10
- Strahler Stream Order - 11
- Wetland
- Vegetated Riparian Zone

Sheet 1 of 5

Source: NSWSS, ESRI, Transgrid, WSP

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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Existing Transmission Line Infrastructure
- Built Up Areas
- Waterbody

Strahler Stream Order
- Strahler Stream Order - 0
- Strahler Stream Order - 1
- Strahler Stream Order - 2
- Strahler Stream Order - 3
- Strahler Stream Order - 4
- Strahler Stream Order - 5
- Strahler Stream Order - 6
- Strahler Stream Order - 8
- Strahler Stream Order - 9
- Strahler Stream Order - 10
- Wetland
- Vegetated Riparian Zone

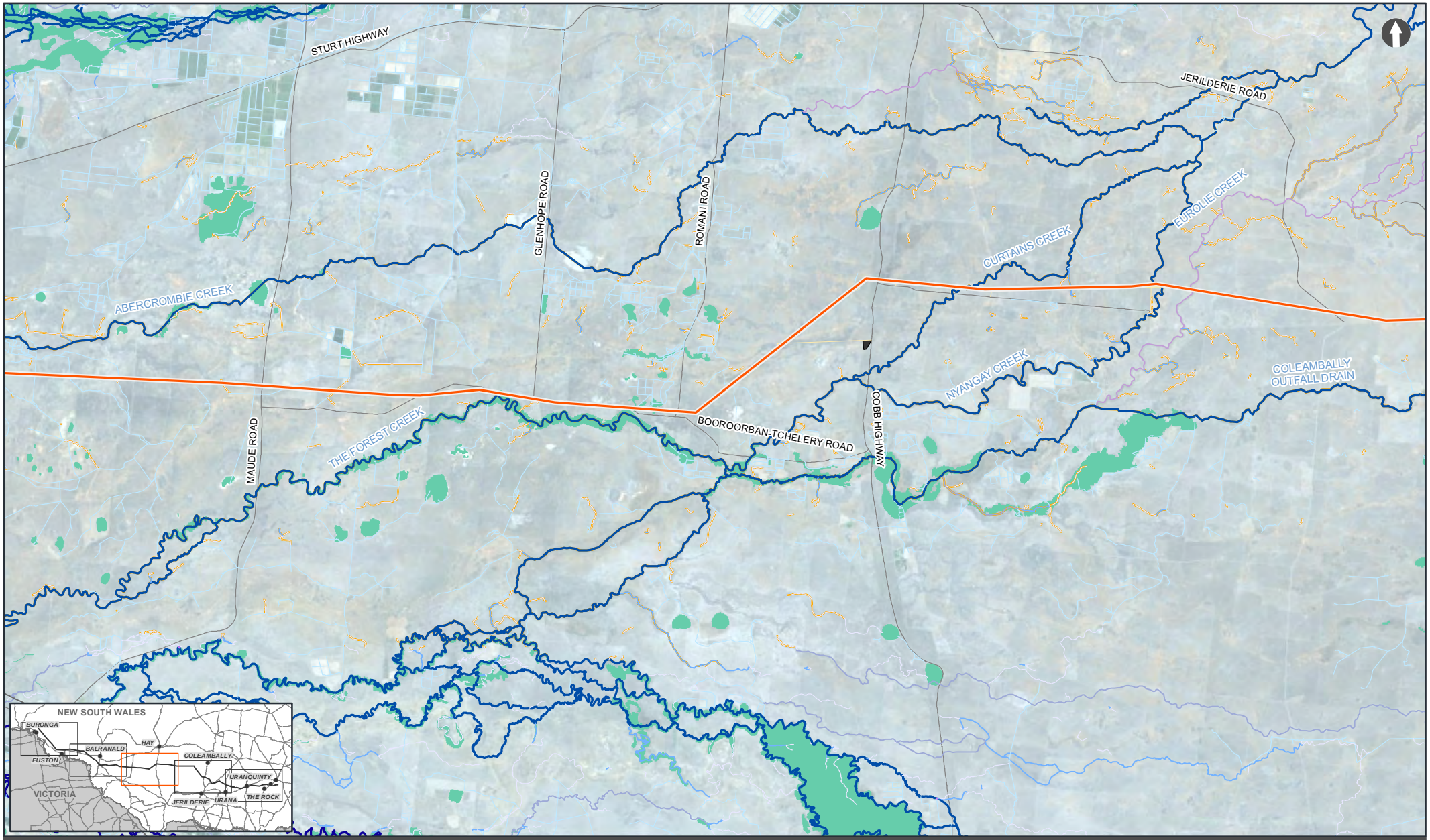
Source: NSWSS, ESRI, Transgrid, WSP

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BDAR - Figure A-2

Landscape Features - Rivers, Streams, Wetlands and Connectivity Features

Sheet 2 of 5



BDAR - Figure A-2

Landscape Features - Rivers, Streams, Wetlands and Connectivity Features

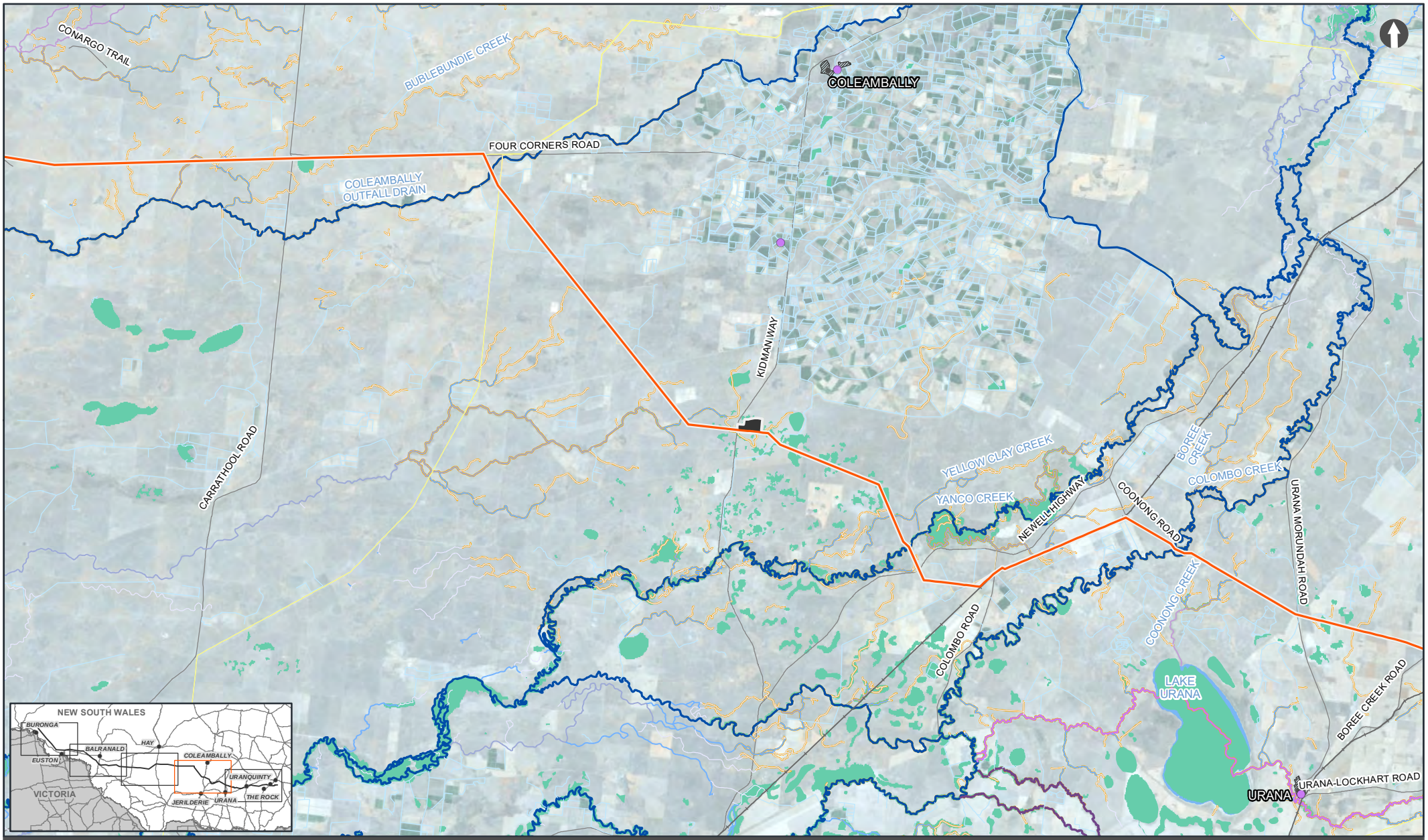
Sheet 3 of 5

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Existing Transmission Line Infrastructure
- Built Up Areas
- Waterbody

Strahler Stream Order
- Strahler Stream Order - 0
- Strahler Stream Order - 1
- Strahler Stream Order - 2
- Strahler Stream Order - 3
- Strahler Stream Order - 4
- Strahler Stream Order - 6
- Strahler Stream Order - 9
- Strahler Stream Order - 10
- Wetland
- Vegetated Riparian Zone

Source: NSWSS, ESRI, Transgrid, WSP

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BDAR - Figure A-2

Landscape Features - Rivers, Streams, Wetlands and Connectivity Features

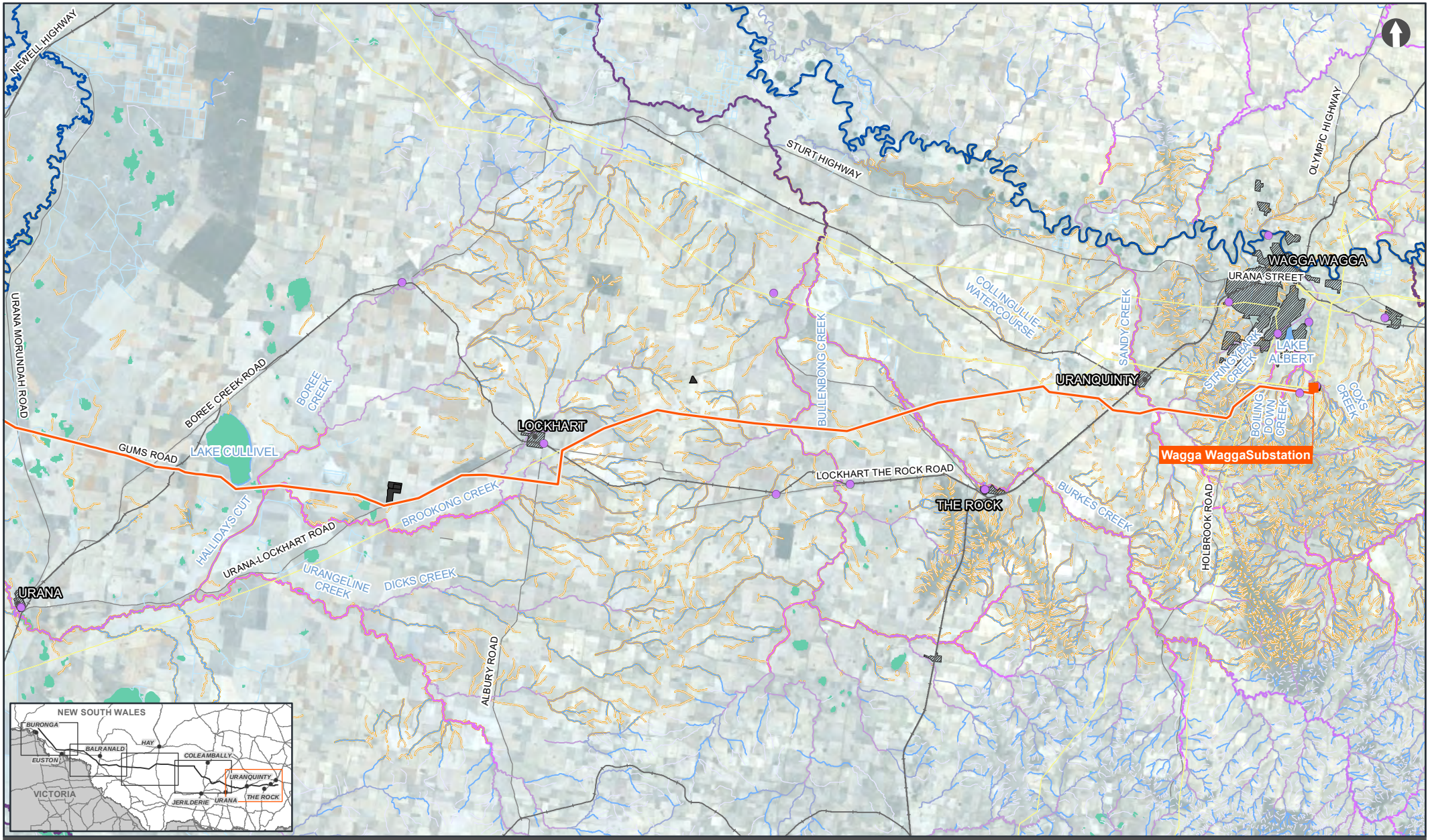
Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Existing Transmission Line Infrastructure
- Built Up Areas
- Waterbody

Strahler Stream Order
- Strahler Stream Order - 0
- Strahler Stream Order - 1
- Strahler Stream Order - 2
- Strahler Stream Order - 3
- Strahler Stream Order - 4
- Strahler Stream Order - 6
- Strahler Stream Order - 7
- Strahler Stream Order - 9
- Wetland
- Vegetated Riparian Zone

Sheet 4 of 5

Source: NSWSS, ESRI, Transgrid, WSP

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BDAR - Figure A-2

Landscape Features - Rivers, Streams, Wetlands and Connectivity Features

Sheet 5 of 5

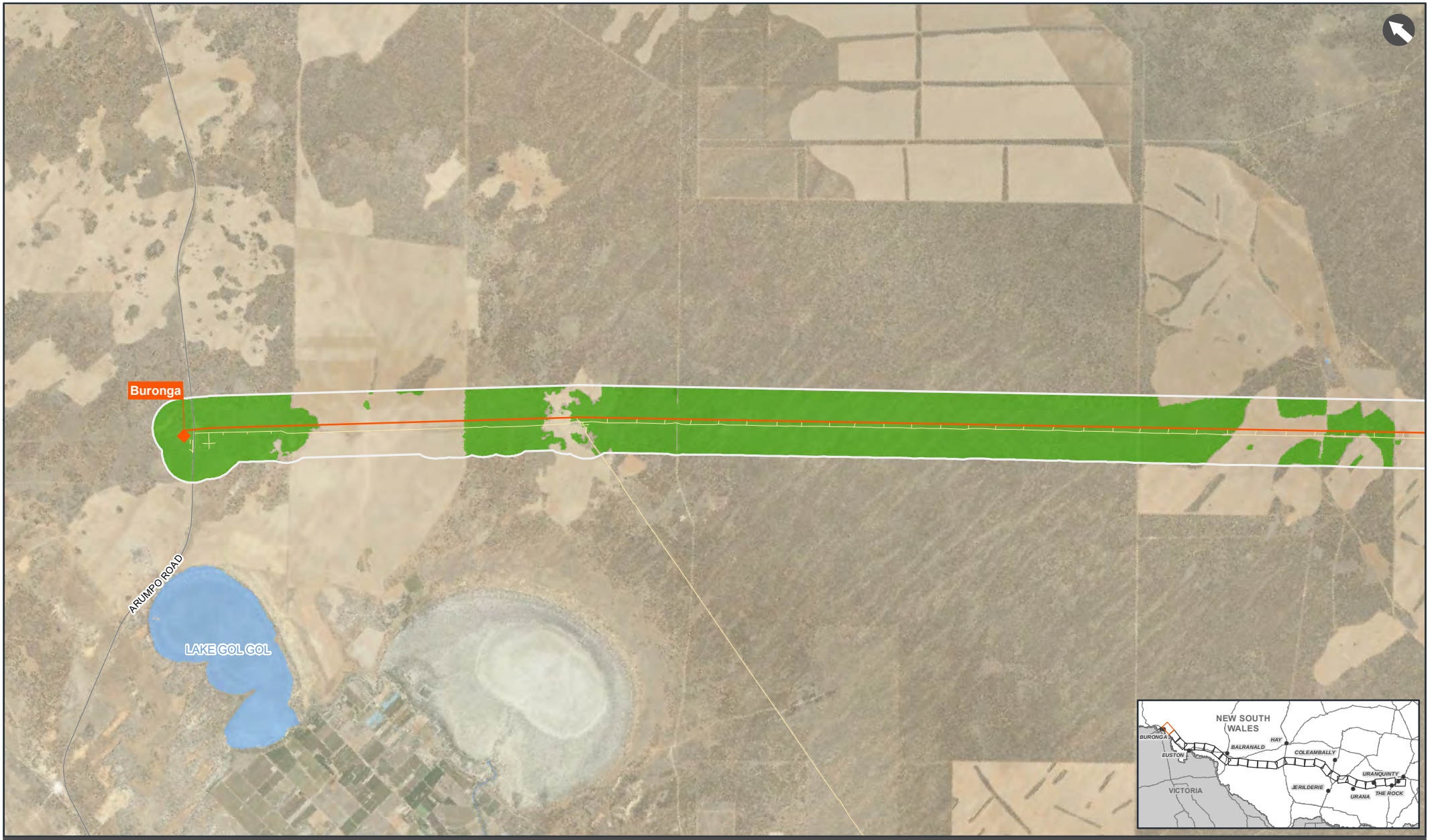
Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Existing Transmission Line Infrastructure
- Built Up Areas
- Waterbody

Strahler Stream Order
- Strahler Stream Order - 0
- Strahler Stream Order - 1
- Strahler Stream Order - 2
- Strahler Stream Order - 3
- Strahler Stream Order - 4
- Strahler Stream Order - 5
- Strahler Stream Order - 6
- Strahler Stream Order - 7
- Strahler Stream Order - 9
- Wetland
- Vegetated Riparian Zone

Source: NSWSS, ESRI, Transgrid, WSP

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APPENDIX A-3
Assessing native vegetation cover



Project Components

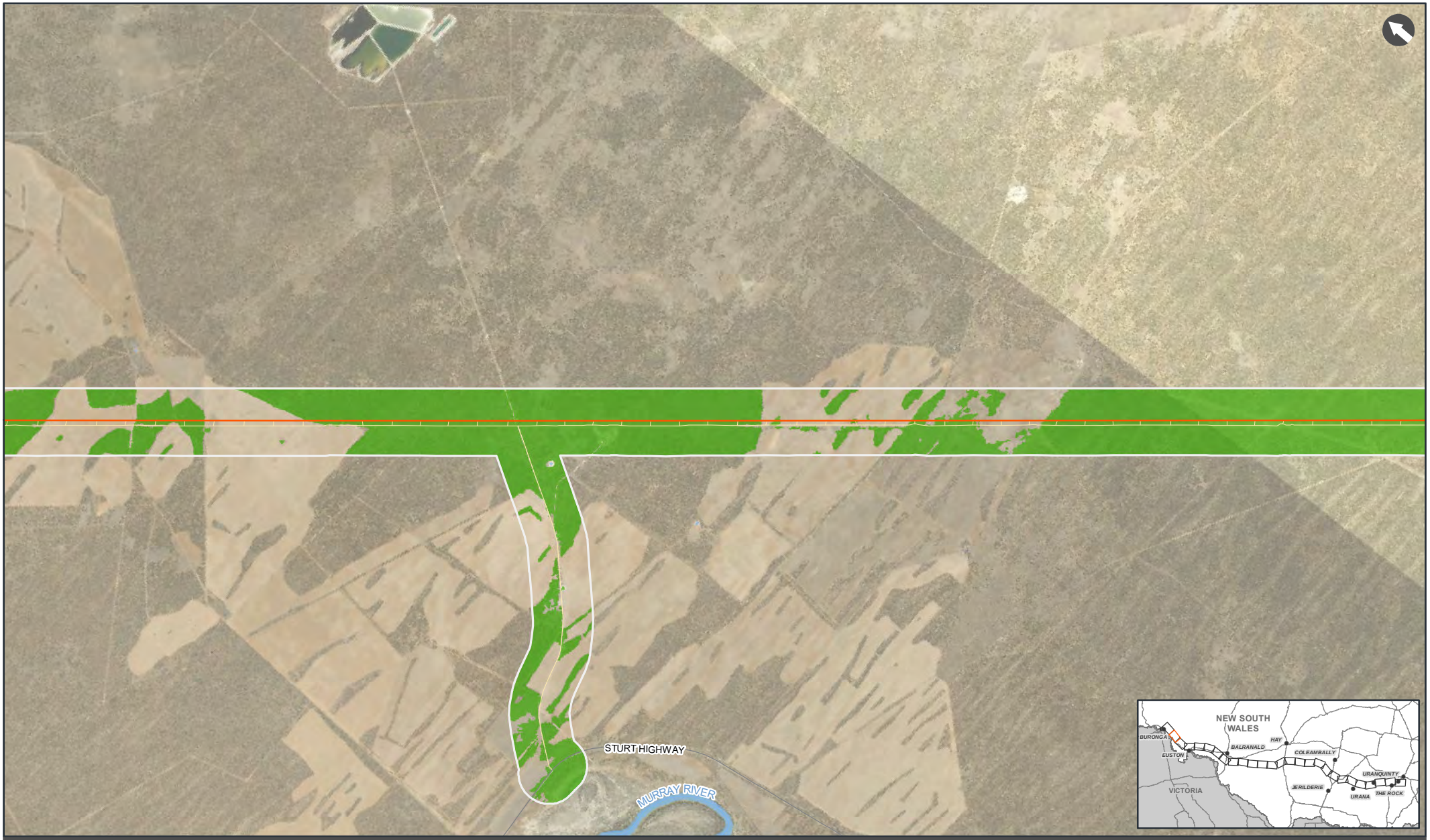
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Native Vegetation Assessment Area
- Native Vegetation

BDAR - Figure A-3a

Assessing Native Vegetation Cover

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

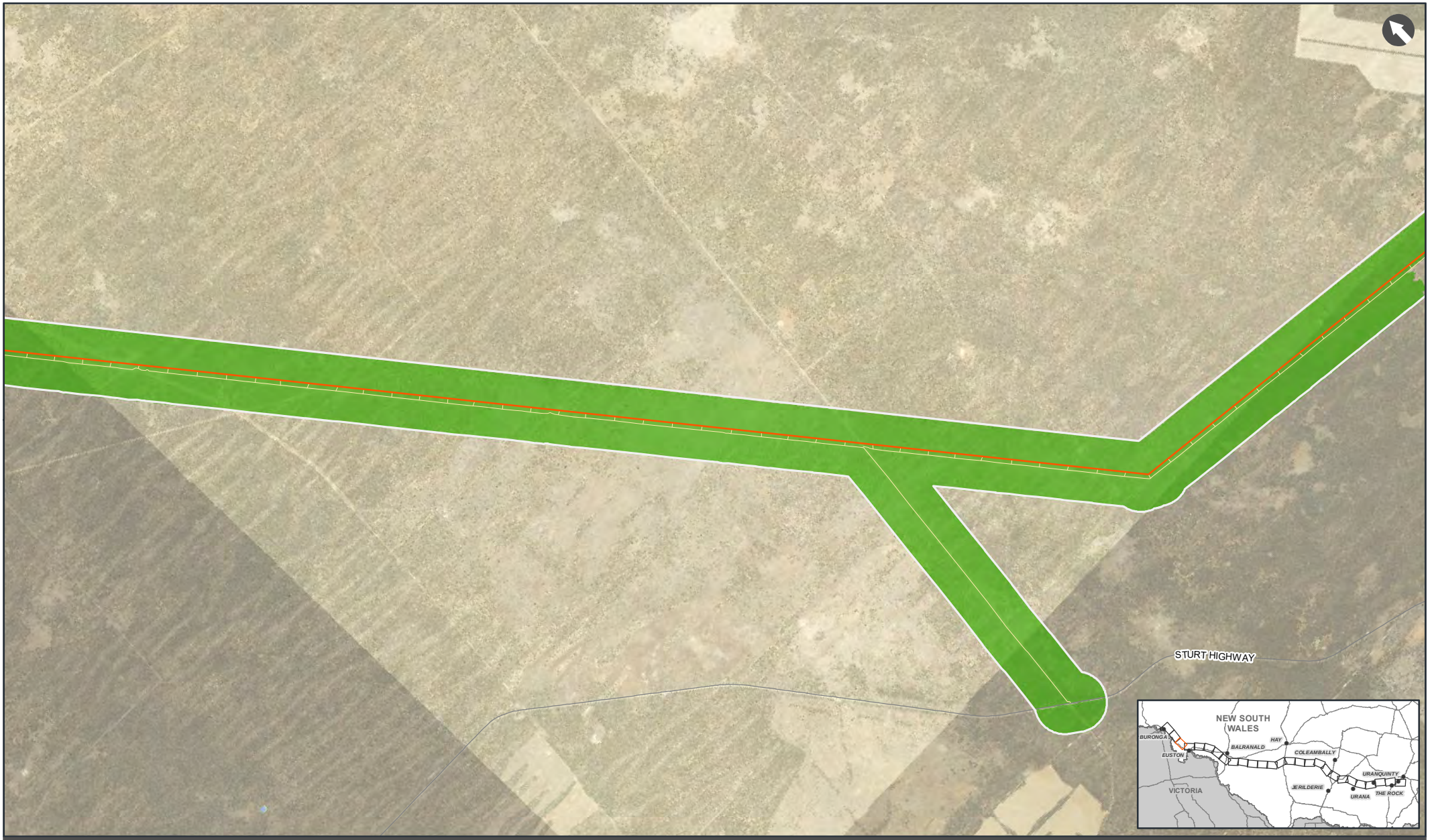
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Native Vegetation Assessment Area
- Native Vegetation

BDAR - Figure A-3b

Assessing Native Vegetation Cover

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

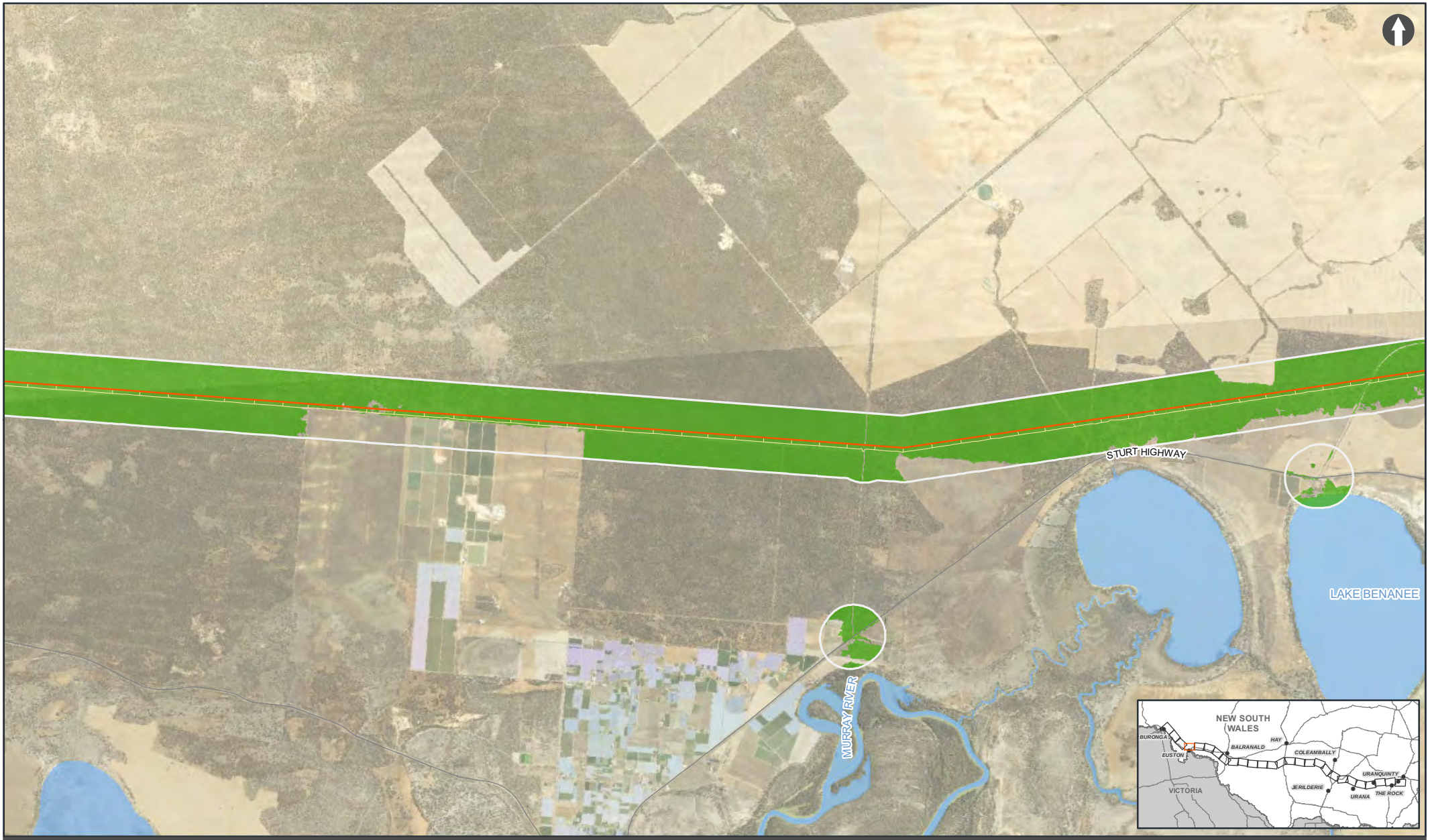
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Native Vegetation Assessment Area
- Native Vegetation

BDAR - Figure A-3c

Assessing Native Vegetation Cover

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

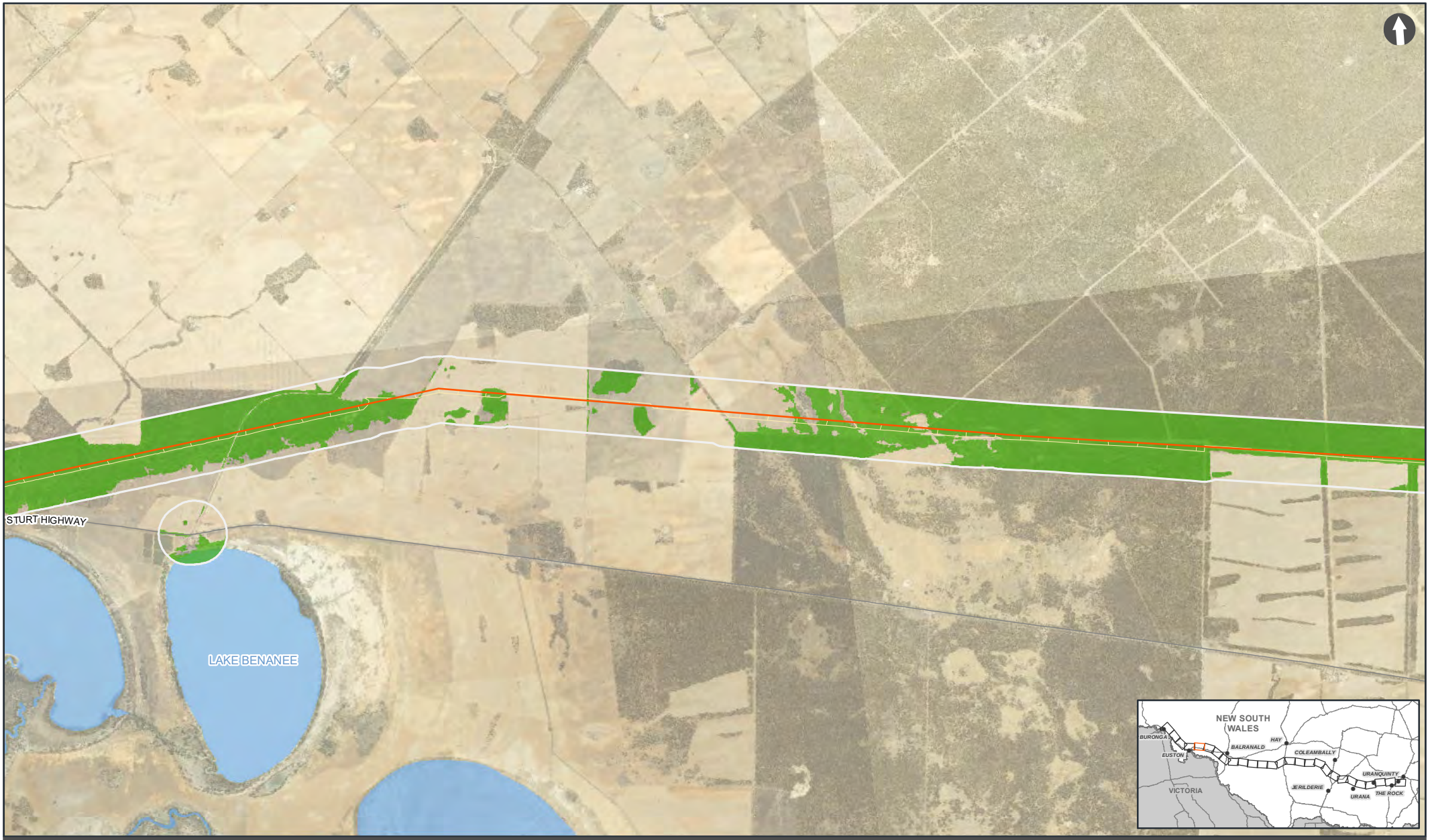
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Native Vegetation Assessment Area
- Native Vegetation

BDAR - Figure A-3d

Assessing Native Vegetation Cover

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

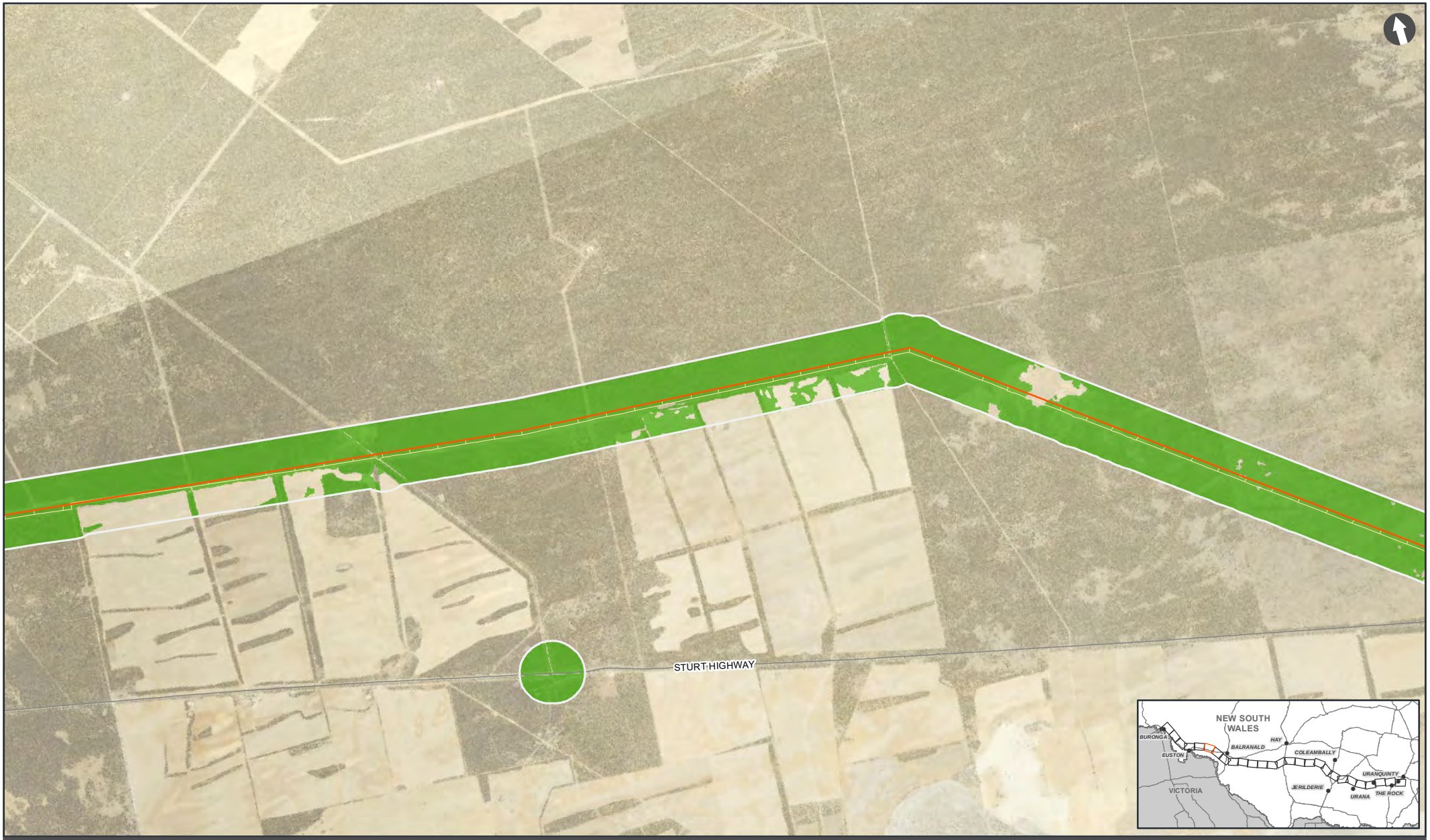
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Native Vegetation Assessment Area
- Native Vegetation

BDAR - Figure A-3e

Assessing Native Vegetation Cover

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

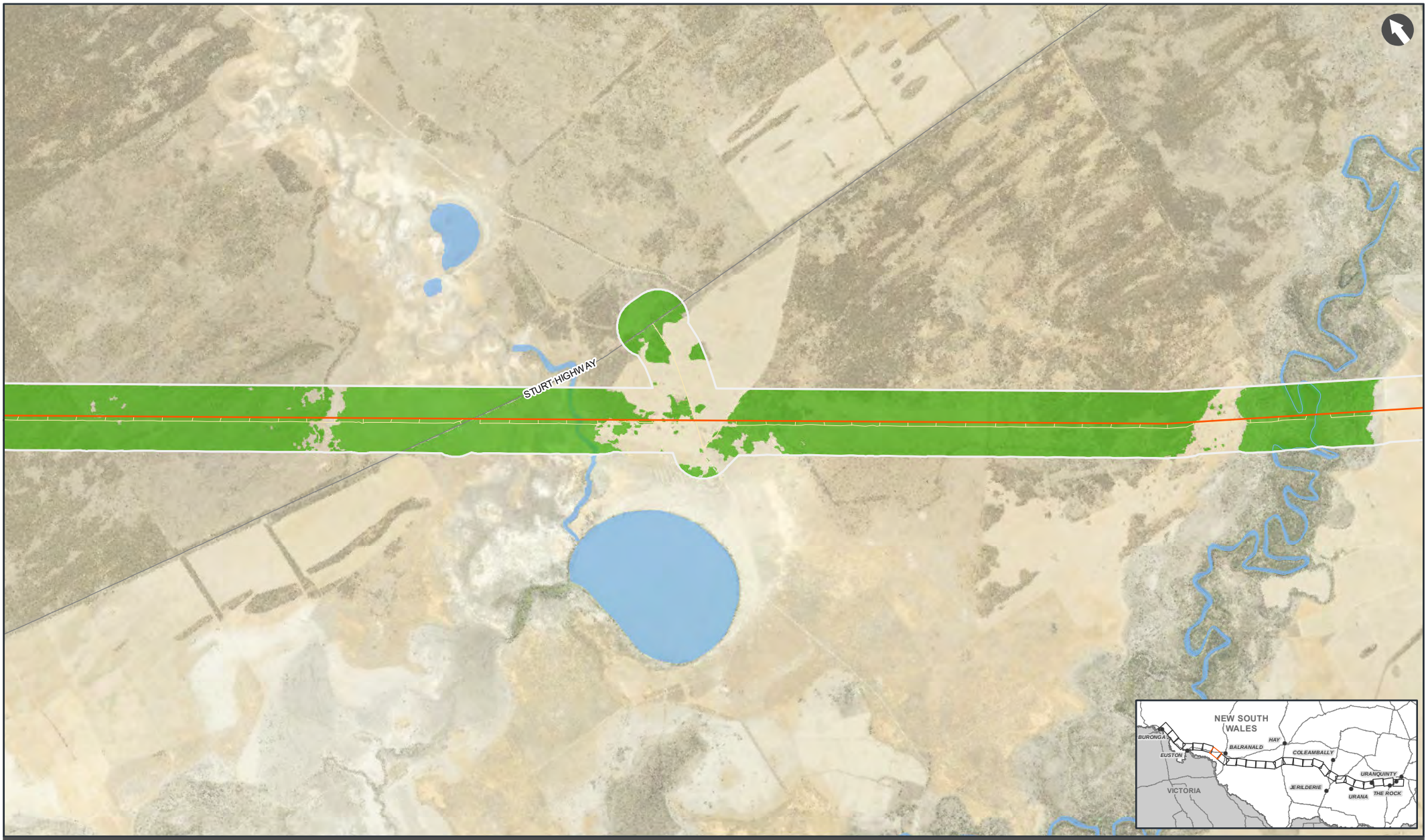
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Native Vegetation Assessment Area
- Native Vegetation

BDAR - Figure A-3f

Assessing Native Vegetation Cover

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

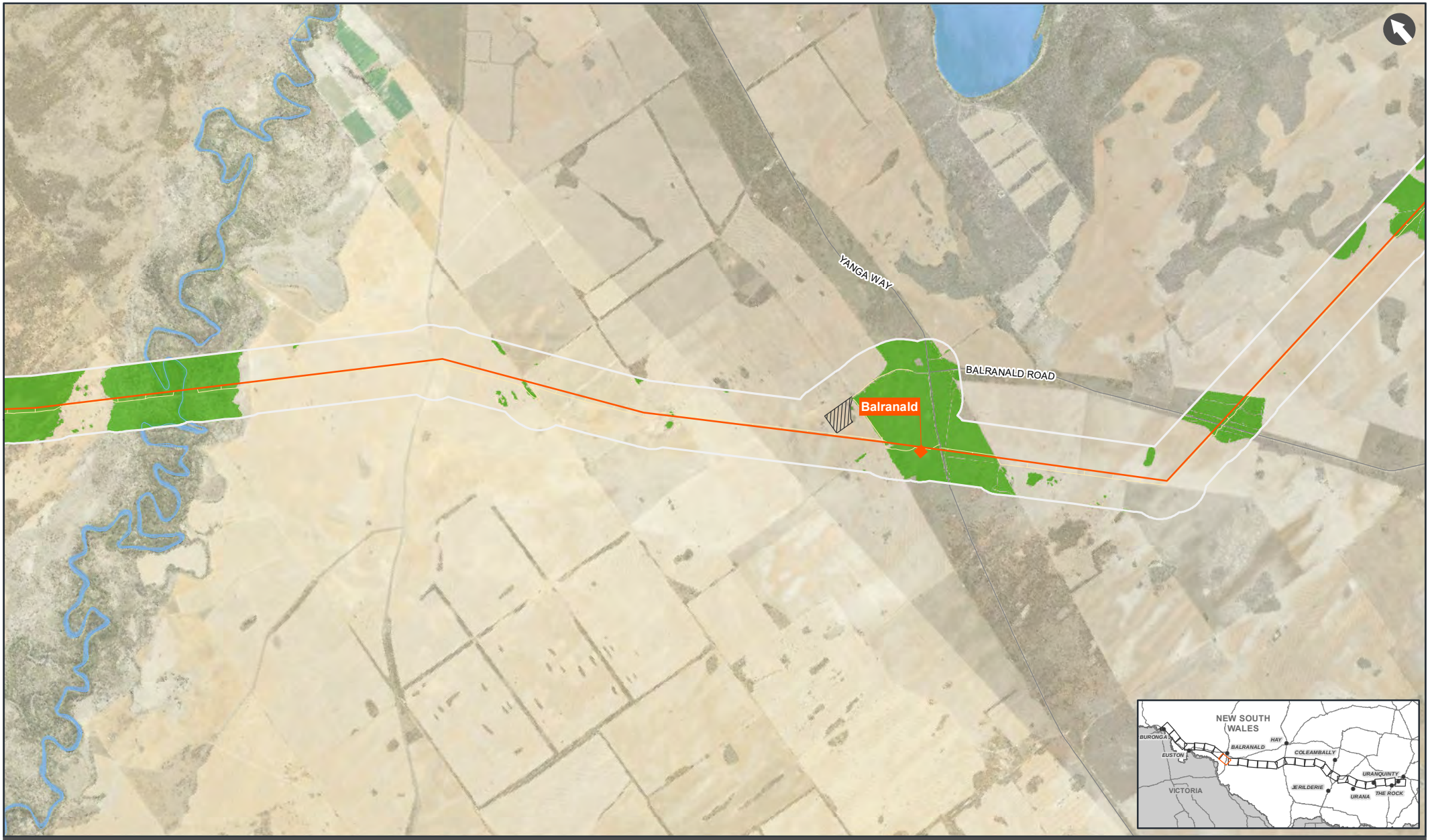
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Native Vegetation Assessment Area
- Native Vegetation

BDAR - Figure A-3g

Assessing Native Vegetation Cover

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

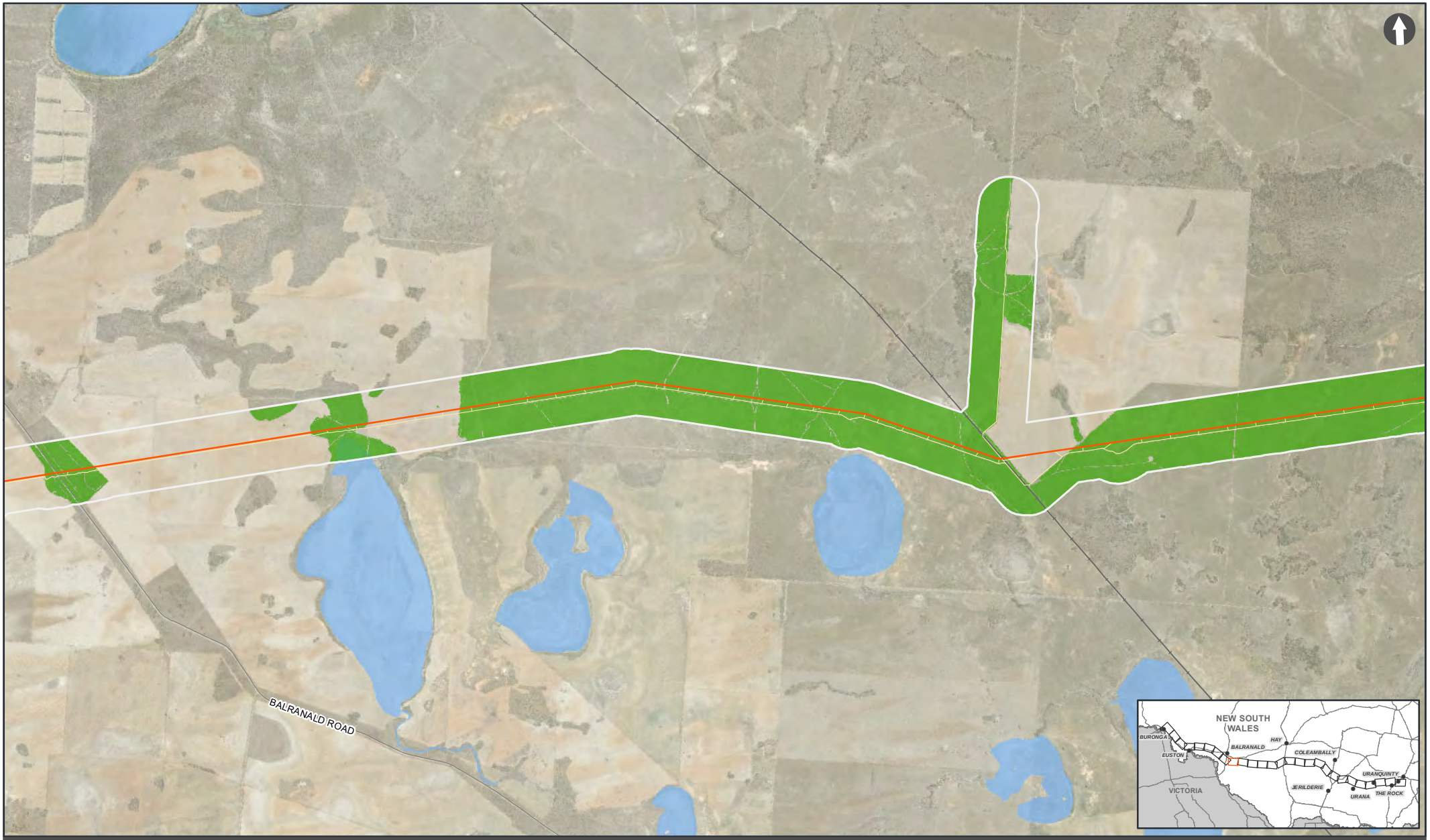
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Native Vegetation Assessment Area
- Native Vegetation

BDAR - Figure A-3h

Assessing Native Vegetation Cover

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Source: NSWSS, ESRI, Transgrid, WSP



0 1 2 KM

BDAR - Figure A-3i

Assessing Native Vegetation Cover

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Native Vegetation Assessment Area
- Native Vegetation

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

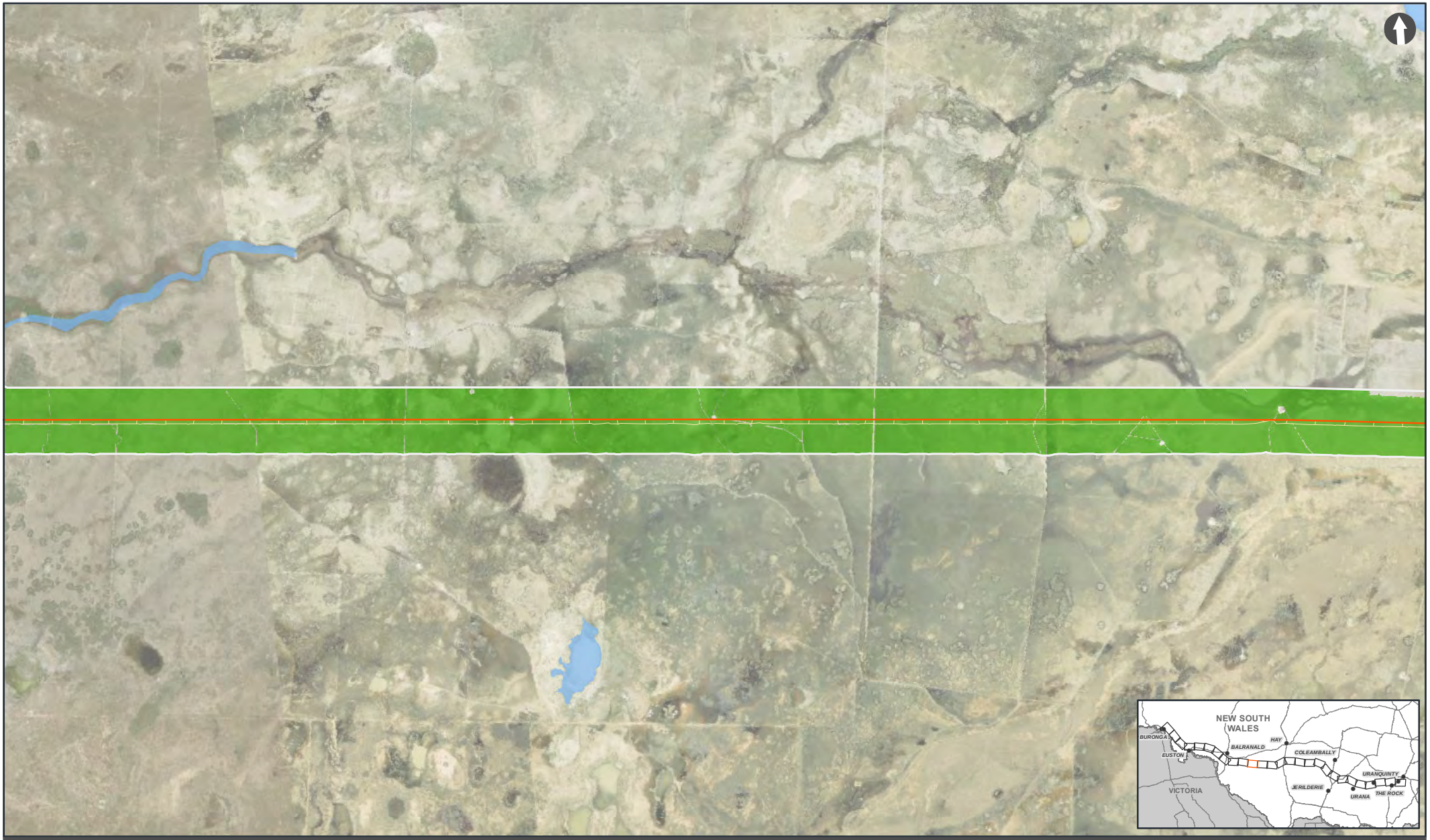
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Native Vegetation Assessment Area
- Native Vegetation

BDAR - Figure A-3j

Assessing Native Vegetation Cover

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

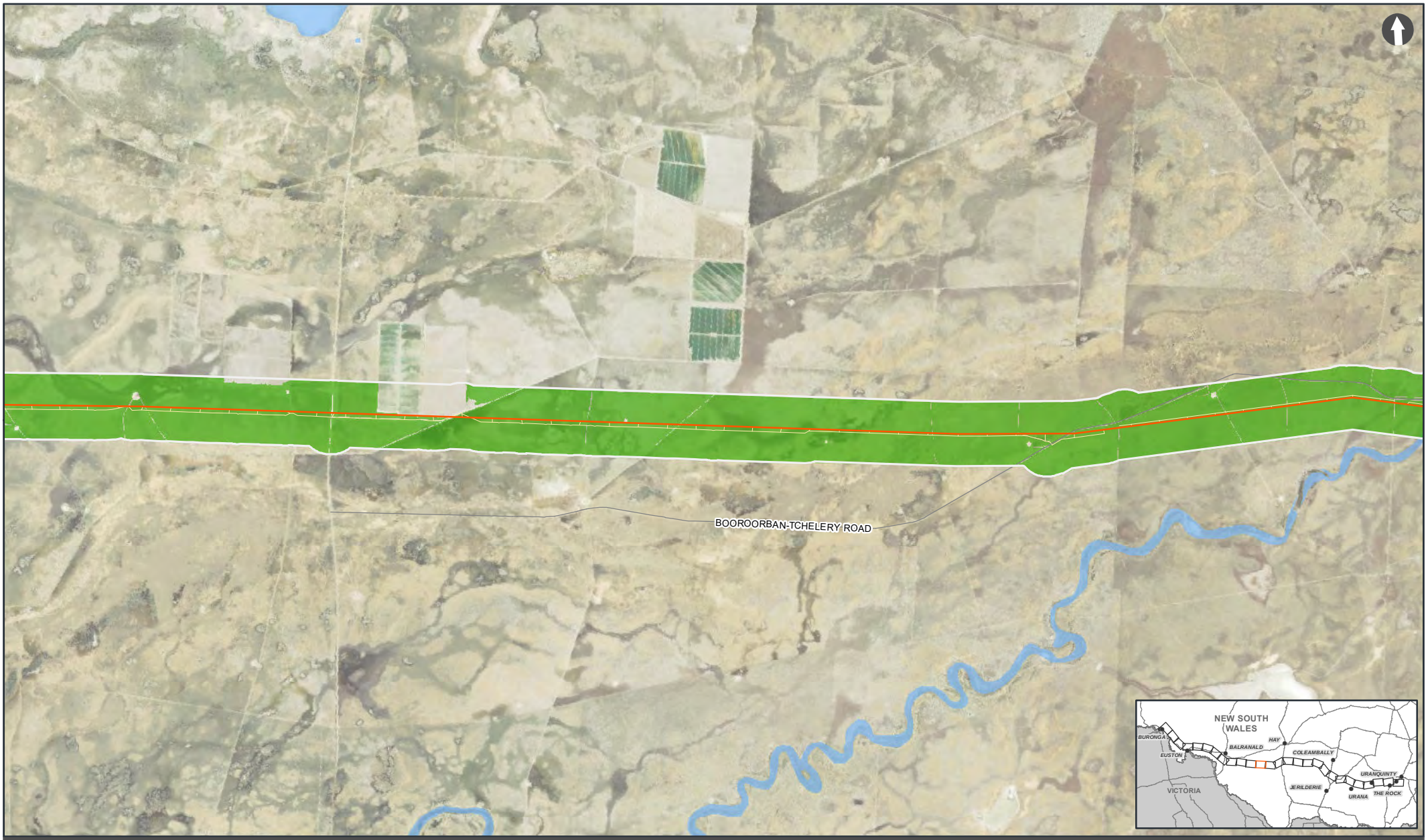
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Native Vegetation Assessment Area
- Native Vegetation

BDAR - Figure A-3k

Assessing Native Vegetation Cover

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

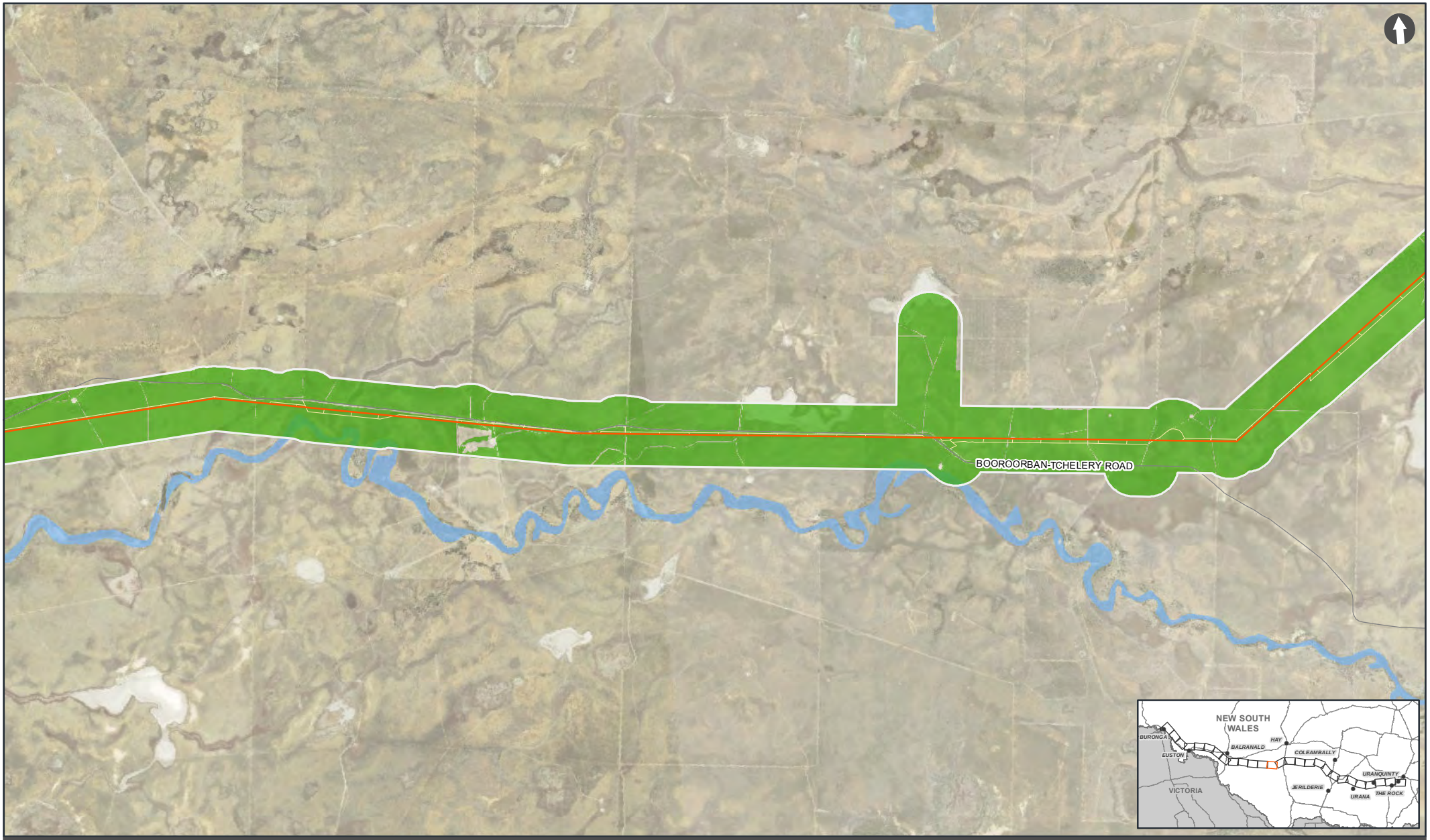
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Native Vegetation Assessment Area
- Native Vegetation

BDAR - Figure A-3

Assessing Native Vegetation Cover

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Source: NSWSS, ESRI, Transgrid, WSP



0 1 2 KM

BDAR - Figure A-3m

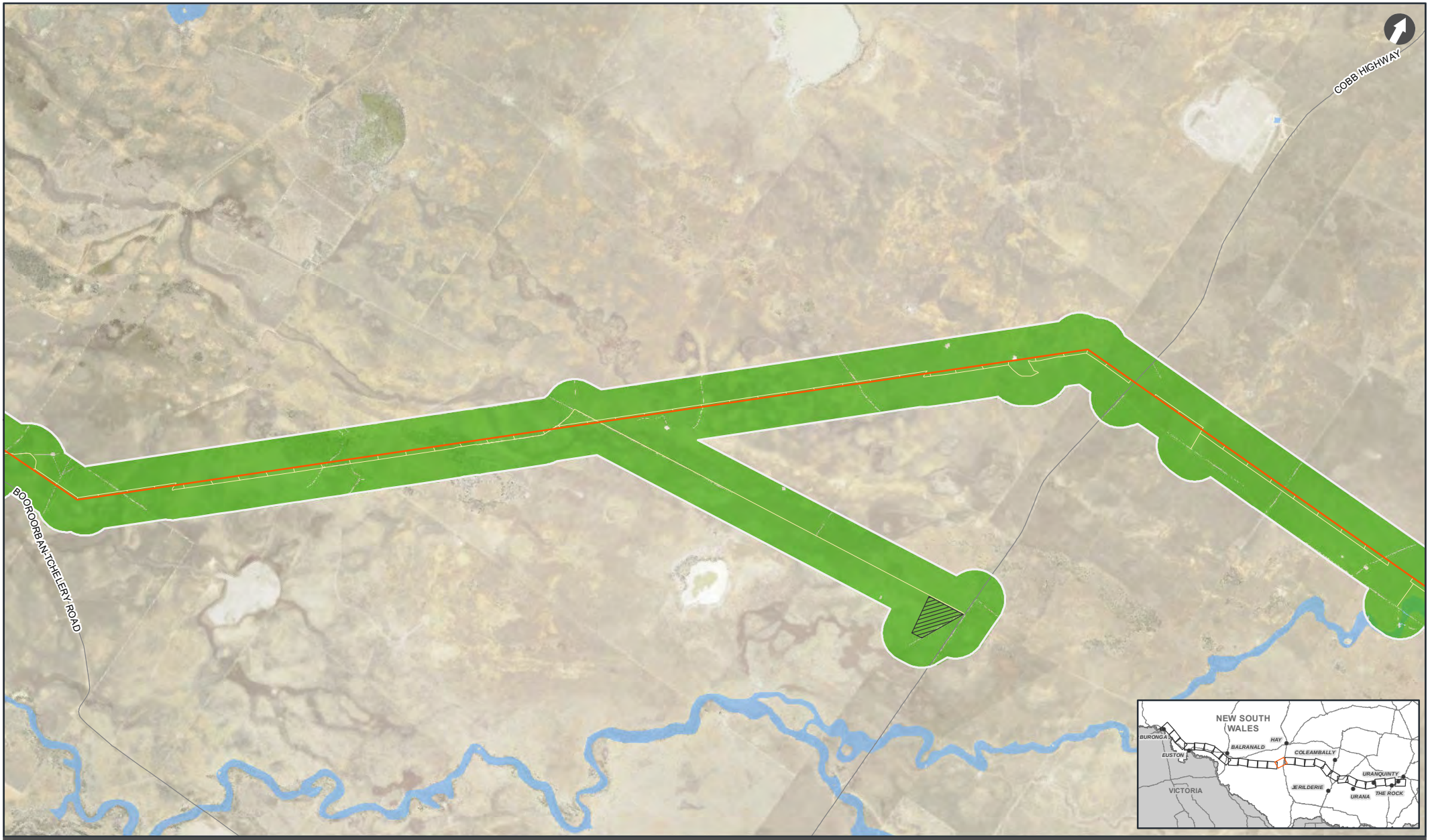
Assessing Native Vegetation Cover

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Native Vegetation Assessment Area
- Native Vegetation

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

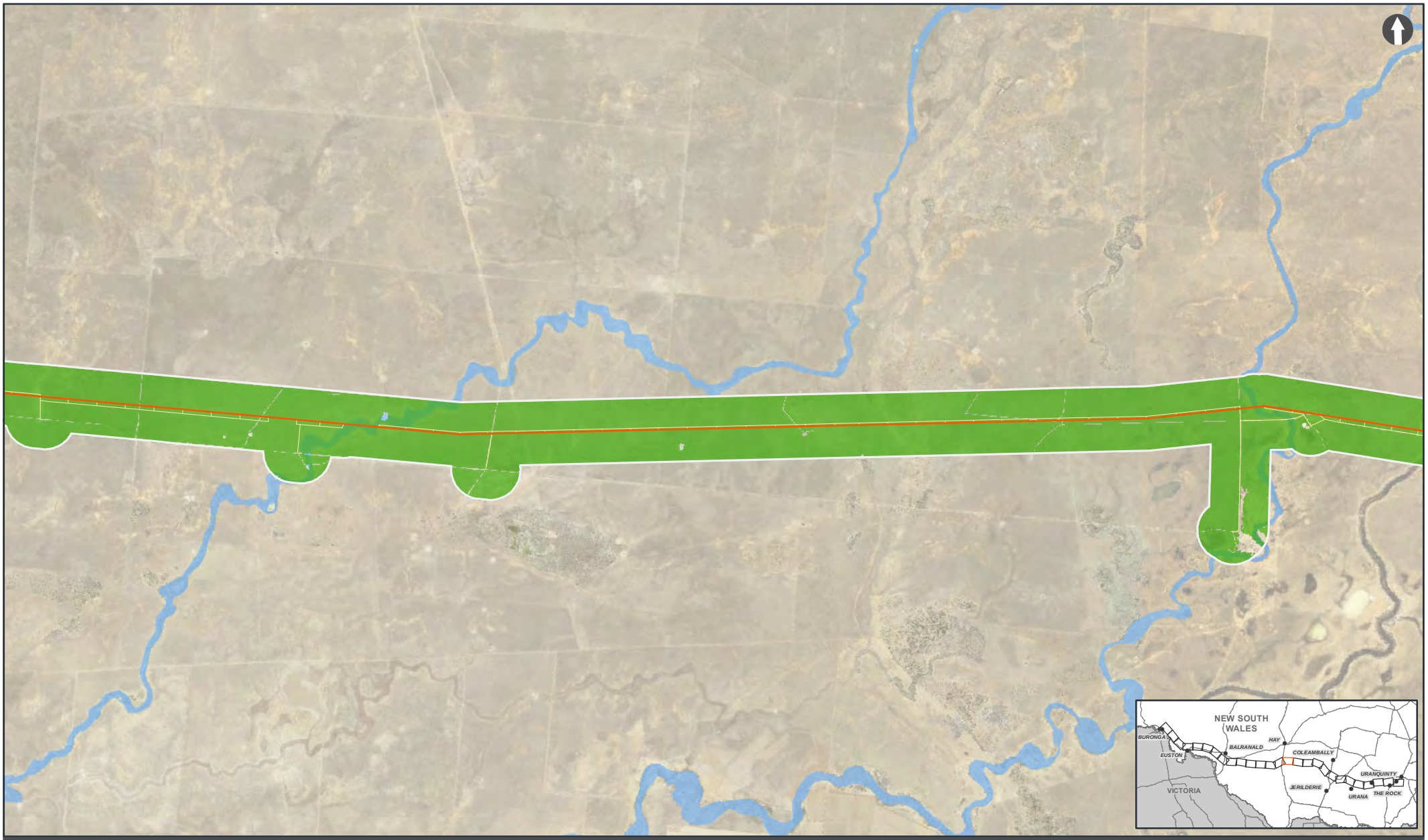
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- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Native Vegetation Assessment Area
- Native Vegetation

BDAR - Figure A-3n

Assessing Native Vegetation Cover

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

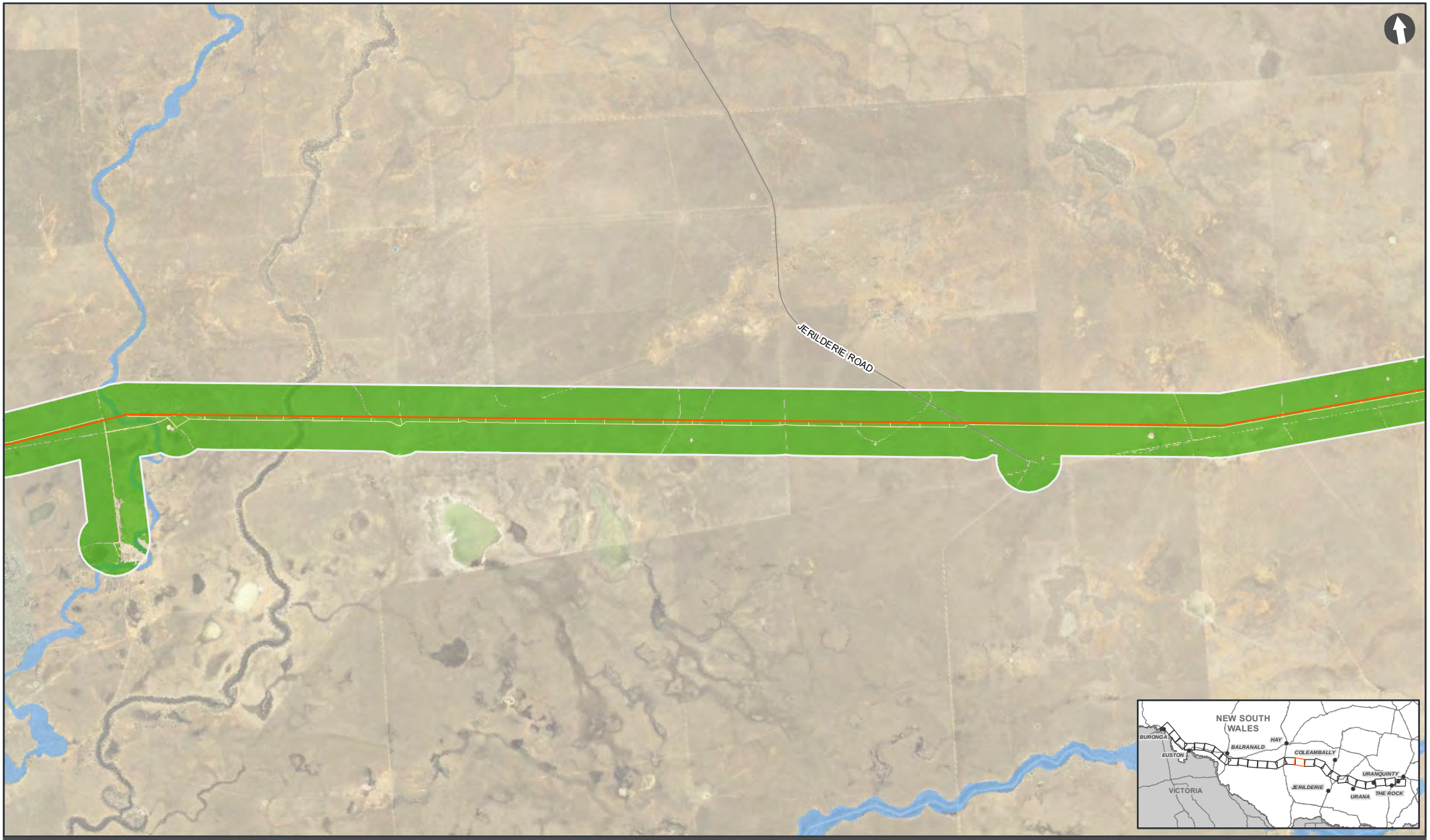
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Native Vegetation Assessment Area
- Native Vegetation

BDAR - Figure A-3o

Assessing Native Vegetation Cover

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Source: NSWSS, ESRI, Transgrid, WSP



0 1 2 KM

Project Components

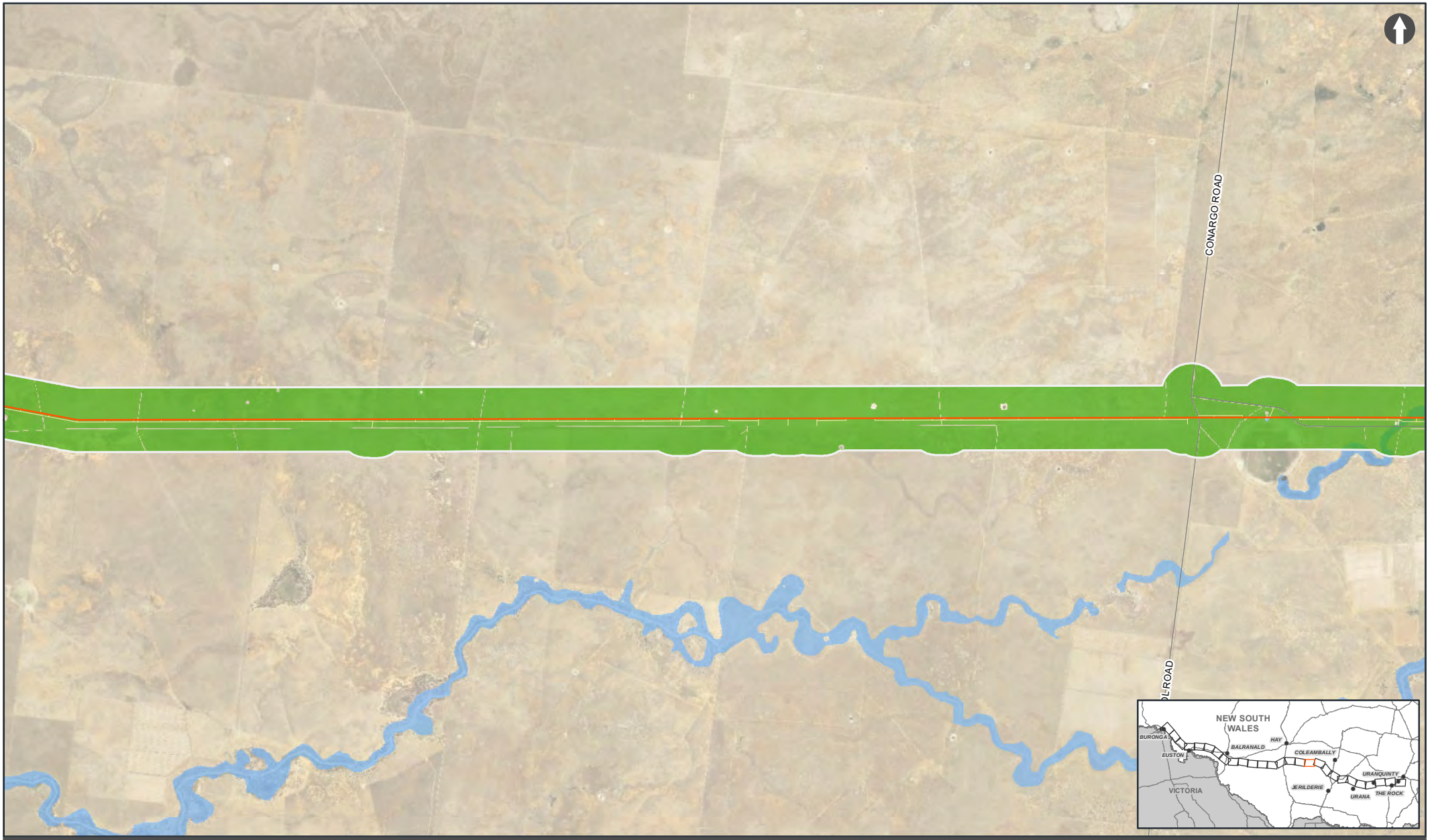
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Native Vegetation Assessment Area
- Native Vegetation

BDAR - Figure A-3p

Assessing Native Vegetation Cover

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Source: NSWSS, ESRI, Transgrid, WSP



0 1 2 KM

BDAR - Figure A-3q

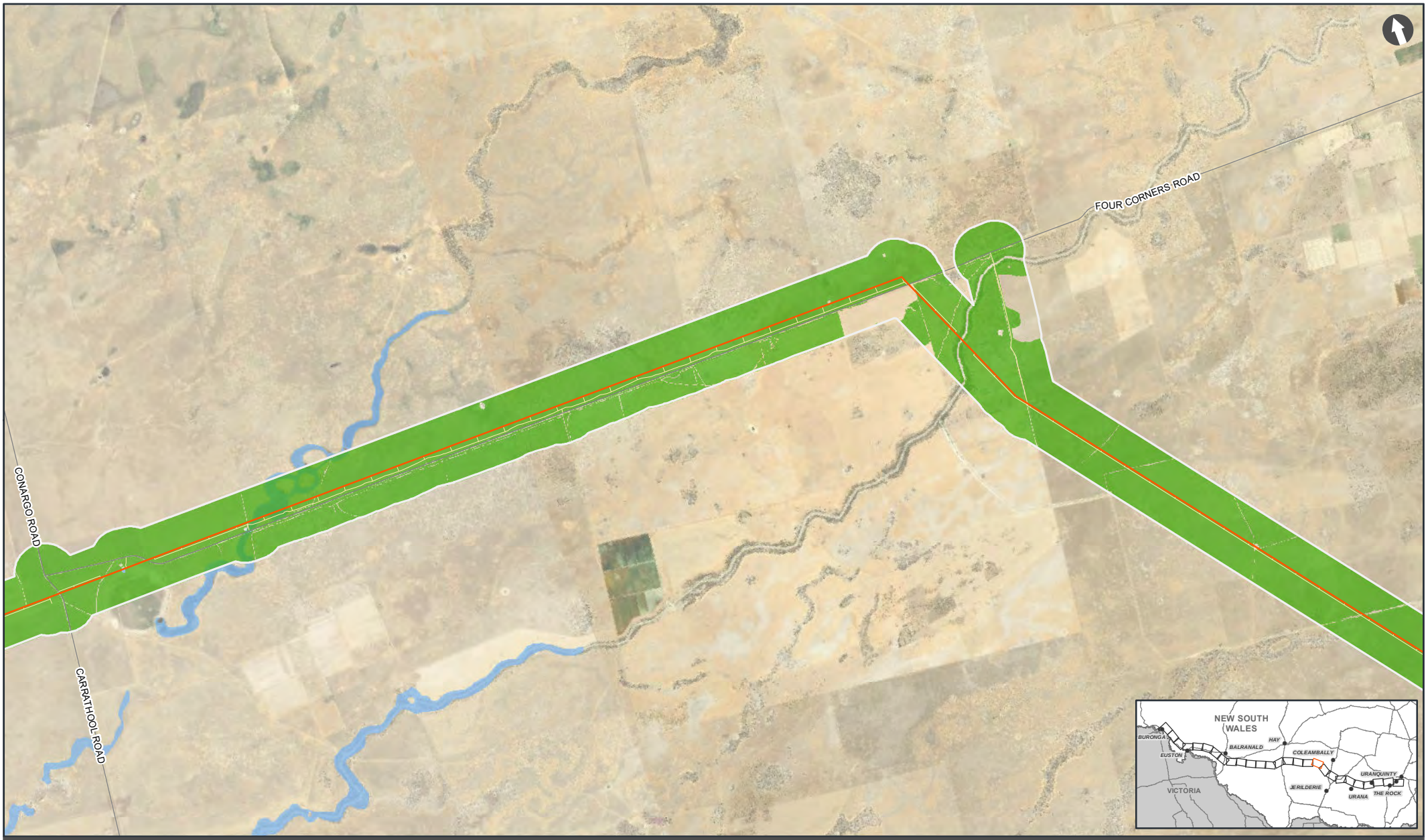
Assessing Native Vegetation Cover

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Native Vegetation Assessment Area
- Native Vegetation

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

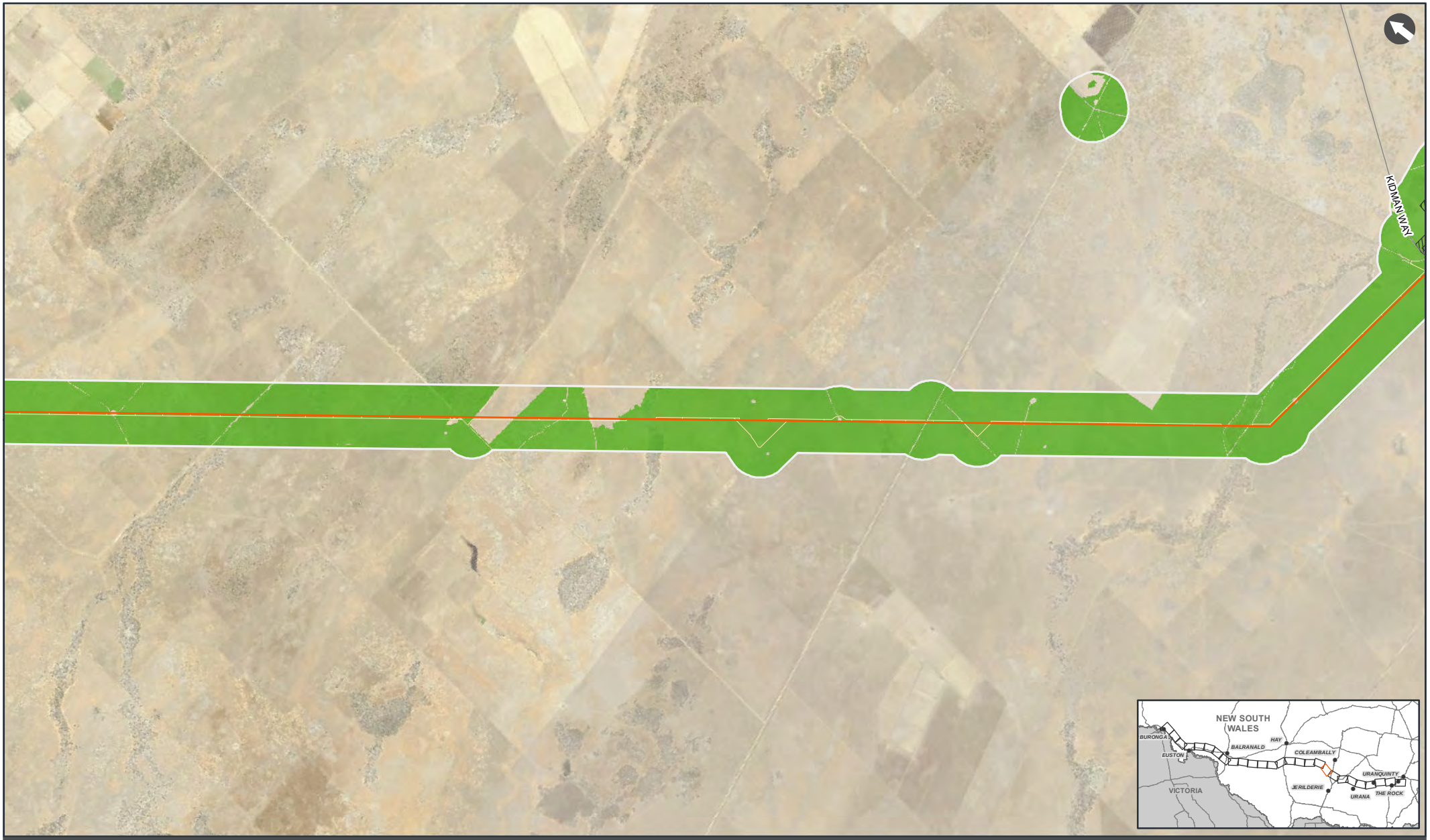
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Native Vegetation Assessment Area
- Native Vegetation

BDAR - Figure A-3r

Assessing Native Vegetation Cover

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Native Vegetation Assessment Area
- Native Vegetation

BDAR - Figure A-3s

Assessing Native Vegetation Cover

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\01_AppendixA\PS117658_BDAR_A003_NativeVegetationCover_r1v3.mxd

Source: NSWSS, ESRI, Transgrid, WSP



Project Components

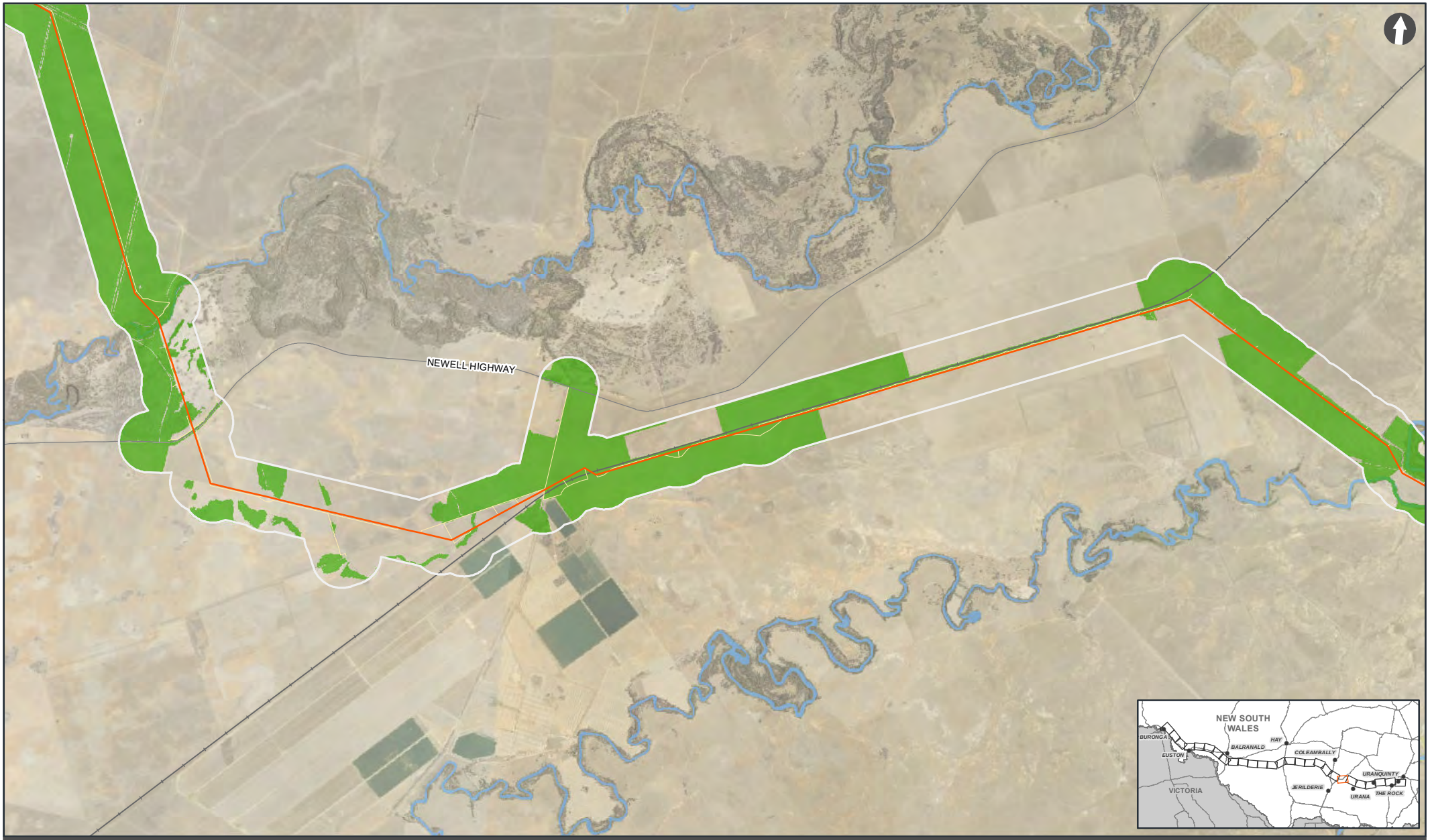
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Native Vegetation Assessment Area
- Native Vegetation

BDAR - Figure A-3t

Assessing Native Vegetation Cover

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\01_AppendixA\PS117658_BDAR_A003_NativeVegetationCover_r1v3.mxd

Source: NSWSS, ESRI, Transgrid, WSP



0 1 2 KM

Project Components

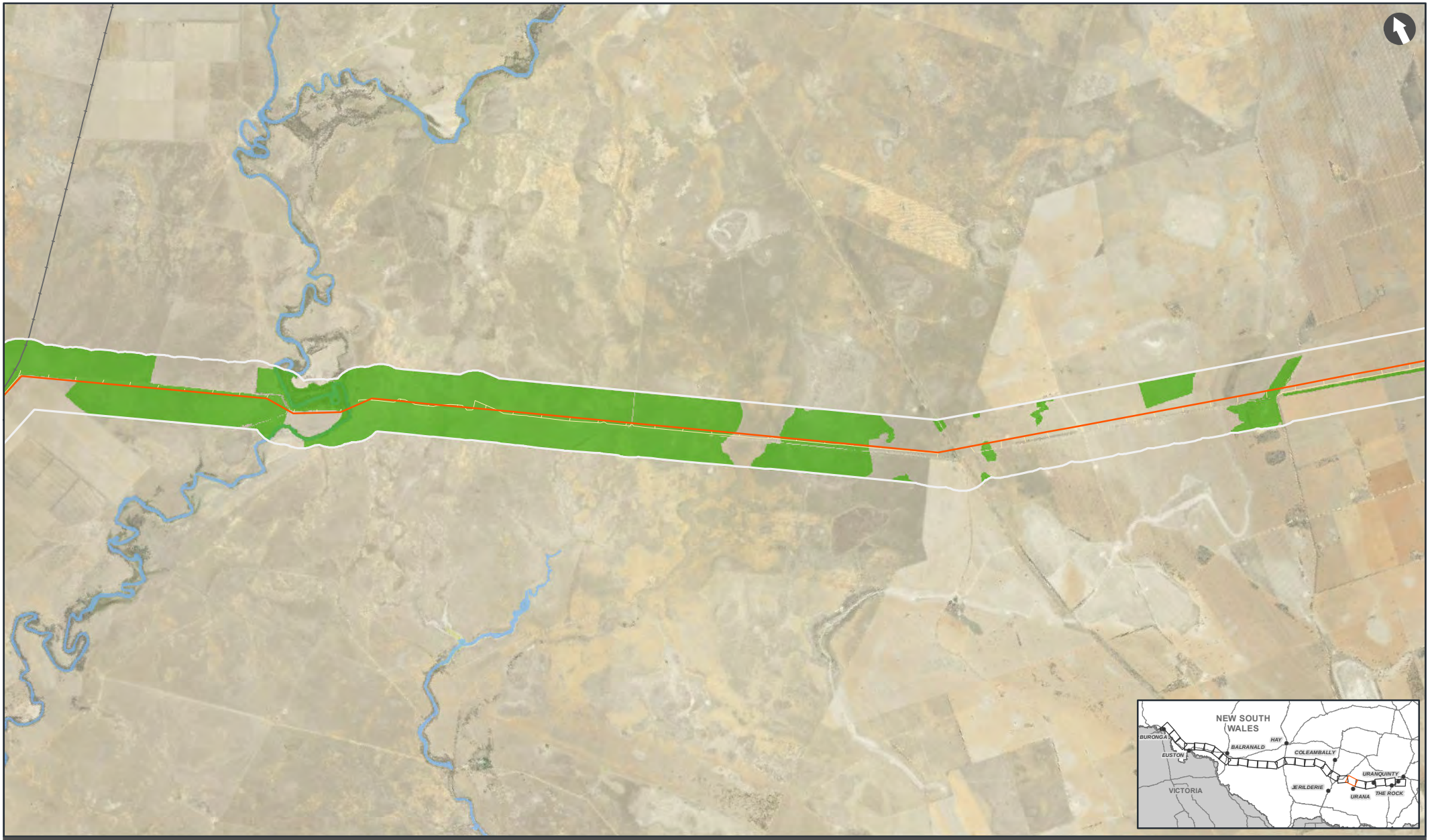
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Native Vegetation Assessment Area
- Native Vegetation

BDAR - Figure A-3u

Assessing Native Vegetation Cover

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Source: NSWSS, ESRI, Transgrid, WSP



0 1 2 KM

Project Components

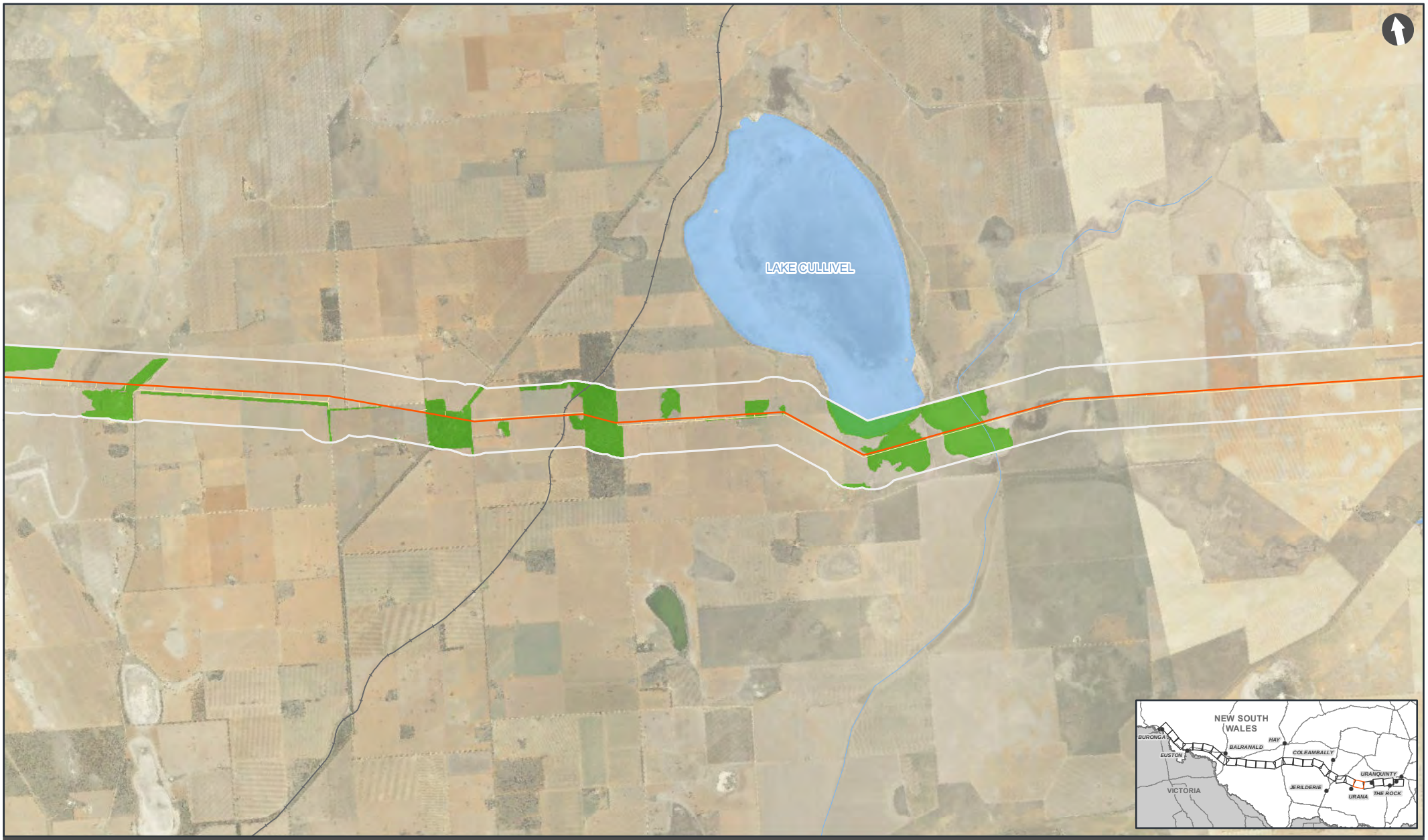
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Native Vegetation Assessment Area
- Native Vegetation

BDAR - Figure A-3v

Assessing Native Vegetation Cover

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Source: NSWSS, ESRI, Transgrid, WSP



0 1 2 KM

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Native Vegetation Assessment Area
- Native Vegetation

BDAR - Figure A-3w

Assessing Native Vegetation Cover

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\01_AppendixA\PS117658_BDAR_A003_NativeVegetationCover_r1v3.mxd

Source: NSWSS, ESRI, Transgrid, WSP



Project Components

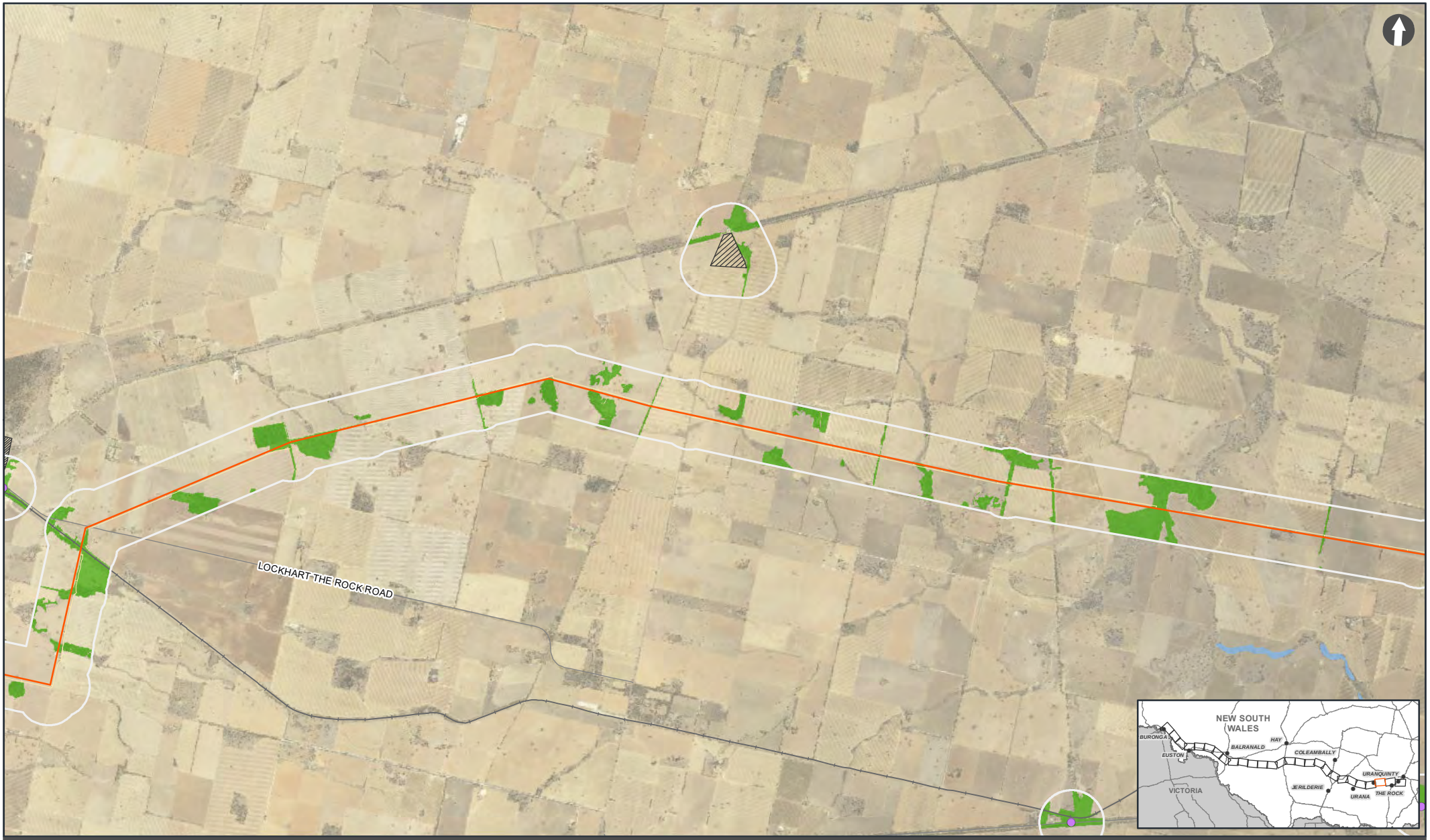
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Native Vegetation Assessment Area
- Native Vegetation

BDAR - Figure A-3x

Assessing Native Vegetation Cover

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\01_AppendixA\PS117658_BDAR_A003_NativeVegetationCover_r1v3.mxd

Source: NSWSS, ESRI, Transgrid, WSP



0 1 2 KM

BDAR - Figure A-3y

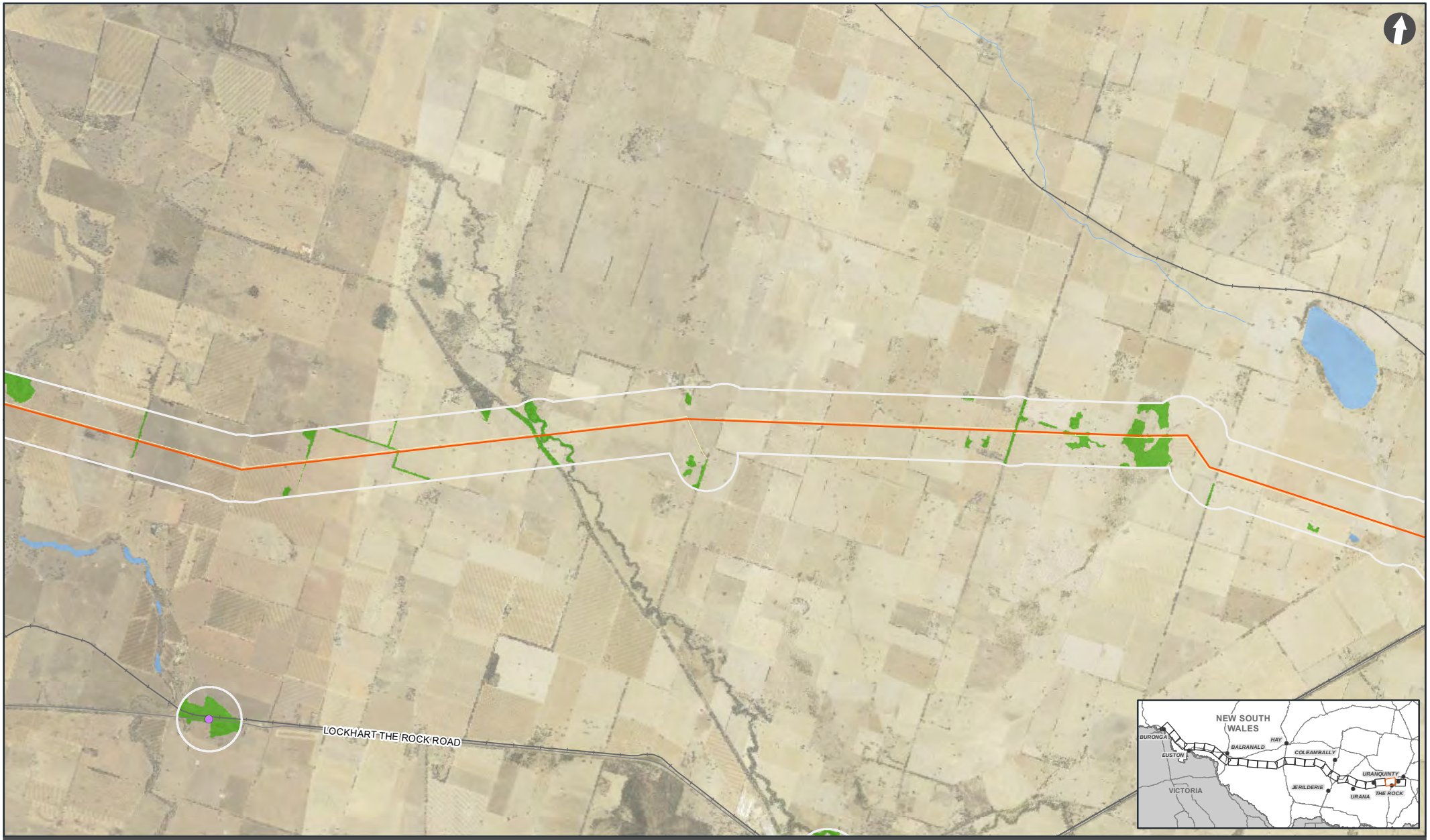
Assessing Native Vegetation Cover

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Native Vegetation Assessment Area
- Native Vegetation

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Native Vegetation Assessment Area
- Native Vegetation

BDAR - Figure A-3z

Assessing Native Vegetation Cover

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\01_AppendixA\PS117658_BDAR_A003_NativeVegetationCover_r1v3.mxd

Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Native Vegetation Assessment Area
- Native Vegetation

BDAR - Figure A-3aa

Assessing Native Vegetation Cover

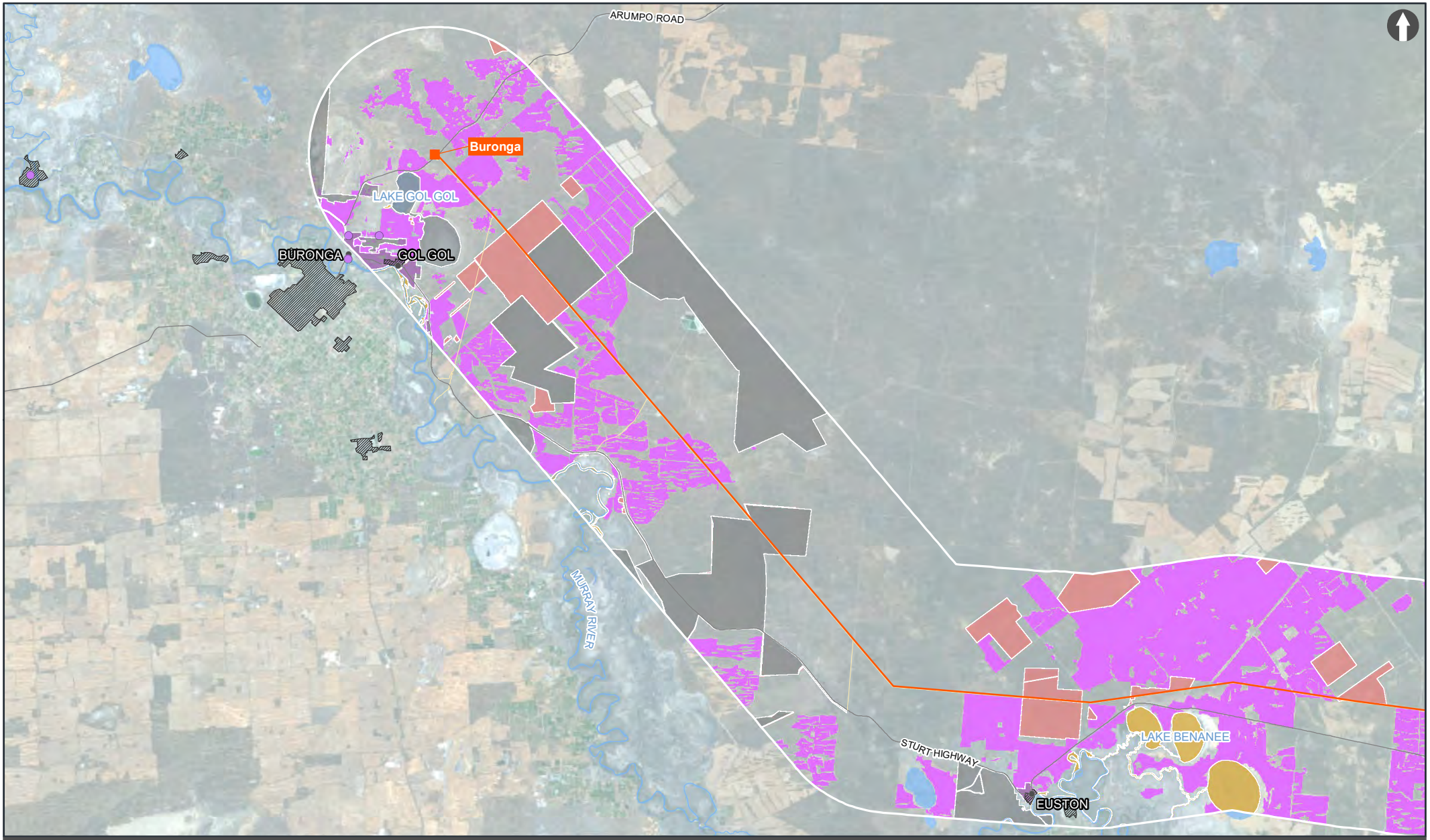
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Source: NSWSS, ESRI, Transgrid, WSP

Appendix B

Native vegetation

APPENDIX B-1
Native vegetation regulatory mapping
Category 1-exempt land



BDAR - Figure B-1a

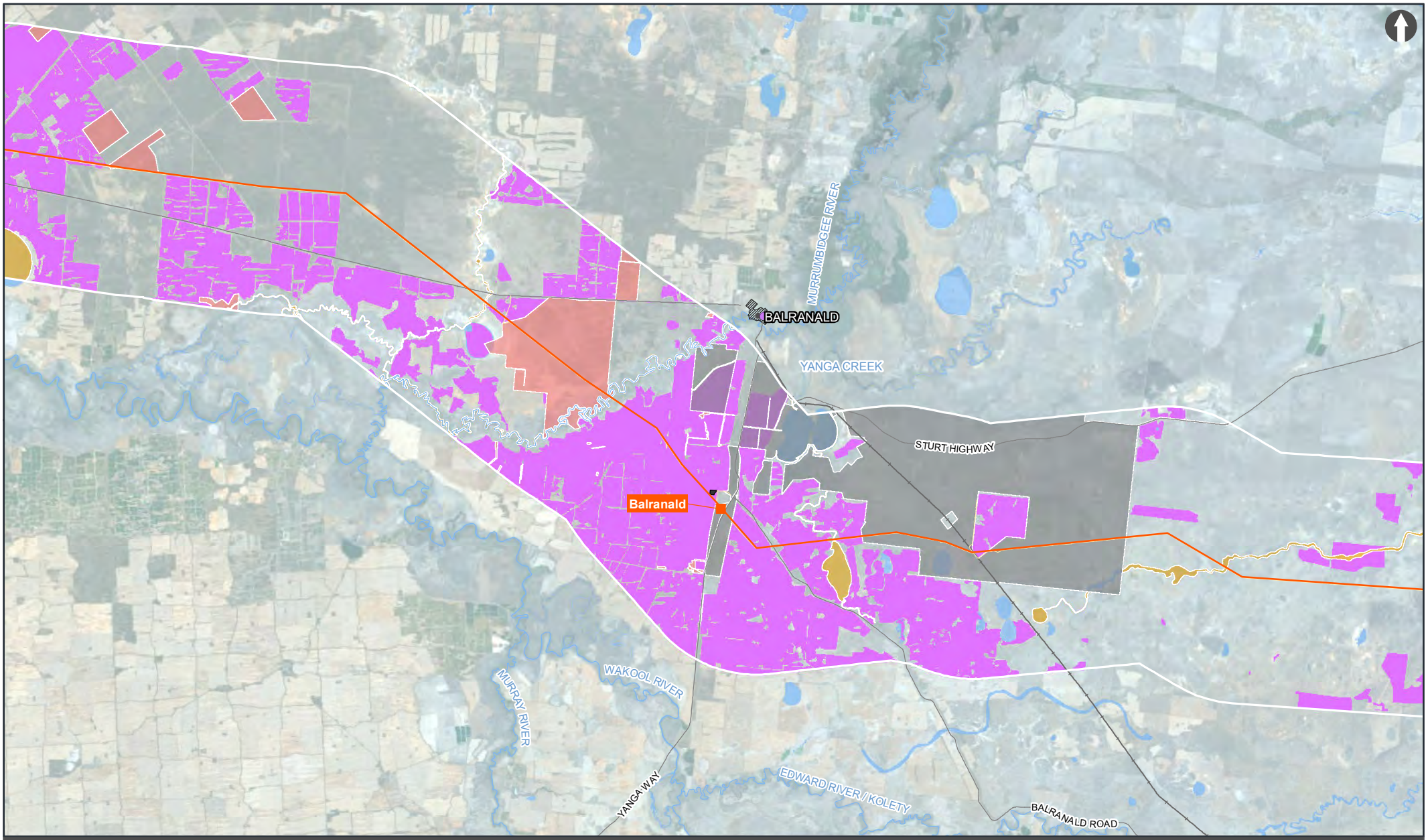
Native Vegetation Regulatory Mapping
Category 1 - Exempt Land

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody

Native Vegetation Regulatory Mapping
- Category 1 - Exempt Land
- Category 2 - Vulnerable Regulated Land
- Category 2 - Sensitive Regulated Land
- Category 2 - Vulnerable and Sensitive Regulated Land
- Excluded Land

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\02_AppendixB\PS117658_BDAR_B001_NativeVegetationRegulatoryMapping_r1v4.mxd

Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure B-1b

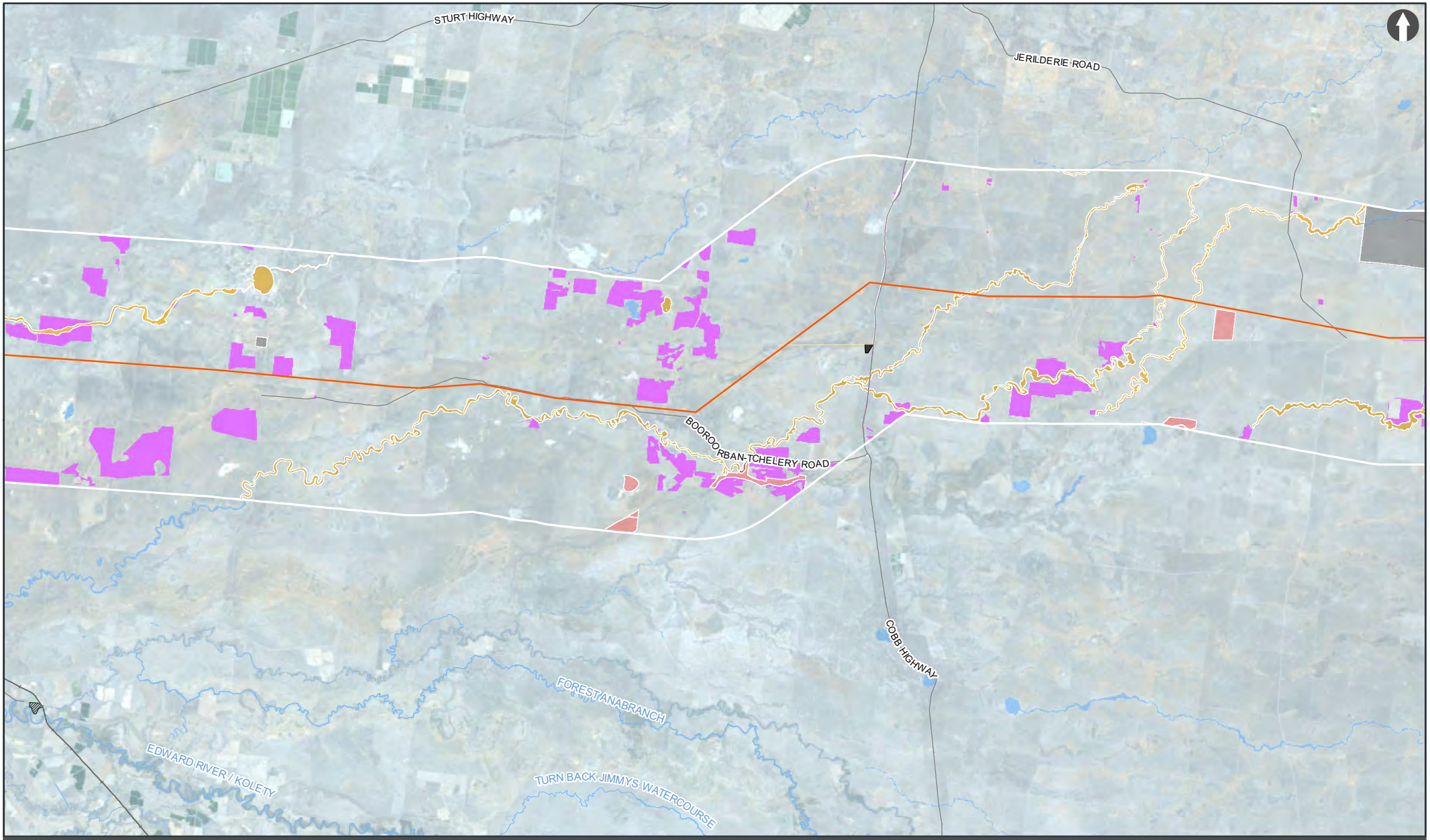
Native Vegetation Regulatory Mapping
Category 1 - Exempt Land

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody

Native Vegetation Regulatory Mapping
- Category 1 - Exempt Land
- Category 2 - Vulnerable Regulated Land
- Category 2 - Sensitive Regulated Land
- Category 2 - Vulnerable and Sensitive Regulated Land
- Excluded Land

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\02_AppendixB\PS117658_BDAR_B001_NativeVegetationRegulatoryMapping_r1v4.mxd

Source: NSWSS, ESRI, Transgrid, WSP



Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody

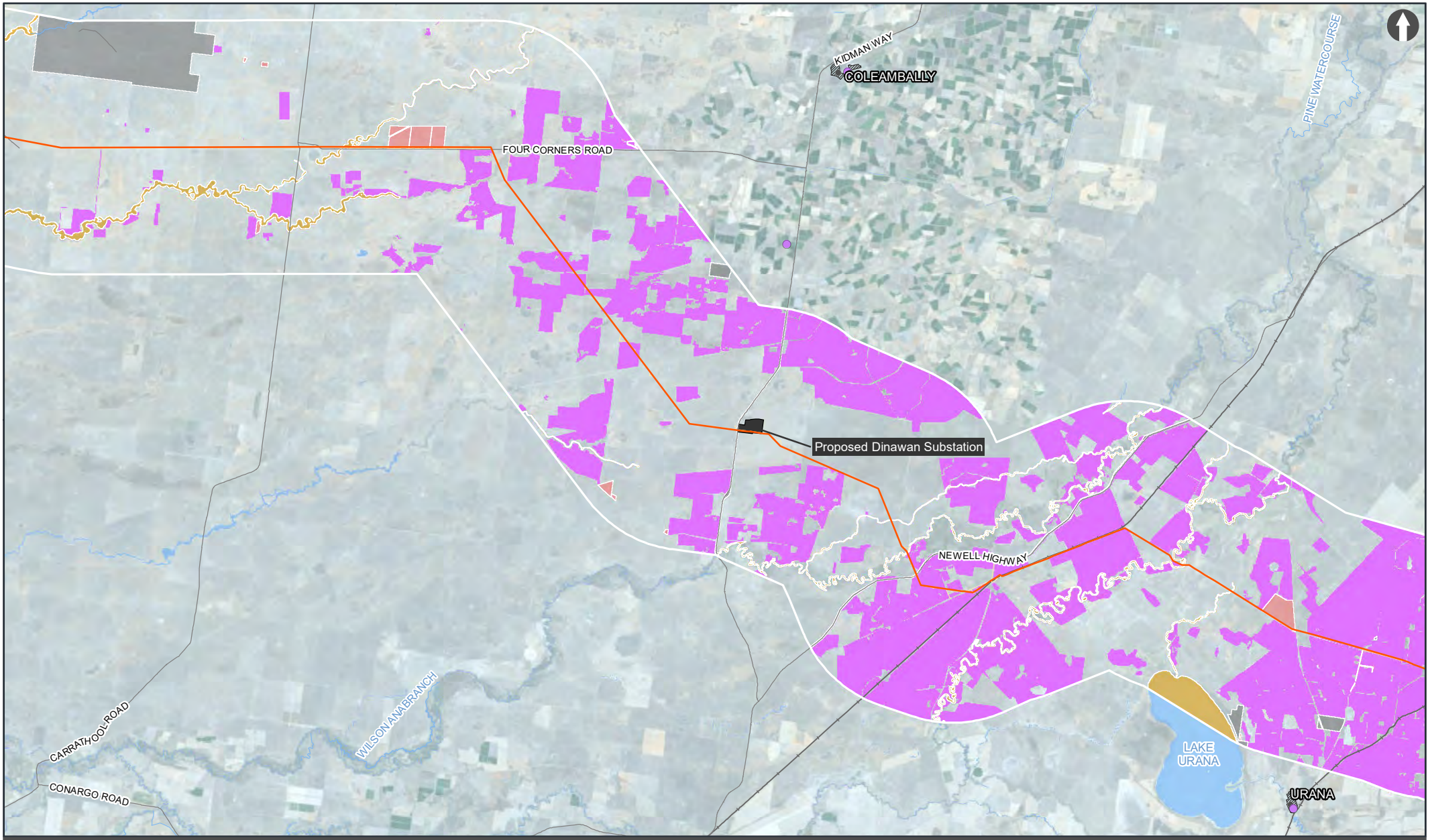
Native Vegetation Regulatory Mapping
- Category 1 - Exempt Land
- Category 2 - Vulnerable Regulated Land
- Category 2 - Sensitive Regulated Land
- Category 2 - Vulnerable and Sensitive Regulated Land
- Excluded Land

BDAR - Figure B-1c

Native Vegetation Regulatory Mapping
Category 1 - Exempt Land

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\02_AppendixB\PS117658_BDAR_B001_NativeVegetationRegulatoryMapping_r1v4.mxd

Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure B-1d

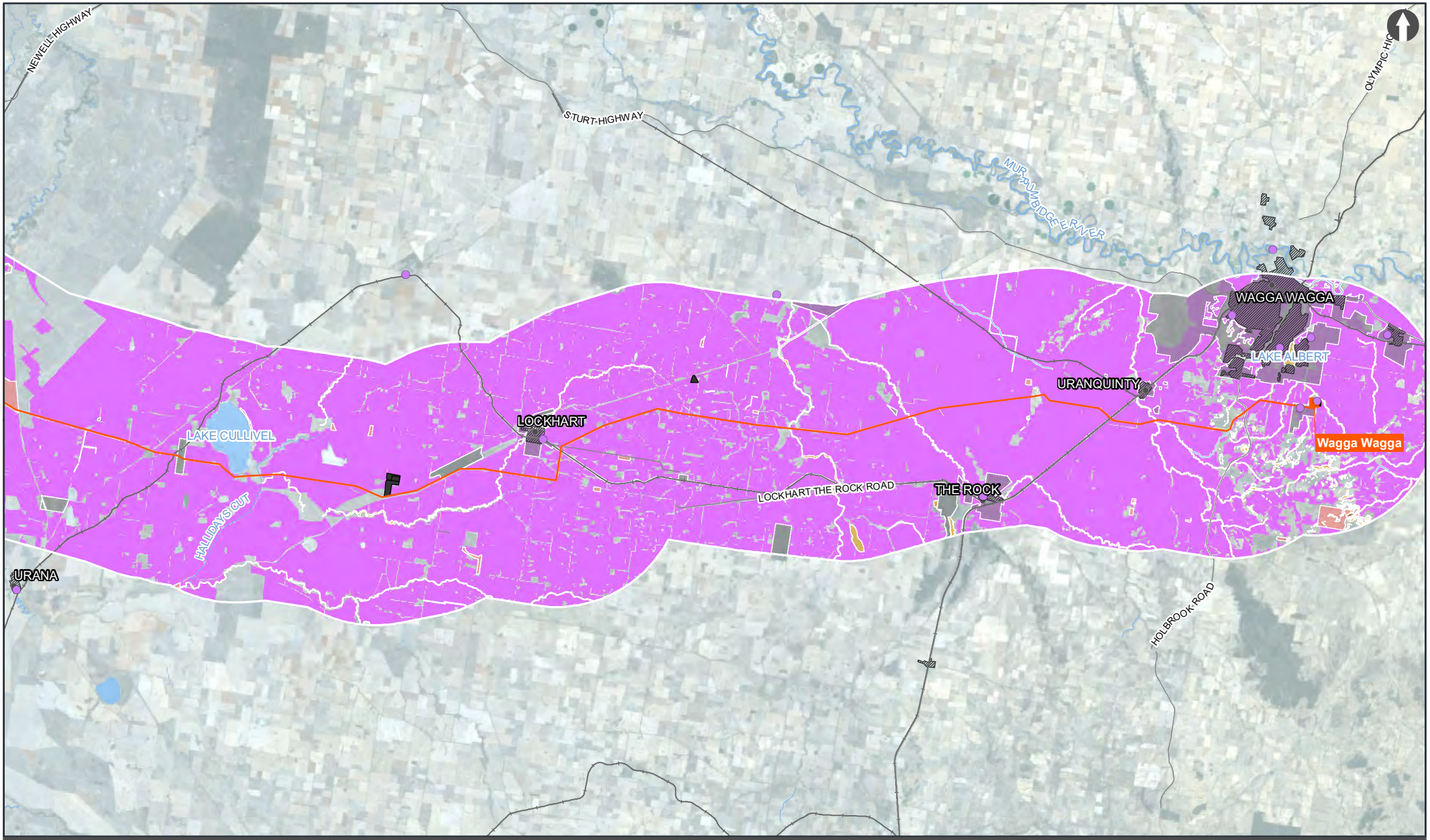
Native Vegetation Regulatory Mapping
Category 1 - Exempt Land

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody

Native Vegetation Regulatory Mapping
- Category 1 - Exempt Land
- Category 2 - Vulnerable Regulated Land
- Category 2 - Sensitive Regulated Land
- Category 2 - Vulnerable and Sensitive Regulated Land
- Excluded Land

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\02_AppendixB\PS117658_BDAR_B001_NativeVegetationRegulatoryMapping_r1v4.mxd

Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure B-1e

Native Vegetation Regulatory Mapping
Category 1 - Exempt Land

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody

Native Vegetation Regulatory Mapping
- Category 1 - Exempt Land
- Category 2 - Vulnerable Regulated Land
- Category 2 - Sensitive Regulated Land
- Category 2 - Vulnerable and Sensitive Regulated Land
- Excluded Land

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\02_AppendixB\PS117658_BDAR_B001_NativeVegetationRegulatoryMapping_r1v4.mxd

Source: NSWSS, ESRI, Transgrid, WSP

APPENDIX B-2
Plant community type profiles

B-2.1 Plant community type profiles

B-2.1.1 Overview

A detailed description of each recorded PCT, including selection justification, floristic and structural composition along with representative photos and summary of BAM plot data against IBRA region benchmarks are provided below. Vegetation profiles have not been completed for community types where access was restricted (sections where State Vegetation mapping was used). For more information on these vegetation types refer to BioNet Classification System.

Detailed vegetation integrity plot data for each PCT and associated vegetation zone is presented in Appendix B-4.

Due to small patch sizes and other constraints such as localised water inundation, some PCTs were unable to have BAM vegetation integrity plot surveys undertaken. These PCTs were limited to wetland vegetation being PCT 53 and PCT 182. To ensure a precautionary approach was applied, benchmark condition was assumed for these vegetation types.

B-2.1.2 Arid shrublands (Acacia Sub-formation)

PCT 143 – Narrow-leaved Hopbush –Scrub Turpentine – Senna shrubland on semi-arid and arid sandplains and dunes

The occurrence of this vegetation type within the proposal study area is illustrated in Figure 4.3 and Appendix B-5. A profile summary of PCT 143 – Narrow-leaved Hopbush – Scrub Turpentine – Senna shrubland on semi-arid and arid sandplains and dunes is provided in Table B-2.1 and is photographically represented below.

Table B-2.1 Summary of PCT 143 – Narrow-leaved Hopbush – Scrub Turpentine – Senna shrubland on semi-arid and arid sandplains and dunes

PCT 143 – NARROW-LEAVED HOPBUSH – SCRUB TURPENTINE – SENNA SHRUBLAND ON SEMI-ARID AND ARID SANDPLAINS AND DUNES	
Vegetation formation	KF_CH12A Arid Shrublands (Acacia Sub-formation)
Vegetation class	Sand Plain Mulga Shrublands
PCT percent cleared	30%
TEC	Not listed
Landscape position	This PCT was recorded in the Murray Darling Depression (South Olary Plain subregion) and the Riverina (Murrumbidgee subregion) IBRA bioregion mainly in low lying swales between aeolian sand dunes dominated by mallee communities (PCT 170 and PCT 171). It is unclear if PCT 143 is a remnant or derived community type. Based on observations made, it is suspected that this community is largely a derived form of PCT 58 as it was recorded in similar landscape positions in proximity to modified patches of PCT 143. PCT 143 also occurred in other areas which had been subject to historical disturbance (i.e. clearing under powerlines) where *Dodonaea viscosa* subsp. *angustissima* appeared as a colonising species.

PCT 143 – NARROW-LEAVED HOPBUSH – SCRUB TURPENTINE – SENNA SHRUBLAND ON SEMI-ARID AND ARID SANDPLAINS AND DUNES	
PCT justification	This community is known to be dominated by *Dodonaea viscosa* subsp. *angustissima* and *Eremophila sturtii* which are colonising woody shrub species that are non-palatable to stock and occur as regrowth after clearing of mallee and Black Oak communities. A quantitative analysis was undertaken for this community using the BioNet Vegetation Classification PCT filter tool (EES Group, 2020). The IBRA region and subregion, community structure and dominant shrub species were used as search criteria. PCT 119 and PCT 143 had the highest number matches and were considered for further analysis. PCT 119 was dismissed due to the absence of *Acacia aneura* which dominates that community. Vegetation is considered most closely aligned to PCT 143 due to the high cover of *Dodonaea viscosa* subsp. *angustissima, Eremophila sturtii* and various sub-species of *Senna artemisioides* which were observed dominating this community in the proposal study area. Based on floristic, geographic and geological characteristics, this vegetation type is considered consistent with the scientific description and distribution information outlined for PCT 143.
Characteristic floristic composition and structure	
Species upper stratum (<4 m)	Dominated by *Dodonaea viscosa* subsp. *angustissima* and *Eremophila sturtii* with *Acacia colletioides, Acacia nyssophylla* and various subspecies of *Senna artemisiodes.*
Species middle stratum (<2 m)	*Eremophila glabra, Olearia pimeleoides, Maireana pyramidata* and *Rhagodia spinescens.*
Species ground stratum (<1 m)	*Atriplex stipitata* subsp. *miscella, Calotis hispidula, Daucus glochidiatus, Enchylaena tomentosa, Maireana pentatropis, Erodium crinitum, Enneapogon avenaceus, Goodenia pinnatifida, Lemooria burkittii, Sclerolaena diacantha, Podolepis capillaris, Plantago drummondii, Roepera apiculatum, Sclerolaena obliquicuspis, Sida intricata* and *Tetragonia eremaea*. Exotic species included *Carrichtera annua*, Medicago laciniata** and *Medicago minima*.*
Vegetation condition	Mod-good: Vegetation was recorded to have an intact upper stratum with evidence of historic grazing in the middle and ground stratum. Species richness in the middle and ground stratum varied based off grazing pressures.



PCT 143_mod-good condition



PCT 143_mod-good condition

PCT 199 – Hooked Needlewood – Needlewood – Mulga – Turpentine Bush open shrubland of the semi-arid and arid plains

The occurrence of this vegetation type within the proposal study area is illustrated in Figure 4.3 and Appendix B-5. A profile summary of PCT 199 – Hooked Needlewood – Needlewood - Mulga – Turpentine Bush open shrubland of the semi-arid and arid plains is provided in Table B-2.2 and is photographically represented below.

Table B-2.2 Summary of PCT 199 – Hooked Needlewood – Needlewood - Mulga – Turpentine Bush open shrubland of the semi-arid and arid plains

PCT 199 – HOOKED NEEDLEWOOD – NEEDLEWOOD - MULGA – TURPENTINE BUSH OPEN SHRUBLAND OF THE SEMI-ARID AND ARID PLAINS	
Vegetation formation	KF_CH12B Arid Shrublands (Acacia sub-formation)
Vegetation class	Sand Plain Mulga Shrublands
PCT percent cleared	25%
TEC	Not listed
Landscape position	This vegetation was recorded in the Murray Darling Depression (South Olary Plain subregion) IBRA region in small patches amongst mallee on sand dunes.
PCT justification	Vegetation assigned to PCT 199 occurs as a tall open shrubland on red-brown sandy soils and is dominated by *Hakea tephrosperma* and/or *Hakea leucoptera.* A quantitative analysis was undertaken for this community using the BioNet Vegetation Classification PCT filter tool (EES Group, 2020). The IBRA region and subregion, vegetation formation, dominant shrub species and community structure and height were used as search criteria. Plot data from mod-good condition vegetation was considered most representative of this community and was used to inform this analysis. PCT 139 and PCT 199 returned the highest number of matches. PCT 139 is typically dominated by *Acacia victoriae.* Given the lack of *Acacia victoriae,* PCT 139 was dismissed leaving PCT 199 as the most appropriate PCT for this vegetation type. Based on floristic and geological characteristics, this vegetation type is considered consistent with the scientific description and distribution information outlined for PCT 199.
Characteristic floristic composition and structure	
Species upper stratum (<4 m)	Dominated by *Hakea tephrosperma.* and/or *Hakea leucoptera.*
Species middle stratum (<2 m)	*Atriplex stipitata* subsp. *miscella, Dodonaea viscosa* subsp. *angustissima, Maireana triptera, Salsola australis*
Species ground stratum (<1 m)	*Brachyscome lineariloba* and *Tetragonia eremaea.* Common weed species include *Centaurea melitensis*, Hordeum leporinum*, Sisymbrium erysimoides**
Vegetation condition	Mod-good: This vegetation type was recorded to have an intact upper stratum. The middle and ground stratum were both subject to pressures from livestock grazing. The ground stratum was also subject to weed invasion which lead to a decrease in species richness.



PCT 199_mod-good (Q209E)



PCT 199_mod-good (Q209E)



PCT 199_mod-good on property H035



PCT 199_mod-good on property H035



PCT 199_mod-good in the South Olary Plain



PCT 199_mod-good in the South Olary Plain

B-2.1.3 Arid shrublands (Chenopod sub-formation)

PCT 157 – Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion

The occurrence of this vegetation type within the proposal study area is illustrated in Figure 4.3 and Appendix B-5. A profile summary of PCT157 – Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion in Table B-2.3 and is photographically represented below.

Table B-2.3 Summary of PCT157 – Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion

PCT 157 – BLADDER SALTBUSH SHRUBLAND ON ALLUVIAL PLAINS IN THE SEMI-ARID (WARM) ZONE INCLUDING RIVERINA BIOREGION	
Vegetation formation	KF_CH12B Arid Shrublands (Chenopod sub-formation)
Vegetation class	Riverine Chenopod Shrublands
PCT percent cleared	60%
TEC	Not listed
Landscape position	This vegetation was recorded on in the Riverina IBRA region (Murrumbidgee subregion) on alluvial plains across the Hay Plain.
PCT justification	Vegetation assigned to PCT 157 was generally treeless, except for occasional scattered *Acacia pendula* or C*asuarina pauper*. Soils were characterized by grey and brown cracking clays and red-brown clay loam soils. A quantitative analysis was undertaken for this community using the BioNet Vegetation Classification PCT filter tool (EES Group, 2020). The IBRA region and subregion, vegetation formation, vegetation class and dominant shrub species were used as search criteria. Plot data from mod-good condition vegetation was considered most representative of this community and was used to inform this analysis. Searches for the Riverina IBRA region returned the highest number of matches for PCT 157, PCT 159, PCT 163 and PCT 164. PCT 159 was dismissed due to lack of *Atriplex nummularia* which is the dominant species that characterises this community. Both PCT 163 and PCT 164 are considered derived communities of PCT 157 where grazing pressures have reduced the presence of *Atriplex lindleyi* subsp. *lindleyi.* PCT 157 was determined to be the most suitable PCT for this vegetation type given the retention of *Atriplex lindleyi* subsp. *lindleyi.* Based on floristic and geological characteristics, this vegetation type is considered consistent with the scientific description and distribution information outlined for PCT 157.
Characteristic floristic composition and structure	
Species upper stratum (6–8 m)	Generally absent, scattered *Acacia pendula* and C*asuarina pauper*.
Species middle stratum (<2 m)	Dominated by *Atriplex vesicaria* subsp. *vesicaria* with *Nitraria billardierei,* and *Maireana aphylla* in more disturbed areas.
Species ground stratum (<1 m)	*Sclerolaena brachyptera, Atriplex lindleyi, Osteocarpum acropterum var. acropterum, Sclerolaena tricuspis, Brachyscome lineariloba, Malacocera tricornis*, and *Plantago cunninghamii*. Exotic species included *Limonium lobatum*, Medicago polymorpha** and *Sonchus oleraceus*.*
Vegetation condition	Mod-good: This vegetation type was recorded in areas with reduced or low grazing pressures and a relatively low disturbance regime.



PCT 157_mod-good (Q48E)



PCT 157_mod-good (Q50E)



PCT 157_mod-good (Q53E)



PCT 157_mod-good (Q54E)

PCT 163 – Dillion Bush (Nitre Bush) shrubland of the semi-arid and arid zones

The occurrence of this vegetation type within the proposal study area is illustrated in Figure 4.3 and Appendix B-5. A profile summary of PCT 163 – Dillion Bush (Nitre Bush) shrubland of the semi-arid and arid zones is provided in Table B-2.4 and is photographically represented below.

Table B-2.4 Summary of PCT 163 – Dillion Bush (Nitre Bush) shrubland of the semi-arid and arid zones

PCT 163 – DILLION BUSH (NITRE BUSH) SHRUBLAND OF THE SEMI-ARID AND ARID ZONES	
Vegetation formation	KF_CH12B Arid Shrublands (Chenopod sub-formation)
Vegetation class	Riverine Chenopod Shrublands
PCT percent cleared	26%
TEC	Not listed
Landscape position	This vegetation was recorded in the Murray Darling Depression (South Olary Plains subregion) and Riverina (Lachlan and Murrumbidgee subregion) IBRA region on alluvial plains and dry lake beds with clay soils.
PCT justification	Vegetation assigned to PCT 163 was dominated by *Nitraria billardierei* occurring in heavily disturbed areas where grazing sensitive species, such as old mand saltbush and bladder saltbush, have been eliminated (EES Group 2020).

PCT 163 – DILLION BUSH (NITRE BUSH) SHRUBLAND OF THE SEMI-ARID AND ARID ZONES	
	A quantitative analysis was undertaken for this community using the BioNet Vegetation Classification PCT filter tool (EES Group, 2020). The IBRA region and subregion, vegetation formation, vegetation class and dominant shrub species were used as search criteria. Plot data from mod-good condition vegetation was considered most representative of this community and was used to inform this analysis. PCT 157, PCT 159 and PCT163 returned the highest number of matches. PCT 159 is a community dominated by *Atriplex nummularia*, and therefore, due to the absence of *Atriplex nummularia* was not considered further. PCT 163 is considered a derived community of PCT 157 where grazing pressures have reduced the presence of *Atriplex lindleyi* subsp. *lindleyi.* Given the lack of *Atriplex lindleyi* subsp. *lindleyi,* it was determined that PCT 163 was the most suitable PCT for this vegetation type. Based on floristic and geological characteristics, this vegetation type is considered consistent with the scientific description and distribution information outlined for PCT 163.
Characteristic floristic composition and structure	
Species upper stratum	Absent
Species middle stratum (<2 m)	Dominated by *Nitraria billardierei* with *Rhagodia spinescens, Maireana aphylla, Atriplex vesicaria, Sclerolaena muricata and Maireana pyramidata.* .
Species ground stratum (<1 m)	*Sclerolaena tricuspis, Austrostipa scabra* subsp. *scabra, Austrodanthonia caespitose, Atriplex lindleyi, Enchylaena tomentosa, Sclerolaena divaricata, Dissocarpus paradoxus, Einadia nutans* subsp. *nutans* and *Sclerolaena brachyptera*. Exotic species included *Schismus barbatus*, Medicago minima** and *Hordeum glaucum*.*
Vegetation condition	Mod-good: This vegetation zone was recorded with an intact native shrub stratum and a modified ground stratum. Exotic species cover varied greatly within the ground stratum based off seasonal variability.



PCT 163_mod-goood (Q57E)



PCT 163_mod-good (Q88E)

PCT 164 – Cotton Bush open shrubland of the semi-arid (warm) zone

The occurrence of this vegetation type within the proposal study area is illustrated in Figure 4.3 and Appendix B-5. A profile summary of PCT 164 – Cotton Bush open shrubland of the semi-arid (warm) zone is provided in Table B-2.5 and is photographically represented below.

Table B-2.5 Summary of PCT 164 – Cotton Bush open shrubland of the semi-arid (warm) zone

PCT 164 – COTTON BUSH OPEN SHRUBLAND OF THE SEMI-ARID (WARM) ZONE	
Vegetation formation	KF_CH12B Arid Shrublands (Chenopod sub-formation)
Vegetation class	Aeolian Chenopod Shrublands
PCT percent cleared	8%
TEC	Not listed
Landscape position	This vegetation was recorded in the Riverina (Murrumbidgee subregion) IBRA region on disturbed depressions on alluvial plains.
PCT justification	Vegetation assigned to PCT 164 occurs on clay soils that are dominated by *Maireana aphylla* (Cotton Bush) in heavily disturbed areas where grazing sensitive species, such as bladder saltbush, have been eliminated. This is a derived community occurring in highly disturbed areas (EES Group, 2020). A quantitative analysis was undertaken for this community using the BioNet Vegetation Classification PCT filter tool (EES Group, 2020). The IBRA region and subregion, vegetation formation, vegetation class and dominant shrub species were used as search criteria. Plot data from mod-good condition vegetation was considered most representative of this community and was used to inform this analysis. PCT 163 and PCT164 returned the highest number of matches. Both PCT 163 and PCT 164 occur in similar landscape positions and on similar soil types. However, PCT 163 is community that is characterized by the dominance of *Nitraria billardierei,* while PCT 164 is characterized by the dominance of *Maireana aphylla.* As previously described, vegetation was dominated by *Maireana aphylla* making PCT 164 the most suitable PCT for this vegetation type. Based on floristic and geological characteristics, this vegetation type is considered consistent with the scientific description and distribution information outlined for PCT 164.
Characteristic floristic composition and structure	
Species upper stratum	Absent
Species middle stratum (<2 m)	Dominated by *Maireana aphylla* with *Nitraria billardierei, Scleroleana muricata, Atriplex vesicaria, Muehlenbeckia florulenta, Rhogodia spinescens* and *Eragrotis australasica.*
Species ground stratum (<1 m)	*Scleoleana tricuspis, Rhodanthe corymbiflora, Autrodanthonia caespitose, Austrodanthonia setaaceam Sporobolus caroli, Calocephalus sonderi, Rhodanthe pygmaea, Scleroleana brachyptera, Atriplex psuedocampanulata, Atriplex leptocarpa* and *Atriplex lindleyi.* Exotic species included *Hordeum* spp.*, *Medicago minima**,* and *Lolium perenne**.
Vegetation condition	Mod-good: This vegetation type was recorded in a modified condition as it exhibited evidence of historic clearing and ongoing agricultural grazing. Exotic cover and richness varied based on seasonality.



PCT 164_mod-good (Q52E)



PCT 164_mod-good (Q56E)

PCT 216 – Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion

The occurrence of this vegetation type within the proposal study area is illustrated in Figure 4.3 and Appendix B-5. A profile summary of PCT 216 – Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion is provided in Table B-2.6 and is photographically represented below.

Table B-2.6 Summary of PCT 216 – Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion

PCT 216 – BLACK ROLY POLY LOW OPEN SHRUBLAND OF THE RIVERINA BIOREGION AND MURRAY DARLING DEPRESSION BIOREGION	
Vegetation formation	KF_CH12B Arid Shrublands (Chenopod sub-formation)
Vegetation class	Riverine Chenopod Shrublands
PCT percent cleared	0%
TEC	Not listed
Landscape position	This vegetation was recorded in the Riverina IBRA region (Murrumbidgee subregion). PCT 216 is known to occur primarily on the Hay plain on alluvial plains and dry lake beds created by low gradient river systems which meander over time (EES Group, 2020).
PCT justification	This community occurs as an open shrubland dominated by *Sclerolaena muricata* var. *muricata* on saline soils in disturbed depressions across the Riverina bioregion. In ecotonal areas with Black Box PCTS, the occasional *Eucalyptus largiflorens* may be found. Evidence suggests that this PCT occurs as a derived community in which the parent PCT cannot be ascertained. A quantitative analysis was undertaken for this community using the BioNet Vegetation Classification PCT filter tool (EES Group, 2020). The IBRA region and subregion, vegetation formation and dominant shrub species were used as search criteria. Plot data from mod-good condition vegetation was considered most representative of this community and was used to inform this analysis. PCT 157, PCT 163, PCT 164, PCT 216 and PCT 236 all returned the highest number of matches. PCT 157, PCT 163, PCT 164 and PCT 236 were dismissed due to differences in landscape positions and/or dominant shrub species to that of the vegetation recorded.

PCT 216 – BLACK ROLY POLY LOW OPEN SHRUBLAND OF THE RIVERINA BIOREGION AND MURRAY DARLING DEPRESSION BIOREGION	
	PCT 216 is described as a low or mid-high open shrubland that occurs on grey and brown clays in the Riverina and Murray-Darling Depression and is dominated by *Sclerolaena muricata* var. *semiglabra.* Despite a difference in *Sclerolaeana muricata* variations the recorded vegetation fits the broader Black Roly Poly shrubland definition in that the recorded vegetation occurs in a similar landscape position, on similar soil types and has the same community structure as that described in PCT 216. It was determined that PCT 216 was the most suitable PCT for the vegetation type despite a difference in *Sclerolaena muricata* variation between the recorded vegetation and the PCT 216 description. Based on landform position, floristic and geological characteristics, this vegetation type is considered consistent with the scientific description and distribution information outlined for PCT 216.
Characteristic floristic composition and structure	
Species upper stratum (6–8 m)	Generally absent, scattered *Eucalyptus largiflorens* in some ecotonal areas.
Species middle stratum	Absent
Species ground stratum (<1 m)	Dominated by *Sclerolaena muricata* var. *muricata* with *Sclerolaena divaricata, Sclerolaena diacantha. Atriplex semibaccata, Enchylaena tomentosa, Sclerolaena tricuspis, Sclerolaena brachyptera, Salsola australis, Sida trichopoda* and *Atriplex lindleyi.* Exotic species included *Asphodelus fistulosus*, Medicago laciniata** and *Erodium cicutarium*.*
Vegetation condition	Mod-good: Native species diversity in this community is typically low and was varied across sampling plots due to rainfall. This community showed evidence of disturbance from grazing pressure.



PCT 216_mod-good (Q107E)



PCT 216_mod-good (Q108E)

B-2.1.4 Dry Sclerophyll Forests (Shrubby sub-formation)

PCT 110 – Western Grey Box – Cypress Pine shrubby woodland on stony footslopes in the NSW South Western Slopes Bioregion and Riverina Bioregion

The occurrence of this vegetation type within the proposal study area is illustrated in Figure 4.3 and Appendix B-5. A profile summary of PCT 110 – Western Grey Box – Cypress Pine shrubby woodland on stony footslopes in the NSW South Western Slopes Bioregion and Riverina Bioregion is provided in Table B-2.7 and is photographically represented below.

Table B-2.7 Summary of PCT 110 – Western Grey Box – Cypress Pine shrubby woodland on stony footslopes in the NSW South Western Slopes Bioregion and Riverina Bioregion

PCT 110 – WESTERN GREY BOX – CYPRESS PINE SHRUBBY WOODLAND ON STONY FOOTSLOPES IN THE NSW SOUTH WESTERN SLOPES BIOREGION AND RIVERINA BIOREGION	
Vegetation formation	KF_CH5B Dry Sclerophyll Forests (Shrubby sub-formation)
Vegetation class	Western Slopes Dry Sclerophyll Forests
PCT percent cleared	75%
TEC	This PCT is consistent with Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions, an Endangered ecological community listed under the NSW BC act and is consistent with the Grey Box (*Eucalyptus microcarpa)* Grassy Woodlands and Derived Native Grasslands of South-eastern Australia, an Endangered ecological community listed under the EPBC Act.
Landscape position	This PCT was recorded in the NSW South Western Slopes (Inland Slopes subregion) IBRA region on low hills outside the Wagga Wagga region.
PCT justification	Vegetation assigned to this PCT occurred as a mid-high (~25 m) woodland dominated by *Eucalyptus microcarpa* and *Callitris glaucophylla* on stony footslopes. A sparse shrubs layer was present with a predominately grassy ground layer. A quantitative analysis was undertaken for this community using the BioNet Vegetation Classification PCT filter tool (EES Group, 2020). The IBRA region and subregion, vegetation formation, vegetation class, dominant species in each stratum were used as search criteria. Mod-good condition vegetation was considered most representative of this community and was used to inform this analysis. PCT 217 returned the highest number of matches. However, dominant tree species (*Eucalyptus sideroxylon*), soil type (red-brown loam/sandy loam) and location (central western slopes of NSW) deemed this PCT inappropriate for the vegetation recorded and was dismissed. PCT 54, 110, 255, 343, 346 and 469 returned the next highest number of matches. PCT 54, 255, 343, 346 and 469 all lacked *Eucalyptus microcarpa* as the dominant tree species and therefore were dismissed. PCT 110 was determined to be the most appropriate PCT. Based on floristic and geological characteristics, this vegetation type is considered consistent with the scientific description and distribution information outlined for PCT 110.

PCT 110 – WESTERN GREY BOX – CYPRESS PINE SHRUBBY WOODLAND ON STONY FOOTSLOPES IN THE NSW SOUTH WESTERN SLOPES BIOREGION AND RIVERINA BIOREGION	
Characteristic floristic composition and structure	
Species upper stratum (10–25 m)	Dominated by *Eucalyptus microcarpa* and *Callitris glaucophylla.*
Species middle stratum (1–3 m)	*Acacia genistifolia* and *Melichrus urceolatus.*
Species ground stratum (<1 m)	Species recorded included *Austrostipa scabra, Calotis hispidula, Cheilanthes sieberi* subsp. *sieberi, Gonocarpus elatus, Hydrocotyle laxiflora, Oxalis perennans, Rytidosperma caespitosum* and *Wahlenbergia gracilis.* Exotic species included *Cirsium vulgare**, *Echium plantagineum*, Hypochaeris radicata** and *Rumex acetosella*.*
Vegetation condition	Mod-good: Vegetation recorded displayed an intact canopy and shrub layer with a modified ground stratum. Ground stratum was subject to grazing pressure and weed incursion.



PCT 110_mod-good (Q113E)



PCT 110_mod-good(Q113E)



PCT 110_mod-good (Q245E)



PCT 110_mod-good (Q245E)

B-2.1.5 Freshwater wetlands

PCT 17 – Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

The occurrence of this vegetation type within the proposal study area is illustrated in Figure 4.3 and Appendix B-5. A profile summary of PCT 17 – Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion is provided in Table B-2.8 and is photographically represented below.

Table B-2.8 Summary of PCT 17 – Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

PCT 17 – LIGNUM SHRUBLAND WETLAND OF THE SEMI-ARID (WARM) PLAINS (MAINLY RIVERINA BIOREGION AND MURRAY DARLING DEPRESSION BIOREGION)	
Vegetation formation	KF_CH8 Freshwater Wetlands
Vegetation class	Inland Floodplain Shrublands
PCT percent cleared	63%
TEC	Not listed
Landscape position	This PCT was recorded in the Riverina IBRA region (Murrumbidgee subregion) on clay soil flood plains, drainage depressions and swamps that are subject to periodic inundation.
PCT justification	Vegetation assigned to PCT 17 had a middle stratum that was dominated by *Duma florulenta* which is a characteristic species of PCT 17 and an important habitat component (Keith, 2004). A quantitative analysis was undertaken for this community using the BioNet Vegetation Classification PCT filter tool (EES Group, 2020). The IBRA region and subregion, vegetation formation, vegetation class, community structure and dominant shrub were used as search criteria. Mod-good condition vegetation was considered most representative of this community and was used to inform this analysis PCT 17, PCT 240 and PCT 271 returned the highest number of matches. PCT 240 and PCT 271 were dismissed due to the absence of *Eremophila maculata* and *Acacia stenophylla* which characterize these communities. PCT 17 was determined to be the most suitable PCT for this vegetation type given the dominance of *Duma florulenta.* Based on landform position, floristic and geological characteristics, this vegetation type is considered consistent with the scientific description and distribution information outlined for PCT 17.
Characteristic floristic composition and structure	
Species upper stratum (4–10 m)	Occasional scattered *Eucalyptus largiflorens*
Species middle stratum (<2 m)	*Duma florulenta, Acacia stenophylla* and *Chenopodium nitrariaceum*
Species ground stratum (<1 m)	*Atriplex infrequens, Atriplex lindleyi, Marsilea drummondii, Sclerolaena stelligera, Atriplex pseudocampanulata, Sclerolaena divaricata, Einadia nutans* subsp. *nutans* and *Enteropogon acicularis.* Exotic species included *Cucumis myriocarpus** and *Mesembryanthemum nodiflorum**.
Vegetation condition	Mod-good: Vegetation was recorded to have a dense middle stratum and diverse ground stratum. Ground stratum cover and exotic cover varied based on seasonality.



PCT 17_mod-good (Q192E)



PCT 17_mod-good (Q192E)



PCT 17_mod-good (Q63E)



PCT 17_mod-good (Q63E)



PCT 17_mod-good



PCT 17_mod-good

PCT 24 – Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains

The occurrence of this vegetation type within the proposal study area is illustrated in Figure 4.3 and Appendix B-5. A profile summary of PCT 24 – Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains is provided in Table B-2.9 and is photographically represented below.

Table B-2.9 Summary of PCT 24 – Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains

PCT 24 – CANEGRASS SWAMP TALL GRASSLAND WETLAND OF DRAINAGE DEPRESSIONS, LAKES AND PANS OF THE INLAND PLAINS	
Vegetation formation	KF_CH8 Freshwater Wetlands
Vegetation class	Inland Floodplain Shrublands
PCT percent cleared	20%
TEC	Not listed
Landscape position	This PCT was recorded in the Riverina (Lachlan and Murrumbidgee subregions) IBRA regions on periodically flooded depressions on floodplains, alluvial plains, claypans and flood outs of watercourses.
PCT justification	Vegetation assigned to PCT 24 occurred on red-grey compact clay or sandy clays that crack very little causing water to pond from local runoff after rain. A quantitative analysis was undertaken for this community using the BioNet Vegetation Classification PCT filter tool (EES Group, 2020). The IBRA region and subregion, vegetation formation, vegetation class and dominant middle stratum species were used as search criteria. Mod-good condition vegetation was considered most representative of this community and was used to inform this analysis PCT 17, PCT 24 and PCT 160 returned the highest number of matches. Given the sporadic nature of rain events in south western NSW during the duration of the survey period a variation of cover and richness was experienced across the landscape, as many species found in PCT 17, PCT 24 and PCT 160 require periodic inundation for germination of seed. However, PCT 17 is typically dominated by *Muehlenbeckia florulenta*, PCT 24 is dominated by *Eragrostis australasica,* and PCT 160 is dominated by *Chenopodium nitrariaceum.* PCT 24 was considered the most appropriate PCT and was applied to vegetation that was currently dominated by and/or showed evidence of being dominated by *Eragrostis australasica* in the form of persistent culms.
Characteristic floristic composition and structure	
Species upper stratum (4–6 m)	Generally absent with occasional *Eucalyptus largiflorens.*
Species middle stratum (<2 m)	Dominated by *Eragrostis australasica*; other species present *Muehlenbeckia florulenta, Chenopodium nitrariaceum*, and *Sclerolaena muricata* var. *muricata.*
Species ground stratum (<1 m)	*Chloris truncata, Marsilea drummondii, Lachnagrostis filiformis, Austrostipa aristiglumis, Sclerolaena divaricata, Sclerolaena tricuspis, Atriplex lindleyi, Plantago drummondii*, and *Brachyscome lineariloba*. Common weed species include *Hordeum sp.*, Medicago minima** and *Medicago laciniata**.
Vegetation condition	Mod-good: Vegetation recorded had an intact middle layer of *Eragrostis australasica* with evidence of historic grazing in the ground stratum.



PCT 24_mod-good (Q70E)



PCT 24_mod-good (Q211E)



PCT 24_mod-good (Q211E)



PCT 24_mod-good (Q211E)

PCT 47 – Swamp grassland wetland of the Riverine Plain

The occurrence of this vegetation type within the proposal study area is illustrated in Figure 4.3 and Appendix B-5. A profile summary of PCT 47 – Swamp grassland wetland of the Riverine Plain is provided in Table B-2.10 and is photographically represented below.

Table B-2.10 Summary of PCT 47 – Swamp grassland wetland of the Riverine Plain

PCT 47 – SWAMP GRASSLAND WETLAND OF THE RIVERINE PLAIN	
Vegetation formation	KF_CH8 Freshwater Wetlands
Vegetation class	Inland Floodplain Shrublands
PCT percent cleared	50%
TEC	This PCT is consistent with Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains which is listed Critically Endangered under the EPBC Act.
Landscape position	This PCT was recorded in the Riverina IBRA region (Murrumbidgee subregion) in low lying areas associated with drainage lines or depressions.

PCT 47 – SWAMP GRASSLAND WETLAND OF THE RIVERINE PLAIN	
PCT justification	This PCT occurs in periodically inundated clayey soils that support a dense mix of grasses and forbs in depressions on the plains of the Murrumbidgee and associated tributaries. A quantitative analysis was undertaken for this community using the BioNet Vegetation Classification PCT filter tool (EES Group, 2020). The IBRA region and subregion, vegetation formation, vegetation class, dominant shrub and understorey species were used as search criteria. Mod-good condition vegetation was considered most representative of this community and was used to inform this analysis. PCT 47 was the best fit based on this analysis.
Characteristic floristic composition and structure	
Species upper stratum	n/a
Species middle stratum (<2 m)	A very sparse to isolated shrub stratum is typical and includes *Duma florulenta*, *Sclerolaena muricata* var. *muricata* and *Sclerolaena muricata* var. *semiglabra*.
Species ground stratum (<1 m)	A dense ground stratum characterises this grassland, with dominant grass species being *Rytidosperma duttonianum*, *Sporobolus caroli*, *Walwhalleya proluta*, *Lachnagrostis filiformis*, and *Enteropogon acicularis*. Forbs are a common component of the ground stratum, including *Juncus flavidus*, *Juncus radula*, *Calocephalus sonderi*, *Erodium crinitum*, *Rhodanthe corymbiflora*, *Rumex dumosus* and *Swainsona procumbens*. Weeds are common in areas subjected to grazing. The most widespread weeds include *Lolium ridgidum**, *Medicago minima**, *Arctotheca calendula**, *Erodium botrys**, *Romulea rosea** and *Sonchus oleraceus**.
Vegetation condition	Mod-good: Vegetation has a dense, diverse ground stratum with scattered to mid-dense emergent shrubs. The balance of native and exotic dominance in the ground cover reflected seasonality and land use practices, particularly rainfall levels and grazing intensity.



PCT 47_mod-good (194E)



PCT 47_mod-good (194E)

PCT 53 – Shallow freshwater wetland sedgeland in depressions on floodplains on inland alluvial plains and floodplains

The occurrence of this vegetation type within the proposal study area is illustrated in Figure 4.3 and Appendix B-5. A profile summary of PCT 53 – Shallow freshwater wetland sedgeland in depressions on floodplains on inland alluvial plains and floodplains is provided in Table B-2.8 and is photographically represented below.

Table B-2.11 Summary of PCT 53 – Shallow freshwater wetland sedgeland in depressions on floodplains on inland alluvial plains and floodplains

PCT 53 – SHALLOW FRESHWATER WETLAND SEDGELAND IN DEPRESSIONS ON FLOODPLAINS ON INLAND ALLUVIAL PLAINS AND FLOODPLAINS	
Vegetation formation	KF_CH8 Freshwater Wetlands
Vegetation class	Inland Floodplain Shrublands
PCT percent cleared	67%
TEC	Not listed
Landscape position	This PCT was recorded in the Riverina (Murrumbidgee subregion) IBRA bioregion from several locations and was associated with drainage depressions and low-lying flats that were subject to periodic inundation from local runoff (i.e. road edge and train line) after rain events.
PCT justification	Vegetation assigned to PCT 53 occurred as a low to mid-high sedge land on grey and brown clays and was dominated by *Eleocharis sp.* Vegetation was subject to inundation at the time of survey. A quantitative analysis was undertaken for this community using the BioNet Vegetation Classification PCT filter tool (EES Group, 2020). The IBRA region and subregion, vegetation formation, vegetation class, community structure and dominant species were used as search criteria. Due to a lack of plot data, information to inform this analysis was based off general field observations. Community structure was identified to be on open sedgeland and *Eleocharis pallens* was used as the most dominant species. PCT 53 was the most appropriate match as it is consistent with the scientific description and distribution information outlined for PCT 53.
Characteristic floristic composition and structure	
Species upper stratum (5–25 m)	Generally absent or present only as scattered, emergent trees including *Eucalyptus camaldulensis* and *Casuarina cristata.*
Species middle stratum (<2 m)	Generally absent with occasional *Muehlenbeckia florulenta, Acacia stenophylla* and *Eremophila bignoniiflora.*
Species ground stratum (<1 m)	The lower stratum comprises a mix of sedges and grasses that forms the dominant and characteristic stratum in this wetland. Species comprise *Eleocharis pallens, Eleocharis acuta, Eleocharis plana, Marsilea drummondii, Alternanthera denticulata, Panicum decompositum, Paspalidium jubiflorum, Lachnagrostis filiformis, Juncus subsecundus.* Exotic species density is very low to absent. Exotic species were not recorded at the time of survey.
Vegetation condition	Mod-good: Vegetation occurs as an open sedge layer with a rich diversity of native species and low levels of exotic cover.





PCT 53 – Source: Bionet image for PCT 53 (BioNet Vegetation Classification (nsw.gov.au))

PCT 160 – Nitre Goosefoot shrubland wetland on clays of the inland floodplains

The occurrence of this vegetation type within the proposal study area is illustrated in Figure 4.3 and Appendix B-5. A profile summary of PCT 160 – Nitre Goosefoot shrubland wetland on clays of the inland floodplains is provided in Table B-2.12 and is photographically represented below.

Table B-2.12 Summary of PCT 160 – Nitre Goosefoot shrubland wetland on clays of the inland floodplains

PCT 160 – NITRE GOOSEFOOT SHRUBLAND WETLAND ON CLAYS OF THE INLAND FLOODPLAINS	
Vegetation formation	KF_CH8 Freshwater Wetlands
Vegetation class	Inland Floodplain Shrublands
PCT percent cleared	28%
TEC	Not listed
Landscape position	This PCT was recorded in the Riverina (Murrumbidgee subregion) IBRA bioregion on low lying plains, drainage depressions and alluvial plains that are subject to flooding.
PCT justification	Vegetation assigned to PCT 160 was widespread but occurred in discrete stands on the upper edges of low-lying areas that were subject to periodic inundation. PCT 160 regularly graded into *Muehlenbeckia florulenta* communities in wetter sites where drainage was impaired. A quantitative analysis was undertaken for this community using the BioNet Vegetation Classification PCT filter tool (EES Group, 2020). The IBRA region and subregion, vegetation formation and dominant shrub species were used as search criteria. Mod-good condition vegetation was considered most representative of this community and was used to inform this analysis PCT 17, PCT 24, PCT 160 and PCT 240 returned the highest number of matches. While all three PCTs occur in similar landscape positions and present with a combination of *Muehlenbeckia florulenta, Eragrostis australasica* and *Chenopodium nitrariaceaum;* PCT 17 requires vegetation to be dominated by *Muehlenbeckia florulenta;* PCT 24 requires vegetation to be dominated by *Eragrostis australasica*; PCT 160 requires vegetation to be dominated by *Chenopodium nitrariaceum* and; PCT 240 requires vegetation to be dominated by *Acacia stenophylla*. Given the species composition of the vegetation recorded PCT 17, PCT 24 and PCT 240 were dismissed. PCT 160 was determined to be the most appropriate classification in periodically inundated low lying areas that were dominated by *Chenopodium nitrariaceum.* Based on floristic and geological characteristics, this vegetation type is considered consistent with the scientific description and distribution information outlined for PCT 160.

PCT 160 – NITRE GOOSEFOOT SHRUBLAND WETLAND ON CLAYS OF THE INLAND FLOODPLAINS	
Characteristic floristic composition and structure	
Species upper stratum (5–15 m)	Generally absent with occasional occurrences of *Eucalyptus largiflorens.*
Species middle stratum (<2 m)	Dominated by *Chenopodium nitrariaceum*; other species include *Muehlenbeckia florulenta, Eragrostis australasica* and *Lycium australe.*
Species ground stratum (<1 m)	*Sclerolaena muricata, Sclerolaena stelligera, Malacocera tricornis, Sclerolaena tricuspis, Einadia nutans* subsp. *nutans* and *Oxalis perennans.* Weed species include H*ordeum sp.*, Lolium perenne*, Medicago minima*, Medicago lacinata** and *Echium plantagineum*.*
Vegetation condition	Mod-good: Vegetation recorded had an intact middle stratum with evidence of grazing and tramping in the ground stratum.



PCT 160_mod-good (Q84E)



PCT 160_mod-good (Q82E)

PCT 182 – Cumbungi rushland wetland of shallow semi-permanent water bodies and inland watercourses

The occurrence of this vegetation type within the proposal study area is illustrated in Figure 4.3 and Appendix B-5. A profile summary of PCT 182 – Cumbungi rushland wetland of shallow semi-permanent water bodies and inland watercourses is provided in Table B-2.13 and is photographically represented below.

Table B-2.13 Summary of PCT 182 – Cumbungi rushland wetland of shallow semi-permanent water bodies and inland watercourses

PCT 182 – CUMBUNGI RUSHLAND WETLAND OF SHALLOW SEMI-PERMANENT WATER BODIES AND INLAND WATERCOURSES	
Vegetation formation	KF_CH8 Freshwater Wetlands
Vegetation class	Inland Floodplain Shrublands
PCT percent cleared	25%
TEC	Not listed
Landscape position	This PCT was recorded in the Riverina IBRA region (Murrumbidgee subregion) along the banks of Colombo Creek.

PCT 182 – CUMBUNGI RUSHLAND WETLAND OF SHALLOW SEMI-PERMANENT WATER BODIES AND INLAND WATERCOURSES	
PCT justification	Within the study area PCT 182 occurs in one location along a shallow bank of a nearly lentic channel of Colombo Creek. A quantitative analysis was undertaken for this community using the BioNet Vegetation Classification PCT filter tool (EES Group, 2020). The IBRA region and subregion, vegetation formation, vegetation class and dominant species were used as search criteria. Due to lack of plot data, information to inform this analysis was based off general field observations. PCT 181 and PCT 182 returned the highest number of matches. PCT 181 is described to be dominated by *Phragmites australis* in shallow water grading into a forbland dom *Senecio cunninghamii* on drier ground. Due to the absence of both *Phragmites australia* and *Senecio cunninghamii,* and the dominance of *Typha domingensis* – which is the dominant species listed for PCT 181 – PCT 182 was dismissed. PCT 181 was determined to be the most suitable vegetation type. Based on floristic and geological characteristics, this vegetation type is considered consistent with the scientific description and distribution information outlined for PCT 182.
Characteristic floristic composition and structure	
Species upper stratum	Absent
Species middle stratum (<2 m)	*Typha domingensis*
Species ground stratum (<1 m)	Absent
Vegetation condition	Mod-good: Vegetation assigned to this condition class displayed an intact layer of *Typha domingensis* with a lack of upper and ground stratum species.



PCT 182_mod-good



PCT 182_mod-good

B-2.1.6 Forested wetlands

PCT 5 – River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South western Slopes Bioregion and the eastern Riverina Bioregion

The occurrence of this vegetation type within the proposal study area is illustrated in Figure 4.3 and Appendix B-5. A profile summary of PCT 5 – River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion is provided in Table B-2.14 and is photographically represented below.

Table B-2.14 PCT 5 – River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion

PCT 5 – RIVER RED GUM HERBACEOUS-GRASSY VERY TALL OPEN FOREST WETLAND ON INNER FLOODPLAINS IN THE LOWER SLOPES SUB-REGION OF THE NSW SOUTH WESTERN SLOPES BIOREGION AND THE EASTERN RIVERINA BIOREGION	
Vegetation formation	KF_CH9 Forests Wetlands
Vegetation class	Inland Riverine Forests
PCT percent cleared	40%
TEC	Not listed
Landscape position	This vegetation was recorded in the Riverina (Murrumbidgee subregion) and NSW South Western Slopes (Lower Slopes and Inland Slopes subregions).
PCT justification	This vegetation was recorded on raised landform elements adjacent to river and wetlands on alluvial loams and clays and silt soils. It was dominated by *Eucalyptus camaldulensis* subsp. *camaldulensis*, had a relatively sparse to absent midstorey and a ground layer dominated by grass species. A quantitative analysis was undertaken for this community using the BioNet Vegetation Classification PCT filter tool (EES Group, 2020). The IBRA region and subregion, vegetation formation, vegetation class, dominant tree species and dominant ground layer species were used as search criteria. Plot data from Mod-good condition vegetation was considered most representative of this community and was used to inform this analysis. PCT 5, PCT 7, PCT 8 and PCT 10 returned the highest number of matches. PCT 7 and PCT 8 are grassy River Red Gum communities that are characterized by the presence of *Paspalidium jubiflorum* in the ground layer. Due to the absence of *Paspalidium jubiflorum* from the vegetation recorded PCT 7 and PCT 8 were not considered further. PCT 10 is described to have a co-dominant canopy of *Eucalyptus camaldulensis* subsp. *camaldulensis* and *Eucalyptus largiflorens.* No *Eucalyptus largiflorens* were recorded within the sample plots allowing the dismissal of PCT 10. Based on floristic and geological characteristics, this vegetation type is considered consistent with the scientific description and distribution information outlined for PCT 5.

PCT 5 – RIVER RED GUM HERBACEOUS-GRASSY VERY TALL OPEN FOREST WETLAND ON INNER FLOODPLAINS IN THE LOWER SLOPES SUB-REGION OF THE NSW SOUTH WESTERN SLOPES BIOREGION AND THE EASTERN RIVERINA BIOREGION	
Characteristic floristic composition and structure	
Species upper stratum (18–26 m)	*Eucalyptus camaldulensis* subsp. *camaldulensis.*
Species middle stratum (1–4 m)	Sparse or absent with the occasional *Acacia dealbata* and *Exocarpus strictus.*
Species ground stratum (<1 m)	*Bothriochloa macra, Lachnagrostis filiformis, Cynodon dactylon, Carex appressa, Carex inversa, Eleocharis pusilla, Wahlenbergia fluminalis, Pratia concolor, Oxalis perennans, Verbena hispida, Austrodanthonia racemosa* var. *racemosa*, and *Austrodanthonia caespitosa*. Exotic species included *Hordeum leporinum*, Cirsium vulgare*, Bromus diandrus*, Lolium* spp.*, and *Echium vulgare**.
Vegetation condition	Mod-good: Vegetation assigned to moderate to good had and intact overstorey but was subject to grazing and exotic species invasion.



PCT 5_mod-good on the banks of Yanco Creek



PCT 5_mod-good (Q198E)

PCT 7 – River Red Gum – Warrego Grass – herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion

The occurrence of this vegetation type within the proposal study area is illustrated in Figure 4.3 and Appendix B-5. A profile summary of PCT 7 – River Red Gum – Warrego Grass – herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion is provided in Table B-2.15 and is photographically represented below.

Table B-2.15 PCT 7 – River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion

PCT 7 – RIVER RED GUM - WARREGO GRASS - HERBACEOUS RIPARIAN TALL OPEN FOREST WETLAND MAINLY IN THE RIVERINA BIOREGION	
Vegetation formation	KF_CH9 Forests Wetlands
Vegetation class	Inland Riverine Forests
PCT percent cleared	40%
TEC	Not listed

PCT 7 – RIVER RED GUM - WARREGO GRASS - HERBACEOUS RIPARIAN TALL OPEN FOREST WETLAND MAINLY IN THE RIVERINA BIOREGION	
Landscape position	This vegetation type was recorded in the Riverina (Murrumbidgee subregion) IBRA region on banks of Colombo Creek.
PCT justification	This vegetation type occurred on alluvial loam and clay soils along tributaries of the Murrumbidgee river. The overstorey was dominated by *Eucalyptus camaldulensis* subsp. *camaldulensis,* while the ground layer was dominated by forbs and grasses including *Paspalidium jubiflorum.* A quantitative analysis was undertaken for this community using the BioNet Vegetation Classification PCT filter tool (EES Group, 2020). The IBRA region and subregion, vegetation formation, vegetation class, dominant tree species and dominant ground layer species were used as search criteria. PCT 5, PCT 7, PCT 8 and PCT 10 returned the highest number of matches. PCT 10 was dismissed due to the absence of *Eucalyptus largiflorens,* PCT 5 was dismissed due to the presence of *Paspalidium jubiflorum,* and PCT 8 was dismissed due to the lack of *Cynodon dactylon.* PCT 7 was determined to be the most suitable PCT for this vegetation. Based on floristic and geological characteristics, this vegetation type is considered consistent with the scientific description and distribution information outlined for PCT 7.
Characteristic floristic composition and structure	
Species upper stratum (18–26 m)	Dominated by *Eucalyptus camaldulensis* subsp. *camaldulensis*.
Species middle stratum (1–4 m)	Generally absent with occasional *Acacia stenophylla* and *Amyema miquelii*.
Species ground stratum (<1 m)	*Paspalidium jubiflorum, Elymus scaber, Lachnagrostis filiformis, Wahlenbergia fluminalis, Ranunculus inundatus, Carex inversa, Rumex brownie, Eleocharis pusilla*. Exotics include *Hordeum leporinum*, Cirsium vulgare*, Echium plantagineum*, Hypochaeris glabra*, Lolium perenne*,* and *Vulpia myuros*.*
Vegetation condition	Mod-good: Vegetation retained an intact canopy with a ground stratum that is subject to grazing and weed invasion.



PCT 7_mod-good near Colombo Creek



PCT 7_mod-good (Q199E)

PCT 8 – River Red Gum – Warrego Grass – Couch Grass riparian tall woodland wetland of the semi-arid (warm) climate zone (Riverina Bioregion and Murray Darling Depression Bioregion)

The occurrence of this vegetation type within the proposal study area is illustrated in Figure 4.3 and Appendix B-5. A profile summary of PCT 8 – River Red Gum – Warrego Grass – Couch Grass riparian tall woodland wetland of the semi-arid (warm) climate zone (Riverina Bioregion and Murray Darling Depression Bioregion) is provided in Table B-2.16 and is photographically represented below.

Table B-2.16 PCT 8 – River Red Gum – Warrego Grass – Couch Grass riparian tall woodland wetland of the semi-arid (warm) climate zone (Riverina Bioregion and Murray Darling Depression Bioregion)

PCT 8 – RIVER RED GUM – WARREGO GRASS – COUCH GRASS RIPARIAN TALL WOODLAND WETLAND OF THE SEMI-ARID (WARM) CLIMATE ZONE (RIVERINA BIOREGION AND MURRAY DARLING DEPRESSION BIOREGION)	
Vegetation formation	KF_CH9 Forests Wetlands
Vegetation class	Inland Riverine Forests
PCT percent cleared	15%
TEC	Not listed
Landscape position	This vegetation occurs in the Riverina (Murrumbidgee subregion) IBRA bioregion on silty-clay-loam alluvial soils on banks, levees and flats close to river channels (EES Group, 2020).
PCT justification	This vegetation type occurred along the banks of the Murrumbidgee River in the far west of the Riverina IBRA region. The overstorey was dominated by *Eucalyptus camaldulensis* subsp. *camaldulensis,* while the ground layer was dominated by grasses including *Paspalidium jubiflorum* and *Cynodon dactylon.* A quantitative analysis was undertaken for this community using the BioNet Vegetation Classification PCT filter tool (EES Group, 2020). The IBRA region and subregion, vegetation formation, vegetation class, dominant tree species and dominant ground layer species were used as search criteria. PCT 5, PCT 7, PCT 8 and PCT 10 returned the highest number of matches. PCT 10 was dismissed due to the absence of *Eucalyptus largiflorens* and PCT 5 was dismissed due to the presence of *Paspalidium jubiflorum.* Due to the co-dominance of *Paspalidium jubiflorum* and *Cynodon dactylon,* PCT 7 was dismissed and PCT 8 was determined to be the most suitable PCT for this vegetation. Based on floristic and geological characteristics, this vegetation type is considered consistent with the scientific description and distribution information outlined for PCT 8.
Characteristic floristic composition and structure	
Species upper stratum (18–26 m)	Dominated by *Eucalyptus camaldulensis* subsp. *camaldulensis.*
Species middle stratum (1–4 m)	Usually absent or very sparse; includes *Acacia stenophylla* and *Muehlenbeckia florulenta*.
Species ground stratum (<1 m)	Dominated by *Paspalidium jubiflorum* and *Cynodon dactylon*. Other species include *Eragrostis elongate, Lachnagrostis filiformis, Wahlenbergia fluminalis, Rumex brownie, Alternanthera denticulate, Atriplex lindleyi Atriplex semibaccata and Enchylaena tomentose*. Exotic species included *Sonchus oleraceus*, Vulpia myuros*, Lolium rigidum*, Conyza bonariensis** and *Lactuca serriola*.*
Vegetation condition	Mod-good: This vegetation was recorded with an intact canopy and a ground layer that was subject to grazing and weed invasion.



PCT 8_mod-good



PCT 8_mod-good

PCT 11 – River Red Gum – Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

The occurrence of this vegetation type within the proposal study area is illustrated in Figure 4.3 and Appendix B-5. A profile summary of PCT 11 – River Red Gum – Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) is provided in Table B-2.17 and is photographically represented below.

Table B-2.17 Summary of PCT 11 – River Red Gum – Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

PCT 11 – RIVER RED GUM – LIGNUM VERY TALL OPEN FOREST OR WOODLAND WETLAND ON FLOODPLAINS OF SEMI-ARID (WARM) CLIMATE ZONE (MAINLY RIVERINA BIOREGION AND MURRAY DARLING DEPRESSION BIOREGION)	
Vegetation formation	KF_CH9 Forests Wetlands
Vegetation class	Inland Riverine Forests
PCT percent cleared	42%
TEC	Not listed
Landscape position	This vegetation was recorded in the Riverina (Murrumbidgee subregion) IBRA bioregion where it occurred on the floodplain of the Murrumbidgee River and Yanco creek.
PCT justification	Vegetation assigned to PCT 11 was recorded on clay/silt alluvium on soils that are periodically inundated and in proximity to major river systems. A quantitative analysis was undertaken for this community using the BioNet Vegetation Classification PCT filter tool (EES Group, 2020). The IBRA region and subregion, vegetation formation, vegetation class, community structure, dominant tree species and dominant shrub species were used as search criteria. Mod-good condition vegetation was considered most representative of this community and was used to inform this analysis Searches returned the highest number of matches for PCT 8, PCT 9, PCT 10, PCT 11 and PCT 249.

PCT 11 – RIVER RED GUM – LIGNUM VERY TALL OPEN FOREST OR WOODLAND WETLAND ON FLOODPLAINS OF SEMI-ARID (WARM) CLIMATE ZONE (MAINLY RIVERINA BIOREGION AND MURRAY DARLING DEPRESSION BIOREGION)	
	The absence of *Duma florulenta* from the scientific description of PCT 8 and PCT 9 is not consistent with the vegetation recorded within the proposal study area. As such, both PCTs were not considered further. Furthermore, PCT 10, was dismissed as PCT 10 displays *Eucalyptus camaldulensis* subsp. *camaldulensis* and *Eucalyptus largiflorens* as co-dominant species. PCT 249 is restricted in its distribution and is dominated by *Amphibromus nervosus*, which distinguishes it from more widespread river red gum communities. Given the lack of *Amphibromus nervosus*, PCT 249 is not consistent with the vegetation recorded and not considered further. PCT 11 was determined to be the most suitable PCT for this vegetation type given the dominance of *Eucalyptus camaldulensis* subsp. *camaldulensis* and *Duma florulenta.* Based on floristic and geological characteristics, this vegetation type is considered consistent with the scientific description and distribution information outlined for PCT 11.
Characteristic floristic composition and structure	
Species upper stratum (18–26 m)	Dominated by *Eucalyptus camaldulensis* subsp. *camaldulensis* and occasional *Amyema miquelii*
Species middle stratum (1–4 m)	*Acacia stenophylla, Duma florulenta, Enchylaena tomentosa, Swainsona greyana* and *Rhagodia spinescens.*
Species ground stratum (<1 m)	*Cynodon dactylon, Einadia nutans* subsp. *nutans, Haloragis glauca, Paspalidium jubiflorum, Pratia concolor, Wahlenbergia fluminalis, Atriplex semibaccata, Euphorbia drummondii, Eclipta platyglossa, Goodenia glauca, Marsilea drummondii, Oxalis perennans, Alternanthera denticulata, Rumex brownii* and *Solanum esuriale*. Exotic species included *Brassica tournefortii*, Echium plantagineum** and *Hypochaeris glabra*.*
Vegetation condition	Mod-good: This condition class has been recorded with an intact upper and a middle stratum. The ground stratum has been subject to weed invasion and grazing pressure from livestock and native animals.



PCT 11_mod-good (Q106E)



PCT 11_mod-good (Q104E)

PCT 249 – River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW

The occurrence of this vegetation type within the proposal study area is illustrated in Figure 4.3 and Appendix B-5. A profile summary of PCT 249 – River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW is provided in Table B-2.18 and is photographically represented below.

Table B-2.18 Summary of PCT 249 – River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW

PCT 249 – RIVER RED GUM SWAMPY WOODLAND WELAND ON COWALS (LAKES) AND ASSOCIATED FLOOD CHANNELS IN CENTRAL NSW	
Vegetation formation	KF_CH9 Forests Wetlands
Vegetation class	Inland Riverine Forests
PCT percent cleared	50%
TEC	Not listed
Landscape position	This vegetation was recorded in the NSW South Western Slopes (Lower Slopes subregion) IBRA bioregion where it occurred on banks and floodplain of Lake Cullivel.
PCT justification	Vegetation assigned to PCT 249 was recorded on clayey soils that are periodically inundated and in proximity to major river systems. A quantitative analysis was undertaken for this community using the BioNet Vegetation Classification PCT filter tool (EES Group, 2020). The IBRA region and subregion, vegetation formation, vegetation class, community structure, dominant tree species and dominant shrub species were used as search criteria. Moderate to good condition vegetation was considered most representative of this community and was used to inform this analysis. Searches returned the best fit with six PCTs (9, 10, 11, 36, 79 and 249). PCT 249, however, returned the highest number of matches when floristic shrub composition was included in the search. PCT 249 was the only unit with *Sclerolaena muricata* as a dominant, which was consistent with plot data collected. Based on floristic composition and structure, location in the landscape (depressions on flats associated with rivers), and soils, this vegetation type is considered consistent with the scientific description and distribution information outlined for PCT 249.
Characteristic floristic composition and structure	
Species upper stratum (18–26 m)	Dominated by *Eucalyptus camaldulensis* subsp. *camaldulensis* trees with a very sparse to open cover (3 to 30% foliage cover), typically forming a scattered tree to open woodland structure.
Species middle stratum (1–4 m)	A mid-dense to dense shrub strata (30–50% foliage cover) is typical, although occasionally absent. Dominant shrubs are *Duma florulenta* and *Sclerolaena muricata* var. *semiglabra.*

PCT 249 – RIVER RED GUM SWAMPY WOODLAND WELAND ON COWALS (LAKES) AND ASSOCIATED FLOOD CHANNELS IN CENTRAL NSW	
Species ground stratum (<1 m)	The mid-dense ground strata comprise a mix of native grasses and forbs, with weeds dominating in many locations. The native grasses were the most recorded. The ground cover incudes a diversity of native grasses and forbs including the grasses *Austrostipa aristiglumis* and *Walwhalleya proluta*, and forbs *Senecio quadridentatus, Dysphania glomulifera* subsp. *glomulifera* and *Urtica incisa*. Exotic species were typically dominant in the ground cover, making up including the typically pasture grasses *Hordeum leporinum, Lolium rigidum* and *Bromus diandrus*. Weeds typical of pasture and other disturbed sites are common including *Echium plantagineum*, *Malva parviflora*, *Medicago polymorpha*, *Capsella bursa-pastoris*, *Sisymbrium orientale* and *Arctotheca calendula*.
Vegetation condition	Mod-good: This condition class has been recorded with a thinned canopy over a typically disturbed ground stratum that is subjected to weed invasion and grazing. Derived: This condition class has been recorded to have lost the canopy layer but has a similar species composition in the mid and ground stratum. Occurred adjacent or nearby to patches of intact (mod-good) PCT 249 and displayed evidence of past land clearing (i.e. logging).



PCT 249_mod-good (Q224E)



PCT 249_mod-good (Q224E)



PCT 249_mod-good (Q225E)



PCT 249_mod-good (Q225E)



PCT 249_derived (Q223E)



PCT 249_derived (Q223E)



PCT 249_derived (Q222E)



PCT 249_derived (Q222E)

B-2.1.7 Grasslands

PCT 44 – Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion

The occurrence of this vegetation type within the proposal study area is illustrated in Figure 4.3 and Appendix B-5. A profile summary of PCT 44 – Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion is provided in Table B-2.19 and is photographically represented below.

Table B-2.19 Summary of PCT 44 – Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion

PCT 44 – FORB-RICH SPEARGRASS – WINDMILL GRASS – WHITE TOP GRASSLAND OF THE RIVERINA BIOREGION	
Vegetation formation	KF_CH4 Grassland
Vegetation class	Riverine Plain Grasslands
PCT percent cleared	73%

PCT 44 – FORB-RICH SPEARGRASS – WINDMILL GRASS – WHITE TOP GRASSLAND OF THE RIVERINA BIOREGION	
TEC	This PCT is consistent with the Natural grasslands of the Murray Valley Plains, a Critically Endangered ecological community listed under the EPBC Act.
Landscape position	This PCT was recorded in the Riverina (Murrumbidgee subregion) IBRA region on alluvial plains.
PCT justification	Vegetation assigned to PCT 44 occurred on red-brown alluvial clays and often scalds. The community occurred as an open to closed grassland dominated by *Austrostipa* sp. including *Austrostipa nodosa* and *Austrostipa scabra.* Other grass species included *Enteropogon acicularis* and *Rytidosperma caespitosa,* but neither were dominant. PCT 44 often graded into other grassland communities, namely PCT 46 where clays became greyer in colour and *Enteropogon acicularis* took over as the dominant grass. A quantitative analysis was undertaken for this community using the BioNet Vegetation Classification PCT filter tool (EES Group, 2020). The IBRA region and subregion, vegetation formation, vegetation class and dominant ground cover species were used as search criteria. Mod-good condition vegetation was considered most representative of this community and was used to inform this analysis. PCT 44 and PCT 46 returned the highest number of matches. PCT 46 is dominated by *Enteropogon acicularis,* not by *Austrostipa* sp. and therefore was dismissed. PCT 44 was determined to be the most appropriate PCT. Based on floristic and geological characteristics, this vegetation type is considered consistent with the scientific description and distribution information outlined for PCT 44.
Characteristic floristic composition and structure	
Species upper stratum	Absent
Species middle stratum (<2 m)	Scattered occurrences of *Maireana pentagona.*
Species ground stratum (<1 m)	Dominated by *Austrostipa nodosa* and *Austrostipa scabra.* Grasses including *Enteropogon acicularis* and *Rytidosperma caespitosa* were present but never dominant. Other species included *Chrysocephalum apiculatum, Calotis scabiosifolia* var. *scabiosifolia, Daucus glochidiatus, Leiocarpa panaetioides, Sida corrugata, Triptilodiscus pygmaeus* and *Wurmbea dioica* subsp. *dioica.* Exotic species included *Hordeum leporinum, Lolium perenne*, Medicago minima** and *Xanthium occidentale*.*
Vegetation condition	Mod-good: Vegetation retained a high level of native species richness and often recorded a high number of threatened flora species. Ground stratum remained largely intact with low levels of weed invasion. Exotic cover varied based on seasonality with annual native grasses dominating select patches during spring. Areas were subject to grazing pressures from stock and native fauna.



PCT 44_mod-good (Q212E)



PCT 44_mod-good (Q212E)



PCT 44_mod-good at The Gums TSR in spring bloom



PCT 44_mod-good at The Gums TSR in spring bloom

PCT 45 – Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes

The occurrence of this vegetation type within the proposal study area is illustrated in Figure 4.3 and Appendix B-5. A profile summary of PCT 45 – Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion is provided in Table B-2.20 and is photographically represented below.

Table B-2.20 Summary of PCT 45 – Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion

PCT 45 – PLAINS GRASS GRASSLAND ON ALLUVIAL MAINLY CLAY SOILS IN THE RIVERINA BIOREGION AND NSW SOUTH WESTERN SLOPES BIOREGION	
Vegetation formation	KF_CH4 Grassland
Vegetation class	Riverine Plain Grasslands
PCT percent cleared	60%
TEC	This PCT is consistent with the Natural grasslands of the Murray Valley Plains, a critically endangered ecological community listed under the EPBC Act.
Landscape position	This PCT was recorded in the Riverina (Murrumbidgee subregion) IBRA region on slight depressions of alluvial plains.

PCT 45 – PLAINS GRASS GRASSLAND ON ALLUVIAL MAINLY CLAY SOILS IN THE RIVERINA BIOREGION AND NSW SOUTH WESTERN SLOPES BIOREGION	
PCT justification	PCT 45 occurred as a tussock grassland dominated by *Austrostipa aristiglumis* and occurred on dark grey self-mulching clays in low lying areas subject to periodic inundation following rain events. PCT 45 typically graded into PCT 46, another grassland community, as clays became slightly lighter in texture and colour. Shrubs were typically absent. A quantitative analysis was undertaken for this community using the BioNet Vegetation Classification PCT filter tool (EES Group, 2020). The IBRA region and subregion, vegetation formation, vegetation class and dominant ground cover species were used as search criteria. Mod-good condition vegetation was considered most representative of this community and was used to inform this analysis. PCT 45 returned the highest number of matches. Therefore, based on floristic and geological characteristics, this vegetation type is considered consistent with the scientific description and distribution information outlined for PCT 45.
Characteristic floristic composition and structure	
Species upper stratum	Absent
Species middle stratum (<2 m)	Sparse; *Sclerolaena muricata* var. *muricata*
Species ground stratum (<1 m)	Dominated by *Austrostipa aristiglumis.* Grass species including *Walwhalleya proluta, Sporobolus caroli, Enteropogon ramosus, Austrodanthonia duttoniana* were present but never dominant. Other species include *Arthropodium minus, Asperula conferta, Eleocharis pusilla, Maireana pentagona, Marsilea drummondii, Oxalis perennans, Rhodanthe corymbiflora Swainsona swainsonioides,* and *Wurmbea dioica* subsp. *dioica.* Exotic species included *Hordeum leporinum, Lolium perenne** and *Medicago minima**.
Vegetation condition	Mod-good: Vegetation retained a high level of native species richness. Exotic cover varied based on seasonality with annual native grasses dominating select patches during spring. Areas were subject to grazing pressures from stock and native fauna.



PCT 45_mod-good (Q190E)



PCT 45_mod-good (Q190E)



PCT 45_mod-good (Q196E)



PCT 45_mod-good (Q196E)

PCT 46 – Curly Windmill Grass – speargrass – wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion

The occurrence of this vegetation type within the proposal study area is illustrated in Figure 4.3 and Appendix B-5. A profile summary of PCT 46 – Curly Windmill Grass – speargrass – wallaby grass grassland on alluvial clay and loam on the Hay plain, Riverina Bioregion is provided in Table B-2.21 and is photographically represented below.

Table B-2.21 Summary of PCT 46 – Curly Windmill Grass – speargrass – wallaby grass grassland on alluvial clay and loam on the Hay plain, Riverina Bioregion

PCT 46 – CURLY WINDMILL GRASS – SPEARGRASS – WALLABY GRASS GRASSLAND ON ALLUVIAL CLAY AND LOAM ON THE HAY PLAIN, RIVERINA BIOREGION	
Vegetation formation	KF_CH4 Grassland
Vegetation class	Riverine Plain Grasslands
PCT percent cleared	20%
TEC	This PCT is consistent with the Natural grasslands of the Murray Valley Plains, a critically endangered ecological community listed under the EPBC Act.
Landscape position	This PCT was recorded in the Riverina (Murrumbidgee subregion) IBRA region on alluvial plains.
PCT justification	Vegetation assigned to PCT 46 occurred as a tussock grassland community dominated by *Enteropogon acicularis.* While *Enteropogon ramosus* is listed as the typically dominant Curly Windmill grass species in PCT 46, fertile material of *E. acicularis* was observed and applied to plots where no fertile material could be found. PCT 46 occurred on grey clays in among other grassland communities, namely PCT 44 which occurred on red clays and PCT 45 which occurred on darker grey self-mulching clays. Shrubs were typically sparse to absent. Ground cover varied depending on seasonality, recent rainfall events and grazing pressures. A quantitative analysis was undertaken for this community using the BioNet Vegetation Classification PCT filter tool (EES Group, 2020). The IBRA region and subregion, vegetation formation, vegetation class and dominant ground cover species were used as search criteria. Mod-good condition vegetation was considered most representative of this community and was used to inform this analysis.

PCT 46 – CURLY WINDMILL GRASS – SPEARGRASS – WALLABY GRASS GRASSLAND ON ALLUVIAL CLAY AND LOAM ON THE HAY PLAIN, RIVERINA BIOREGION	
	PCT 45 and PCT 46 returned the highest number of matches. PCT 45 is a grassland community that is characterised by a dominance of *Austrostipa aristiglumis* (Plains grass). Given the lack of Plains grass and prevalence of *Enteropogon,* PCT 46 was determined the most appropriate PCT. Therefore, based on floristic and geological characteristics, this vegetation type is considered consistent with the scientific description and distribution information outlined for PCT 45.
Characteristic floristic composition and structure	
Species upper stratum	Absent
Species middle stratum (<2 m)	Very scattered occurrences of *Maireana aphylla* and *Maireana pentagona.*
Species ground stratum (<1 m)	Dominated by *Enteropogon acicularis.* Grass species including *Austrostipa scabra, Austrostipa nodosa* and *Rytidosperma caespitosum* were present but never dominant. Other species included *Atriplex leptocarpa, Calocephalus sonderi, Crassula sieberana, Daucus glochidiatus, Erodium crinitum, Goodenia pusilliflora, Rhodanthe corymbiflora* and *Vittadinia cuneata* var. *cuneata.* Exotic species included *Cucumis myriocarpus*, Hordeum leporinum, Lolium perenne*, Medicago minima** and *Xanthium occidentale*.*
Vegetation condition	Mod-good: Vegetation assigned to moderate to good condition class retained a high level of native species richness. Exotic cover varied based on seasonality with high levels of annual native grasses recorded during spring. Areas were subject to grazing pressures from stock and native fauna.



PCT 46_mod-good (178E)



PCT 46_mod-good (178E)



PCT 46_mod-good (189E)



PCT 46_mod-good (189E)

B-2.1.8 Grassy woodlands

PCT 74 – Yellow Box – River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion

The occurrence of this vegetation type within the proposal study area is illustrated in Figure 4.3 and Appendix B-5. A profile summary of PCT 74 – Yellow Box – River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion is provided in Table B-2.22 and is photographically represented below.

Table B-2.22 Summary of PCT 74 – Yellow Box – River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion

PCT 74 – YELLOW BOX – RIVER RED GUM TALL GRASSY RIVERINE WOODLAND OF NSW SOUTH WESTERN SLOPES BIOREGION AND RIVERINA BIOREGION	
Vegetation formation	KF_CH3 Grassy Woodlands
Vegetation class	Floodplain Transition Woodlands
PCT percent cleared	73%
TEC	This PCT is consistent with White box – Yellow Box – Blakely's Red Gum grassy woodlands and derived native grasslands, a Critically Endangered ecological community listed under the NSW BC ACT and the EPBC Act.
Landscape position	This PCT was recorded in the NSW South Western Slopes (Lower Slopes and Inland Slopes subregion) IBRA bioregion on terrace flats near the edge of floodplains.
PCT justification	Vegetation assigned to PCT 74 occurred on as an ecotonal community on the upper limit regular flooding between true River Red gum forest and outer plains box woodlands. The mid stratum was generally sparse with only isolated shrubs. The ground cover was dominated by grasses and forbs. Both the mid (shrub) strata and ground cover were modified by historic land use, including clearing, cropping and grazing. Therefore, fewer characteristic species of this PCT were recorded. The canopy was dominated by *Eucalyptus melliodora* and *Eucalyptus camaldulensis* with a foliage cover of 30%, growing along the banks of rivers on alluvial flats, which is consistent with PCT 74. Although the understorey was modified by historic clearing and agricultural land use, several characteristic native grasses and shrubs were recorded in this unit.

PCT 74 – YELLOW BOX – RIVER RED GUM TALL GRASSY RIVERINE WOODLAND OF NSW SOUTH WESTERN SLOPES BIOREGION AND RIVERINA BIOREGION	
	Analysis was undertaken for this community using the BioNet Vegetation Classification PCT filter tool (EES Group, 2020). The IBRA region, vegetation formation, vegetation class and dominant trees and understorey species were used as search criteria. PCT 74 had the highest number of matches. Based on location, siting in the landscape, and floristic composition and structure, this vegetation type is consistent with the scientific description and distribution information for PCT 74.
Characteristic floristic composition and structure	
Species upper stratum (8–15 m)	Co-dominated by *Eucalyptus melliodora* and *Eucalyptus camaldulensis.*
Species middle stratum (<2 m)	Generally sparse with isolated occurrences of *Acacia* species. The low shrub *Atriplex semibaccata* was also recorded.
Species ground stratum (<1 m)	Several native grasses dominated the ground cover, including *Austrostipa scabra, Austrostipa bigeniculata, Chloris truncata, Enteropogon acicularis* and *Rytidosperma setaceum*. Other native forbs were *Convolvulus angustissimus, Einadia nutans, Salsola australis, Sida corrugata* and *Vittadinia cuneata* var. *cuneata*. Weed invasion was common and in many locations exotic species were the dominant ground cover. Exotic species include pasture grasses including *Lolium perenne, Hordeum* sp., *Avena fatua* and *Bromus diandrus*. Also recorded were the weeds *Trifolium angustifolium*, *Trifolium repens*, *Sonchus oleraceus*, *Lactuca serriola* f. *serriola* and *Malva parviflora*.
Vegetation condition	Mod-good vegetation recorded had an intact canopy with mature trees containing hollows, although tree dieback is a common feature of this PCT. However, the unit was typically reduced to a linear remnant restricted to the riverbanks across mostly cleared alluvial flats. There was high level of weed invasion in the ground stratum due to historic disturbance, clearing, grazing and cropping.



PCT 74_mod-good at Wagga Wagga, NSW



PCT 74_mod-good (Q239E)

PCT 76 – Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions

The occurrence of this vegetation type within the proposal study area is illustrated in Figure 4.3 and Appendix B-5. A profile summary of PCT 76 – Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions is provided in Table B-2.23 and is photographically represented below.

Table B-2.23 Summary of PCT 76 -Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions

PCT 76 -WESTERN GREY BOX TALL GRASSY WOODLAND ON ALLUVIAL LOAM AND CLAY SOILS IN THE NSW SOUTH WESTERN SLOPES AND RIVERINA BIOREGIONS	
Vegetation formation	KF_CH3 Grassy Woodlands
Vegetation class	Floodplain Transition Woodlands
PCT percent cleared	92%
TEC	This PCT is consistent with Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions, an endangered ecological community listed under the NSW BC act and the EPBC Act.
Landscape position	This PCT was recorded in the NSW South Western Slopes (Lower Slopes subregion) IBRA region.
PCT justification	Occurs on texture contrast red or brown earths or grey clay soils on undulating alluvial plains. Is subject to high levels of disturbance and modification across much of its range, with remnants often small and isolation with high levels of weed invasion. Analysis was undertaken for this community using the BioNet Vegetation Classification PCT filter tool (EES Group, 2020). The IBRA region, IBRA subregion, vegetation formation, vegetation class and dominant trees, shrubs and understorey species were used as search criteria. PCT 76 had the highest number of matches. Based on location, siting in the landscape, soils, floristic composition and structure, this vegetation type is consistent with the scientific description and distribution information for PCT 76.
Characteristic floristic composition and structure	
Species upper stratum (8–15 m)	*Eucalyptus macrocarpa* open woodland.
Species middle stratum (<2 m)	Shrub strata is very sparse to absent. Species occurring include *Acacia hakeoides*, *Chenopodium desertorum* subsp. *microphyllum*, *Dodonaea viscosa* subsp. *angustissima*, *Eremophila debilis*, *Sclerolaena muricata* var. *muricata*, *Sclerolaena muricata* var. *villosa.*
Species ground stratum (<1 m)	The ground cover is a mid-dense to dense mix of grasses and forbs. Dominant native grasses include *Austrostipa aristiglumis* and *Austrostipa scabra* subsp. *falcata*, with less common grasses *Enteropogon acicularis*, *Juncus flavidus*, *Lomandra multiflora*, *Rytidosperma caespitosum* and *Rytidosperma setaceum.*
Vegetation condition	Mod-good: Vegetation retained an intact canopy with varying levels of native richness and cover in the middle stratum. The ground stratum retained some native species richness but was subject to high levels of weed invasion that overall was causing a reduction in richness. Most vegetation was recorded as small linear patches that were otherwise surrounded by agriculture (cropping) or infrastructure (roads).



PCT 76_mod-good (Q231E)

PCT 80 – Western Grey Box – White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion

The occurrence of this vegetation type within the proposal study area is illustrated in Figure 4.3 and Appendix B-5. A profile summary of PCT80 – Western Grey Box – White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion is provided in Table B-2.24 and is photographically represented below.

Table B-2.24 Summary of PCT80 – Western Grey Box – White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion

PCT80 – WESTERN GREY BOX – WHITE CYPRESS PINE TALL WOODLAND ON LOAM SOIL ON ALLUVIAL PLAINS OF NSW SOUTH WESTERN SLOPES BIOREGION AND RIVERINA BIOREGION	
Vegetation formation	KF_CH3 Grassy Woodlands
Vegetation class	Floodplain Transition Woodlands
PCT percent cleared	83%
TEC	This PCT is consistent with Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions, an Endangered ecological community listed under the NSW BC act and is consistent with the Grey Box (*Eucalyptus microcarpa)* Grassy Woodlands and Derived Native Grasslands of South-eastern Australia, an Endangered ecological community listed under the EPBC Act.
Landscape position	This PCT was recorded in the NSW South Western Slopes (Lower Slopes and Inland Slopes subregion) IBRA region on alluvial plains. PCT 80 typically grades into PCT 75 on low rises where sand content increases in the soil.
PCT justification	Vegetation assigned to PCT 80 was recorded to occurred as a grassy woodland on loam soils mainly in the transitional zone of the Murrumbidgee and Lower Slopes subregions. Canopy layer was dominated by *Eucalyptus microcarpa* with a sometimes dense subcanopy of *Callitris glaucophylla.* A quantitative analysis was undertaken for this community using the BioNet Vegetation Classification PCT filter tool (EES Group, 2020). The IBRA region and subregion, vegetation formation, community structure and dominant canopy species were used as search criteria. Mod-good condition vegetation was considered most representative of this community and was used to inform this analysis.

PCT80 – WESTERN GREY BOX – WHITE CYPRESS PINE TALL WOODLAND ON LOAM SOIL ON ALLUVIAL PLAINS OF NSW SOUTH WESTERN SLOPES BIOREGION AND RIVERINA BIOREGION	
	PCT 56, 70, 74, 76, 80, 81, 82, 201 and 267 recorded the highest number of matches. PCT 56, 70, 81 and 82 were dismissed due to geographic location. *Eucalyptus microcarpa* is not the dominate canopy species in PCT 74, 201 and 267, therefore these PCTs are dismissed. Lastly, PCT 76 was dismissed due to the high percentage of *Callitris glaucophylla* recorded leaving PCT 80 as the most appropriate PCT. Therefore, based on floristic and geological characteristics, this vegetation type is considered consistent with the scientific description and distribution information outlined for PCT 80.
Characteristic floristic composition and structure	
Species upper stratum (8–25 m)	Canopy dominated by *Eucalyptus macrocarpa* with a sub-canopy of *Callitris glaucophylla.* Occasional occurrences of *Allocasuarina luehmanii.*
Species middle stratum (<2 m)	Almost absent; *Senna artemisioides* subsp. *filifolia*
Species ground stratum (<1 m)	*Arthropodium minus, Austrostipa scabra, Calotis cuneifolia, Cheilanthes sieberi, Crassula sieberiana, Einadia nutans, Enteropogon acicularis, Maireana enchylaenoides, Oxalis perennans, Rytidosperma caespitosum, Rytidosperma fulvum, Sida corrugata, Vittadinia gracilis* and *Wurmbea dioica* subsp. *dioica.*
Vegetation condition	Mod-good: Vegetation retained an intact canopy, shrub and ground layer. Ground layer had high levels of species diversity and low levels of weed invasion. Most vegetation in this condition class occurred in various State Forests. Moderate: Vegetation retained an intact canopy layer but experienced decreased species richness in the ground stratum due to weed invasion, grazing pressures and historic land use practices. Vegetation was highly segmented and most often occurred as small strips along roadsides or as patches in otherwise cropped areas. Poor: Vegetation retained an intact canopy layer but experienced high levels of weed invasion and very low levels of native retention in the ground layer. Vegetation was highly segmented and restricted to clumps within cropped land. Derived: Vegetation assigned to derived condition displayed either a very sparse or absent canopy stratum. The understorey in this condition was >50% native and displayed a diversity of grasses and forbs. Often subject to grazing pressures from feral and native fauna.



PCT 80_mod-good (Q207E)



PCT 80_moderate (Q203E)



PCT 80_poor (Q233E)



PCT 80_derived (Q228E)

PCT 267 – White Box – White Cypress Pine – Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion

The occurrence of this vegetation type within the proposal study area is illustrated in Figure 4.3 and Appendix B-5. A profile summary of PCT 266 – White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion is provided in Table B-2.25 and is photographically represented below.

Table B-2.25 Summary of PCT 267 – White Box – White Cypress Pine – Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion

PCT 267 – WHITE BOX – WHITE CYPRESS PINE – WESTERN GREY BOX SHRUB/GRASS/FORB WOODLAND IN THE NSW SOUTH WESTERN SLOPES BIOREGION	
Vegetation formation	KF_CH3 Grassy Woodlands
Vegetation class	Western Slopes Grassy Woodlands
PCT percent cleared	94%
TEC	This PCT is consistent with White box – Yellow Box – Blakely's Red Gum grassy woodlands and derived native grasslands, a Critically Endangered ecological community listed under the NSW BC ACT and the EPBC Act.
Landscape position	This PCT was recorded in the NSW South Western Slopes (Inland Slopes subregion) IBRA region on low hills.

PCT 267 – WHITE BOX – WHITE CYPRESS PINE – WESTERN GREY BOX SHRUB/GRASS/FORB WOODLAND IN THE NSW SOUTH WESTERN SLOPES BIOREGION	
PCT justification	Vegetation assigned to PCT 267 occurred as mid-high woodland on fertile soils. Vegetation was dominated by White box (*Eucalyptus albens*) and White Cypress Pine (*Callitris glaucophylla*). The shrub layer was typically sparse with high levels of weed invasion in the ground layer. A quantitative analysis was undertaken for this community using the BioNet Vegetation Classification PCT filter tool (EES Group, 2020). The IBRA region and subregion, vegetation formation, vegetation class, community structure and dominant canopy species were used as search criteria. Mod-good condition vegetation was considered most representative of this community and was used to inform this analysis PCT 267, 272, 277, 281 and 1609 returned the highest number of matches. PCT 272 can be dismissed as it is a shrubby woodland not a grassy woodland. PCT 1609 can be dismissed as it only occurs in the central and upper Hunter Valley. Both PCT 281 and PCT 277 are not dominated by *Eucalyptus albens* or *Callitris glaucophylla* and therefore can also be dismissed, leaving PCT 267 the most appropriate PCT. Based on floristic and geological characteristics, this vegetation type is considered consistent with the scientific description and distribution information outlines for PCT 267.
Characteristic floristic composition and structure	
Species upper stratum (8–15 m)	Dominated by *Eucalyptus albens* and *Callitris glaucophylla*
Species middle stratum (1–2 m)	*Acacia decora*
Species ground stratum (<1 m)	*Einadia nutans* subsp. *nutans, Glycine tabacina, Lomandra filiformis* subsp. *coriacea, Sida corrugata, Wahlenbergia luteola.* The ground layer contained high levels of exotics including *Avena barbata*, Bromus diandrus*, Echium plantagineum*, Hordeum vulgare*, Lolium perenne** and *Vulpia myuros.*
Vegetation condition	Mod-good Vegetation recorded retained an intact canopy layer with a sparse native shrub layer. The ground layer was subject to weed incursion but managed to retain native species richness. During spring, select patches were dominated by exotic annuals. Vegetation was highly segregated and mostly occurred as linear patches in road reserves.



PCT 267_mod-good (Q89E)



PCT 267_mod-good (Q89E)

PCT 277 – Blakely's Red Gum – Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion

The occurrence of this vegetation type within the proposal study area is illustrated in Figure 4.3 and Appendix B-5. A profile summary of PCT 277 – Blakely's Red Gum – Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion is provided in Table B-2.26 and is photographically represented below.

Table B-2.26 Summary of PCT 277 – Blakely's Red Gum – Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion

PCT 277 – BLAKELY'S RED GUM – YELLOW BOX GRASSY TALL WOODLAND OF THE NSW SOUTH WESTERN SLOPES BIOREGION	
Vegetation formation	KF_CH3 Grassy Woodlands
Vegetation class	Western Slopes Grassy Woodlands
PCT percent cleared	94%
TEC	This PCT is consistent with White box – Yellow box – Blakely's Red Gum grassy woodlands and derived native grasslands, a Critically Endangered ecological community listed under the NSW BC ACT and the EPBC Act.
Landscape position	This PCT was recorded in the NSW South Western Slopes (Lower Slopes subregion) IBRA region.
PCT justification	Vegetation assigned to PCT 77 occurred as mid-high to tall woodland or open forest on soils of relatively higher fertility in landscapes of lower relief. Vegetation is dominated by *Eucalyptus melliodora* and *Eucalyptus blakelyi*. The shrub layer was typically sparse with high levels of weed invasion in the ground layer particularly in grazed sites. A quantitative analysis was undertaken for this community using the BioNet Vegetation Classification PCT filter tool (EES Group, 2020). The IBRA region and subregion, vegetation formation, vegetation class, community structure and dominant canopy species were used as search criteria. Mod-good condition vegetation was considered most representative of this community and was used to inform this analysis. Several PCTs were returned with a high number of matches including PCT 79, 85, 266 and 277. PCT 277 was selected based on its geographic location and typical position in the landscape, in combination with floristic composition and structure.
Characteristic floristic composition and structure	
Species upper stratum (15–25 m)	The canopy comprises a woodland to open forest of *Eucalyptus melliodora* and *Eucalyptus blakelyi*.
Species middle stratum (1–3 m)	A sparse low tree/shrub stratum occurs that includes *Acacia baileyana*, *Acacia dealbata* and *Bursaria spinosa* subsp. *spinosa*.
Species ground stratum (<1 m)	The ground cover is typically dense in sites with no or low grazing intensity but becomes more open in grazed sites. Floristic composition is typically diverse, comprising a mix of native grasses, forbs and ferns, particularly in locations with higher moisture. Typical grasses are *Austrostipa nodosa*, *Panicum effusum*, *Paspalidium constrictum* and *Rytidosperma erianthum*. Common forbs include *Lomandra multiflora*, *Hydrocotyle laxiflora*, *Asperula conferta*, *Dianella revoluta* var. *revoluta*, *Oxalis perennans* and *Vittadinia cuneata* var. *cuneata*. The ground over is more simplified in grazed sites and weeds become more common, including *Avena fatua**, *Hypochaeris radicata**, *Lolium perenne**, *Oxalis pes-caprae**, *Phalaris minor** and *Sonchus oleraceus**.

PCT 277 – BLAKELY'S RED GUM – YELLOW BOX GRASSY TALL WOODLAND OF THE NSW SOUTH WESTERN SLOPES BIOREGION	
Vegetation condition	Mod-good: Vegetation was recorded to have an intact canopy and middle stratum. The ground stratum displayed moderate species richness and was subject to grazing pressures and weed invasion. Derived: Vegetation was recorded to lack an intact canopy and middle stratum due to historic land clearing practices. The ground layer recorded a similar species composition to that of the mod-good condition vegetation, albeit with a decrease in species richness. Vegetation was subject weed invasion and grazing pressures from feral animals and livestock.



PCT 277_mod-good (Q202E)



PCT 277_mod-good (Q202E)



PCT 277_mod-good (Q242E)



PCT 277_mod-good (Q242E)

B-2.1.9 Semi-arid woodlands (Grassy Formation)

PCT 13 – Black Box – Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

The occurrence of this vegetation type within the proposal study area is illustrated in Figure 4.3 and Appendix B-5. A profile summary of PCT 13 – Black Box – Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) is provided in Table B-2.27 and is photographically represented below.

Table B-2.27 Summary of PCT 13 – Black Box – Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

PCT 13 – BLACK BOX – LIGNUM WOODLAND WETLAND OF THE INNER FLOODPLAINS IN THE SEMI-ARID (WARM) CLIMATE ZONE (MAINLY RIVERINA BIOREGION AND MURRAY DARLING DEPRESSION BIOREGION)	
Vegetation formation	KF_CH11A Semi-arid Woodlands (Grassy sub-formation)
Vegetation class	Inland Floodplain Woodlands
PCT percent cleared	57%
TEC	Not listed
Landscape position	This vegetation was recorded in the Riverina IBRA region (Murrumbidgee subregion) and was restricted to low-lying floodplains.
PCT justification	Vegetation assigned to this community occurred on fine heavy grey clay soils on a slightly elevated island within a larger floodplain system. A quantitative analysis was undertaken for this community using the BioNet Vegetation Classification PCT filter tool (EES Group, 2020). The IBRA region and subregion, vegetation formation, vegetation class and dominant canopy species was used as search criteria. Plot data from mod-good condition vegetation was considered most representative of this community and was used to inform PCT 13, PCT 15 and PCT 16 returned the highest number of matches and are all *Eucalyptus largiflorens* dominated communities which occur on similar landscape positions. PCT 15 is characterised by the dominance of chenopods such as Atriplex and Maireana species in the understorey, and PCT 16 is characterized by the dominance of forbs, grasses and low growing chenopods in the understorey. Alternatively, PCT 13 is characterised by stands of *Duma florulenta* in the understorey with a combination of chenopods and forbs. PCT 13 was considered the most appropriate vegetation type based on the floristic composition and structure (i.e. occurrence of *Duma florulenta* as a key understorey component), landscape position and geological attributes which are consistent with the scientific description and distribution information outlined for PCT 13.

PCT 13 – BLACK BOX – LIGNUM WOODLAND WETLAND OF THE INNER FLOODPLAINS IN THE SEMI-ARID (WARM) CLIMATE ZONE (MAINLY RIVERINA BIOREGION AND MURRAY DARLING DEPRESSION BIOREGION)	
Characteristic floristic composition and structure	
Species upper stratum (8–15 m)	Dominated by *Eucalyptus largiflorens.*
Species middle stratum (<2 m)	Dominated by *Duma florulenta, Chenopodium nitrariaceum, Rhagodia spinescens, Eremophila divaricata* subsp. *divaricata, Maireana brevifolia* and *Enchylaena tomentosa*.
Species ground stratum (<1 m)	*Alternanthera denticulata, Atriplex lindleyi, Atriplex pseudocampanulata, Atriplex semibaccata, Atriplex stipitata* subsp. *miscella, Disphyma crassifolium* subsp. *clavellatum, Enteropogon acicularis, Dissocarpus paradoxus, Oxalis perennans, Sclerolaena obliquicuspis, Sclerolaena tricuspis, Sida trichopoda, Teucrium racemosum* and *Wahlenbergia fluminalis*. Exotic species included *Brassica tournefortii** and *Sisymbrium erysimoides**.
Vegetation condition	Mod-good: Vegetation retained an intact canopy layer. The middle and ground stratum were subject to weed invasion but retained moderate levels of native species richness and cover. Patches were subject to grazing pressures from feral animals, livestock and native animals.



PCT 13_mod-good (Q172E)



PCT 13_mod-good (Q173E)



PCT 13_mod-good (Q173E)

PCT 15 – Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

The occurrence of this vegetation type within the proposal study area is illustrated in Figure 4.3 and Appendix B-5. A profile summary of PCT 15 – Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion) is provided in Table B-2.28 and is photographically represented below.

Table B-2.28 Summary of PCT 15 – Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

PCT 15 – BLACK BOX OPEN WOODLAND WETLAND WITH CHENOPOD UNDERSTOREY MAINLY ON THE OUTER FLOODPLAINS IN SOUTH-WESTERN NSW (MAINLY RIVERINA BIOREGION AND MURRAY DARLING DEPRESSION BIOREGION)	
Vegetation formation	KF_CH11A Semi-arid Woodlands (Grassy sub-formation)
Vegetation class	Inland Floodplain Woodlands
PCT percent cleared	50%
TEC	Not listed
Landscape position	This vegetation was recorded in the Murray Darling Depression (South Olary Plain subregion) and Riverina (Lachlan and Murrumbidgee subregion) IBRA bioregions and generally occurred on the higher elevations on the floodplains where flooding is less frequent.
PCT justification	Vegetation assigned to PCT 15 is similar to PCT 13 in that it occurs on fine heavy grey clays which often feature gilgais. However, the dominance of chenopods in the understorey is a key characteristic feature of PCT 15 compared to PCT 13 which contains high covers of *Duma florulenta.* Increases in distance from river systems and subsequent increases in elevation lead to less frequent flooding and an increase in salinity which supports more Atriplex, Maireana and Sclerolaena species characteristic of PCT 15. Alternatively, as elevation and distance to the river systems decreases flooding becomes more frequent leading to a higher prevalence of *Duma florulenta* in the understorey. A quantitative analysis was undertaken for this community using the BioNet Vegetation Classification PCT filter tool (EES Group, 2020). The IBRA region and subregion, vegetation formation, vegetation class and dominant canopy and shrub species were used as search criteria. Mod-good condition vegetation was considered most representative of this community and was used to inform this analysis PCT 15 had the highest number of matches. Based on floristic and geological characteristics, this vegetation type is considered consistent with the scientific description and distribution information outlined for PCT 15.

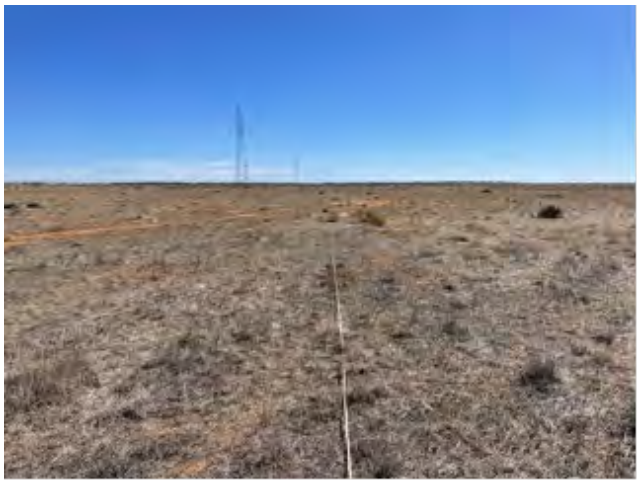
PCT 15 – BLACK BOX OPEN WOODLAND WETLAND WITH CHENOPOD UNDERSTOREY MAINLY ON THE OUTER FLOODPLAINS IN SOUTH-WESTERN NSW (MAINLY RIVERINA BIOREGION AND MURRAY DARLING DEPRESSION BIOREGION)	
Characteristic floristic composition and structure	
Species upper stratum (8–10 m)	Dominated by *Eucalyptus largiflorens.*
Species middle stratum (<2 m)	Dominated by *Maireana pyramidata, Enchylaena tomentosa* and *Rhagodia spinescens* with *Chenopodium nitrariaceum, Maireana pentatropis* and *Salsola australis.*
Species ground stratum (<1 m)	*Dissocarpus paradoxus, Sclerolaena obliquicuspis, Sclerolaena diacantha, Sclerolaena brachyptera, Euphorbia drummondii, Tripogon loliiformis, Sida corrugata, Brachyscome lineariloba, Calotis hispidula, Austrostipa nitida, Dysphania cristata, Osteocarpum acropterum* var. *acropterum, Atriplex holocarpa, Atriplex lindleyi, Erodium crinitum, Atriplex eardleyae* and various Roepera and *Tetragonia* species. Exotic species included *Alyssum linifolium*, Erodium cicutarium*, Malva parviflora*, Medicago minima*, Mesembryanthemum nodiflorum*, Psilocaulon granulicaule*, Schismus barbatus** and *Sisymbrium erysimoides*.*
Vegetation condition	Mod-good: Vegetation was recorded to have an intact canopy with evidence of historic grazing in the middle and ground stratum. Derived: This vegetation was recorded in areas of modification leading to a lack of overstorey. It was mostly recorded near patches of PCT 15 and has similar ground stratum floristics to that of the parent PCT.



PCT 15_mod-good



PCT 15_mod-good (Q87E)



PCT 15_derived during winter (Q85E)



PCT 15_derived during spring (Q155E)

PCT 26 – Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion

The occurrence of this vegetation type within the proposal study area is illustrated in Figure 4.3 and Appendix B-5. A profile summary of PCT 26 – Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion is provided in Table B-2.29 and is photographically represented below.

Table B-2.29 Summary of PCT 26 – Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion

PCT 26 – WEEPING MYALL OPEN WOODLAND OF THE RIVERINA BIOREGION AND NSW SOUTH WESTERN SLOPES BIOREGION	
Vegetation formation	KF_CH11A Semi-arid Woodlands (Grassy sub-formation)
Vegetation class	Inland Floodplain Woodlands
PCT percent cleared	90%
TEC	This PCT is consistent with Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes Bioregion, an Endangered ecological community listed under the NSW BC Act and is consistent with Weeping Myall Woodlands, an Endangered ecological community under the EPBC Act.
Landscape position	This vegetation was recorded in the Riverina (Murrumbidgee subregion) IBRA bioregions on alluvial plains.
PCT justification	Vegetation assigned to PCT 26 occurred on brown clays and was characterized by a dominance of *Acacia pendula* on flats with *Eucalyptus largiflorens* and *Eucalyptus camaldulensis* occurring is scattered clusters in depressions. A quantitative analysis was undertaken for this community using the BioNet Vegetation Classification PCT filter tool (EES Group, 2020). The IBRA region and subregion, vegetation formation, vegetation class, community structure and dominant canopy species were used as search criteria. Mod-good condition vegetation was considered most representative of this community and was used to inform this analysis

PCT 26 – WEEPING MYALL OPEN WOODLAND OF THE RIVERINA BIOREGION AND NSW SOUTH WESTERN SLOPES BIOREGION	
	PCT 13, PCT 15, PCT 16, PCT 26 and PCT 55 returned the highest number of matches. PCT 55 was dismissed due to a lack of *Casuarina cristata,* which is the dominant canopy species of this PCT. PCT 13, PCT 15 and PCT 16 are characterized by a dominant canopy of *Eucalyptus largiflorens,* and while there were occasional occurrences of *Eucalyptus largiflorens*, the vegetation recorded was characterized by a dominant canopy of *Acacia pendula* leaving PCT 26 as the most suitable PCT. Therefore, based on floristic and geological characteristics, this vegetation type is considered consistent with the scientific description and distribution information outlined for PCT 26.
Characteristic floristic composition and structure	
Species upper stratum (8–15 m)	Dominated by *Acacia pendula*. Other species include *Eucalyptus largiflorens* and *Eucalyptus camaldulensis* in depressions.
Species middle stratum (<2 m)	*Rhagodia spinescens, Chenopodium nitrariaceum, Hakea leucoptera, Santalum lanceolatum, Exocarpos aphyllus* and *Maireana aphylla*.
Species ground stratum (<1 m)	*Rytidosperma caespitosa, Rytidosperma setacea, Austrostipa scabra, Austrostipa nodosa, Sporobolus carolii, Atriplex leptocarpa, Atriplex semibaccata, Rhodanthe corymbiflora* and *Vittadinia cuneata*. Exotic species include *Medicago minima*, Medicago laciniata*, Hordeum sp.** and *Lolium sp.**.
Vegetation condition	Mod-good: Vegetation was recorded to have an intact canopy dominated by Acacia pendula. Mid and ground storey displaced evidence of grazing and weed invasion. Moderate: Vegetation was recorded to have a sparse canopy of Acacia pendula with evidence of grazing and occurrences of heavy weed invasion in the ground layer. Derived: This vegetation was recorded in areas of modification leading to a lack of overstorey. It was mostly recorded near patches of PCT 5 and has similar ground stratum floristics to that of the parent PCT.



PCT 26_mod-good (Q98E)



PCT 26_mod-good in the Murrumbidgee subregion



PCT 26_moderate (Q96E)



PCT 26_moderate (Q97E)



PCT 26 – derived (Q100E)



PCT 26 – derived (Q102E)

B-2.1.10 Semi-arid woodlands (Shrubby Formation)

PCT 22 – Semi-arid shrubby Buloke – Slender Cypress Pine woodland, far south-western NSW

The occurrence of this vegetation type within the proposal study area is illustrated in Figure 4.3 and Appendix B-5. A profile summary of PCT 22 – Semi-arid shrubby Buloke – Slender Cypress Pine woodland, far south-western NSW is provided in Table B-2.30 and is photographically represented below.

Table B-2.30 Summary of PCT 22 – Semi-arid shrubby Buloke – Slender Cypress Pine woodland, far south-western NSW

PCT 22 – SEMI-ARID SHRUBBY BULOKE – SLENDER CYPRESS PINE WOODLAND, FAR SOUTH-WESTERN NSW	
Vegetation formation	KF_CH11B Semi-arid Woodlands (Shrubby sub-formation)
Vegetation class	Riverine Sandhill Woodlands
PCT percent cleared	70%

PCT 22 – SEMI-ARID SHRUBBY BULOKE – SLENDER CYPRESS PINE WOODLAND, FAR SOUTH-WESTERN NSW	
TEC	This PCT is consistent with *Allocasuarina luehmannii* Woodland in the Riverina and Murray-Darling Depression Bioregions which is listed as Endangered under the BC and in consistent with the Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions which is listed as Endangered under the EPBC Act.
Landscape position	This PCT was recorded in the Murray Darling Depression (South Olary Plain subregion) IBRA subregion on undulating sandplains. Vegetation was restricted to one location at the Balranald substation.
PCT justification	Vegetation assigned to PCT 22 occurred on sand dunes and plains where *Allocasuarina luehmanii* was the dominant species. A quantitative analysis was undertaken for this community using the BioNet Vegetation Classification PCT filter tool (EES Group, 2020). The IBRA region and subregion, vegetation formation and dominant species in all strata were used as search criteria. Moderate to good condition vegetation was considered most representative of this community and was used to inform this analysis. Based on floristic and geological characteristics, this vegetation type is considered consistent with the scientific description and distribution information outlined for PCT 22.
Characteristic floristic composition and structure	
Species upper stratum (8–12 m)	Dominated by *Allocasuarina luehmanii*. Occasional trees are *Acacia oswaldii* and *Eucalyptus socialis.*
Species middle stratum (2–4 m)	*Rhagodia spinescens* dominates the typically sparse shrub stratum, with other common species including *Atriplex semibaccata, Dodonaea viscosa* subsp. *angustissima, Pittosporum angustifolium, Rhagodia spinescens, Sclerolaena brachyptera* and *Sclerolaena tricuspis.*
Species ground stratum (<2 m)	A sparse to mid-dense ground cover is typical with common grasses including *Austrostipa nitida*, *Enteropogon acicularis Anthosachne scabra, Austrostipa elegantissima, Austrostipa nodosa* and *Rytidosperma caespitosum*. *Lomandra leucocephala subsp. leucocephala.* Forbs are less dominant in the ground cover, but include *Sida corrugata*, *Vittadinia cervicularis* var. *cervicularis*, *Goodenia pinnatifida*, *Brachyscome lineariloba*, *Plantago turrifera* and *Senecio glossanthus*. Exotic species include *Echium plantagineum**, *Vulpia myuros**, *Carrichtera annua**, *Hordeum leporinum**, *Lolium perenne**, *Medicago minima** and *Sisymbrium erysimoides**.
Vegetation condition	Mod-good: Vegetation was recorded to have an intact upper stratum dominated by *Allocasuarina luehmanii*. The middle and ground stratum varied in species richness and native cover with a reduction in both attributable to grazing pressures. The ground stratum also recorded varying levels of weed incursion.



An example of PCT 22 at Balranald substation



An example of mature *Allocasuarina luehmannii* fruit

PCT 23 – Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones

The occurrence of this vegetation type within the proposal study area is illustrated in Figure 4.3 and Appendix B-5. A profile summary of PCT 23 – Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones is provided in Table B-2.31 and is photographically represented below.

Table B-2.31 Summary of PCT 23 – Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones

PCT 23 – YARRAN TALL OPEN SHRUBLAND OF THE SANDPLAINS AND PLAINS OF THE SEMI-ARID (WARM) AND ARID CLIMATE ZONES.	
Vegetation formation	KF_CH11B Semi-arid Woodlands (Shrubby sub-formation)
Vegetation class	Riverine Sandhill Woodlands
PCT percent cleared	71%
TEC	This PCT is consistent with *Acacia melvillei* Shrubland in the Riverina and Murray-Darling Depression Bioregions which is listed under the BC Act.
Landscape position	This PCT was recorded in the Murray Darling Depression (South Olary Plain subregion) and Riverina (Lachlan and Murrumbidgee subregion) on undulating sandplains
PCT justification	Vegetation assigned to PCT 23 occurred as localised stands on red-brown, sandy-loam soils where *Acacia melvillei* was the dominant species. A quantitative analysis was undertaken for this community using the BioNet Vegetation Classification PCT filter tool (EES Group, 2020). The IBRA region and subregion, vegetation formation and dominant species in all the stratums were used as search criteria. Moderate to good condition vegetation was considered most representative of this community and was used to inform this analysis. PCT 23, PCT 28 and PCT 57 returned the highest number of matches. PCT 28 and PCT 57 were dismissed due to the absence of *Callitris glaucophylla* and *Casuarina cristata*, which are characteristic dominant canopy species respectively in those PCTs. Given the dominance of *Acacia melvillei,* PCT 23 was determined the most suitable PCT. Therefore, based on floristic and geological characteristics, this vegetation type is considered consistent with the scientific description and distribution information outlined for PCT 23.

PCT 23 – YARRAN TALL OPEN SHRUBLAND OF THE SANDPLAINS AND PLAINS OF THE SEMI-ARID (WARM) AND ARID CLIMATE ZONES.	
Characteristic floristic composition and structure	
Species upper stratum (>2 m)	Dominated by *Acacia melvillei* with occasional *Eremophila sturtii*
Species middle stratum (<2 m)	*Rhagodia spinescens, Dissocarpus paradoxus, Nitraria billardierei, Sclerolaena diacantha,* and *Enchylaena tomentosa*
Species ground stratum (<1 m)	*Atriplex lindleyi, Brachyscome lineariloba, Linum marginale, Sclerolaena brachyptera, Solanum esuriale, Austrostipa scabra, Enteropogon acicularis, Ptilotus sessilifolius, Rhodanthe corymbiflora, Rytidosperma caespitosum* and *Vittadinia cuneata.* Exotic species include *Medicago minima*, Medicago polymorpha** and *Sisymbrium orientale*.*
Vegetation condition	Mod-good: Vegetation was recorded to have an intact upper stratum dominated by *Acacia melvillei*. Middle and ground stratum displayed evidence of grazing by native and feral herbivores. Derived: This vegetation was recorded in areas of modification leading to a lack of overstorey. It was mostly recorded near patches of PCT 5 and has similar ground stratum floristics to that of the parent PCT.



PCT 23_mod-good (Q142E)



An example of PCT 23_mod-good in the South Olary Plain



PCT 23_derived (Q91E)



PCT 23_derived (Q94E)

PCT 28 – White Cypress Pine open woodland of sandplains, prior streams and dunes mainly of the semi-arid (warm) climate zone

The occurrence of this vegetation type within the proposal study area is illustrated in Figure 4.3 and Appendix B-5. A profile summary of PCT 28 – White Cypress Pine open woodland of sand plains, prior streams and suns mainly of the semi-arid (warm) climate zone is provided in Table B-2.32 and is photographically represented below.

Table B-2.32 Summary of PCT 28 – White Cypress Pine open woodland of sand plains, prior streams and suns mainly of the semi-arid (warm) climate zone.

PCT 28 – WHITE CYPRESS PINE OPEN WOODLAND OF SAND PLAINS, PRIOR STREAMS AND DUNES MAINLY OF THE SEMI-ARID (WARM) CLIMATE ZONE	
Vegetation formation	KF_CH11B Semi-arid Woodlands (Shrubby sub-formation)
Vegetation class	Riverine Sandhill Woodlands
PCT percent cleared	73%
TEC	This PCT is consistent with Sandhill Pine woodland in the Riverina, Murray – Darling Depression and NSW South Western Slopes bioregions, an endangered ecological community listed under the NSW BC Act.
Landscape position	This PCT was recorded in the Riverina (Murrumbidgee subregion) IBRA bioregion on prior streams, source bordering sand dunes and sand plains.
PCT justification	Vegetation assigned to this PCT occurred on eolian sand or loam on slight rises and sand hills. A quantitative analysis was undertaken for this community using the BioNet Vegetation Classification PCT filter tool (EES Group, 2020). The IBRA region and subregion, vegetation formation, community structure and dominant species in the canopy, shrub and ground strata were used as search criteria. PCT 20, PCT 28, PCT 56, PCT 86 and PCT631 returned the highest number of matches. PCT 28 was selected based on canopy dominants, biophysical attributes and position in the landscape, particularly the predominance of eolian sand or loam and occurrence on slight rises and sand hills.
Characteristic floristic composition and structure	
Species upper stratum (8–15 m)	*Callitris glaucophylla* dominates the canopy with *Allocasuarina luehmannii* and *Alectryon oleifolius* subsp. *canescens* present as co- or sub-dominant trees.
Species middle stratum (<2 m)	The mid strata typically occur as a sparse to very sparse layer, becoming denser in less disturbed sites, comprising low shrubs of *Atriplex leptocarpa*, *Atriplex semibaccata*, *Atriplex vesicaria*, *Rhagodia spinescens*, *Salsola australis*, *Sclerolaena muricata* var. *semiglabra* and *Sclerolaena obliquicuspis*.
Species ground stratum (<1 m)	The ground cover comprises patches of mid-dense to dense forbs and grasses with areas of exposed sandy soils especially in grazed sites. Common species are *Tetragonia moorei*, *Urtica incisa*, *Dysphania cristata*, *Crassula sieberiana*, *Erodium crinitum*, *Calotis hispidula* and *Crassula colorata* var. *acuminata*. Grasses generally occur at lower densities in this unit, including *Austrostipa scabra*, *Enteropogon acicularis*, *Austrostipa nodosa*, *Panicum decompositum* and *Sporobolus caroli*. Weeds were common and often dominant in this unit, particularly in sites that are grazed or otherwise highly modified. Common weeds are *Aira cupaniana**, *Avena barbata**, *Echium plantagineum**, *Eragrostis cilianensis**, *Hordeum leporinum**, *Lolium perenne**, *Medicago minima** and *Medicago minima**.

PCT 28 – WHITE CYPRESS PINE OPEN WOODLAND OF SAND PLAINS, PRIOR STREAMS AND DUNES MAINLY OF THE SEMI-ARID (WARM) CLIMATE ZONE	
Vegetation condition	Mod-good: Vegetation was recorded to have an intact upper stratum dominated by *Callitris glaucophylla* and presence of native shrubs and ground cover. Middle and ground stratum displayed evidence of grazing by native and feral herbivores. Poor: Canopy is much thinned and understorey shrubs and ground cover species are dominated by weed species.



PCT 28_mod-good (Q101E)



An example of PCT 28.

PCT 58 – Black Oak – Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion

The occurrence of this vegetation type within the proposal study area is illustrated in Figure 4.3 and Appendix B-5. A profile summary of PCT 58 – Black Oak – Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion is provided in Table B-2.33 and is photographically represented below.

Table B-2.33 Summary of PCT 58 – Black Oak – Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion

PCT 58 – BLACK OAK – WESTERN ROSEWOOD OPEN WOODLAND ON DEEP SANDY LOAMS MAINLY IN THE MURRAY DARLING DEPRESSION BIOREGION	
Vegetation formation	KF_CH11B Semi-arid Woodlands (Shrubby sub-formation)
Vegetation class	Semi-arid Sand Plain Woodlands
PCT percent cleared	50%
TEC	Not listed
Landscape position	This vegetation was recorded in the Murray Darling Depression (South Olary Plain subregion) and Riverina (Lachlan and Murrumbidgee subregions) IBRA bioregions in a range of landscape positions. In the Western section of the proposal study area PCT 58 was recorded in low-lying swales. As the proposal study area continues further east PCT 58 was recorded on low undulating sandy rises.

PCT 58 – BLACK OAK – WESTERN ROSEWOOD OPEN WOODLAND ON DEEP SANDY LOAMS MAINLY IN THE MURRAY DARLING DEPRESSION BIOREGION	
PCT justification	The distribution of this community was heavily influenced by soil type and acidity. Soils which supported this vegetation were sandy loams with a solonised clay component. These soils were calcium carbonate (lime) rich due to a reaction between calcium in the topsoil and sodium introduced by salt-laden winds. Small deposits of limestone are known to occur on the surface of these alkaline soils. *Casuarina pauper* was the dominant canopy species of this community which is an indicator species of this geology as this species will not colonise acidic soils (Keith, 2004). Vegetation assigned to this PCT were dominated by *Casuarina pauper* with *Alectryon oleifolius* subsp. *canescens* and *Myoporum platycarpum* subsp. *platycarpum* occurring as co-dominant species in some locations. As such, this PCT was distinct in landscape. A quantitative analysis was undertaken for this community using the BioNet Vegetation Classification PCT filter tool (EES Group, 2020). The IBRA region and subregion, community structure, dominant species in all stratums were used as search criteria. PCT 58 returned the highest number of matches so represented the best fit.
Characteristic floristic composition and structure	
Species upper stratum (6–10 m)	Dominated by *Casuarina pauper* with *Alectryon oleifolius* subsp. *canescens*
Species middle stratum (<2 m)	The shrub strata density ranges from dense to sparse depending on the level of disturbance, such as stock grazing. Dominant shrubs in this unit are *Enchylaena tomentosa, Nitraria billardierei, Sclerolaena diacantha, Rhagodia spinescens, Maireana pyramidata, Maireana brevifolia, Sclerolaena brachyptera, Maireana aphylla* and *Maireana georgei.*
Species ground stratum (<1 m)	The herbaceous ground cover comprises a diversity of forbs including *Tetragonia moorei*, *Tetragonia eremaea*, *Roepera similis*, *Einadia nutans* subsp. *nutans*, *Calotis hispidula*, *Calandrinia eremaea*, *Brachyscome lineariloba* and *Atriplex lindleyi*. Common grasses are *Enteropogon acicularis, Austrostipa elegantissima, Austrostipa nitida, Panicum decompositum* and *Enteropogon acicularis.* Exotic species are common, with density reflecting seasonality and land use, including *Carrichtera annua*, Psilocaulon granulicaule*, Hordeum sp.*, Romulea minutiflora*, Erodium cicutarium*, Medicago laciniata*, Medicago minima*, Sisymbrium erysimoides*, Sisymbrium orientale*, Malva parviflora** and *Lamarckia aurea*.*
Vegetation condition	Mod-good: Encompasses all areas which contained an intact canopy. The shrub and understorey were variable depending on the level of grazing pressure and disturbance history. In areas where grazing was absent or not apparent the middle and ground stratum displayed a slightly higher diversity.



PCT 58_mod-good (Q93E)



PCT 58_mod-good (Q124E)



PCT 58_mod-good in the Lachlan subregion



PCT 58_mod-good in the Lachlan subregion

PCT 75 – Yellow Box – White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion

The occurrence of this vegetation type within the proposal study area is illustrated in Figure 4.3 and Appendix B-5. A profile summary of PCT 75 – Yellow Box – White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion is provided in Table B-2.34 and is photographically represented below.

Table B-2.34 Summary of PCT 75 – Yellow Box – White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion

PCT 75 – YELLOW BOX – WHITE CYPRESS PINE GRASSY WOODLAND ON DEEP SANDY-LOAM ALLUVIAL SOILS OF THE EASTERN RIVERINA BIOREGION AND WESTERN NSW SOUTH WESTERN SLOPES BIOREGION	
Vegetation formation	KF_CH11B Semi-arid Woodlands (Shrubby sub-formation)
Vegetation class	Riverine Sandhill Woodlands
PCT percent cleared	92%
TEC	This PCT is consistent with White box – Yellow box – Blakely's Red Gum grassy woodlands and derived native grasslands, a Critically Endangered ecological community listed under the NSW BC ACT and the EPBC Act.

PCT 75 – YELLOW BOX – WHITE CYPRESS PINE GRASSY WOODLAND ON DEEP SANDY-LOAM ALLUVIAL SOILS OF THE EASTERN RIVERINA BIOREGION AND WESTERN NSW SOUTH WESTERN SLOPES BIOREGION	
Landscape position	This PCT was recorded in the NSW South Western Slopes (Inland Slopes and Lower Slopes subregion) IBRA bioregion on eolian sand or sand loam of flood plains and plains. PCT 75 grades into PCT 80 where clay content increases in low lying areas.
PCT justification	Analysis was undertaken for this community using the BioNet Vegetation Classification PCT filter tool (EES Group, 2020). The IBRA region, vegetation formation, vegetation class, and dominant species (trees and understorey) were used as search criteria. PCT 75 had the highest number of matches. Based on location, siting in the landscape, and floristic composition and structure, this vegetation type is consistent with the scientific description and distribution information for PCT 75.
Characteristic floristic composition and structure	
Species upper stratum (6–10 m)	*Callitris glaucophylla*, *Eucalyptus melliodora* dominate, with structure varying depending on past and present land use. In areas where with regrowth, *Callitris glaucophylla* can occur as a mid-dense to dense subcanopy below remnant trees. In locations with ongoing grazing and/or cropping, scattered *Eucalyptus melliodora* remnants occur over pasture.
Species middle stratum (<2 m)	A sparse shrub stratum occurs in locations with less disturbance but is absent in more modified sites such as where grazing and cropping occur. Common species include *Atriplex semibaccata*, *Enchylaena tomentosa*, *Rhagodia spinescens*, *Salsola australis*, *Maireana excavata*, *Sclerolaena muricata* var. *semiglabra*, *Sclerolaena muricata* var. *muricata*, *Chenopodium desertorum* subsp. *virosum*, *Glycine tabacina* and *Maireana microphylla*.
Species ground stratum (<1 m)	The native ground cover ranges from very sparse in disturbed sites to mid-dense in more intact remnants. Ground cover composition comprises a mix of grasses and forbs. The most dominant and common native grasses are *Austrostipa scabra* subsp. *falcata*, *Austrostipa bigeniculata*, *Panicum effusum*, *Rytidosperma setaceum*, *Austrostipa aristiglumis*, *Austrostipa scabra*, *Rytidosperma caespitosum*, *Enteropogon acicularis*, *Aristida behriana*, *Aristida ramosa*, *Rytidosperma fulvum*, *Sporobolus caroli* and *Paspalidium constrictum.* A diversity of native forbs occurs in less disturbed sites, with the most common being *Urtica incisa*, *Einadia nutans* subsp. *nutans*, *Erodium crinitum*, *Calotis anthemoides*, *Sida corrugata*, *Hydrocotyle laxiflora*, *Vittadinia cuneata* var. *cuneata*, *Goodenia pusilliflora*, *Dianella revoluta* var. *revoluta* and *Lomandra multiflora*. Exotic grasses and forbs are more common in areas with higher levels of disturbance and modification, such as woodland and DNG remnants open to stock grazing. Common pasture grasses are dominant in grazed aeras, including *Avena fatua*, *Hordeum leporinum* and *Lolium ridgidum*. Other common weeds include *Sisymbrium officinale*, *Echium plantagineum*, *Malva parviflora*, *Erodium cicutarium* and *Trifolium arvense*.
Vegetation condition	Mod-good: Vegetation retained an intact and mature canopy with evidence of regeneration in most patches. Varying levels of *Callitris glaucophylla* were recorded with some patches developing a dense sub-canopy. Middle stratum varied in native species richness based off the cover of *Callitris glaucophylla* with higher middle stratum native richness being associated with lower levels of *C. glaucophylla.* Native species richness and cover varied based on grazing pressure and weed invasion. Poor: Vegetation retained an intact canopy, but the ground stratum recorded high levels of weed incursion. Patches often occurred as highly segregated linear patches of vegetation surrounded by agriculture, infrastructure or otherwise degraded land.

PCT 75 – YELLOW BOX – WHITE CYPRESS PINE GRASSY WOODLAND ON DEEP SANDY-LOAM ALLUVIAL SOILS OF THE EASTERN RIVERINA BIOREGION AND WESTERN NSW SOUTH WESTERN SLOPES BIOREGION	
	Derived: Vegetation assigned to derived condition displayed either a very sparse or absent canopy stratum. The understorey in this condition was >50% native and displayed diversity of grasses and forbs. The ground stratum typically displayed a similar species composition to that of the mod-good condition class, and often occurred in proximity to more intact patches. The ground layer was subject to grazing pressures from native animals, feral animals and livestock.



PCT 75_mod-good (Q200E)



PCT 75_mod-good (Q204E)



PCT 75_derived condition (Q205E)



PCT 75_derived condition (Q206E)

PCT 170 – Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones

The occurrence of this vegetation type within the proposal study area is illustrated in Figure 4.3 and Appendix B-5. A profile summary of PCT 170 – Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones is provided in Table B-2.35 and is photographically represented below.

Table B-2.35 Summary of PCT 170 – Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones

PCT 170 - CHENOPOD SANDPLAIN MALLEE WOODLAND/SHRUBLAND OF THE ARID AND SEMI-ARID (WARM) ZONES	
Vegetation formation	KF_CH11B Semi-arid Woodlands (Shrubby sub-formation)
Vegetation class	Sand Plain Mallee Woodlands
PCT percent cleared	41%
TEC	Select sections of this PCT are consistent with Plains mallee box woodland, a critically endangered ecological community listed under the EPBC Act. Vegetation within the TEC occurs as a tall open mallee that is dominated by *Eucalyptus dumosa* with a chenopod understorey.
Landscape position	This vegetation was recorded in the Murray Darling Depression (South Olary Plain subregion) and Riverina (Lachlan and Murrumbidgee subregions) IBRA bioregion in swales at slightly lower elevations to east-west linear sand dunes. Across the proposal study area, this vegetation occurred in aeolian dunefields and on sandplains.
PCT justification	Soils which support this community are sandy loam with a higher clay content than that of the surrounding east-west linear sand dunes and deep sands where PCT 171 and PCT 172 dominate respectively. Vegetation assigned to this PCT occurred as a mallee woodland dominated by a variety of Eucalypt species. The floristics within this community were variable and heavily dependent on soil type, fire history and fire intervals. The landscape position, absence of very sandy soils, dominance of chenopods and absence of *Triodia scariosa* var. *scariosa* defined this community in the field and distinguished it from PCT 171 and PCT 172. PCT 170 within the proposal study area has been classified as two variants; being 'Bull' and 'Whipstick'. These variants were used to distinguish between areas which either contained a mature or semi-mature canopy cohort due to past disturbances such as fire regimes and past tree clearing. Where these disturbances were higher the canopy cohort was generally younger and had not yet had time to form hollows (whipstick variant). Where these disturbances were less the canopy cohort was generally older and contained hollow bearing trees. A quantitative analysis was undertaken for this community using the BioNet Vegetation Classification PCT filter tool (EES Group, 2020). The IBRA region and subregion, community structure, dominant species in the canopy and shrub stratum were used as search criteria. PCT 170 returned the highest number of matches. The vegetation recorded was consistent with the floristics, geology, landscape position and scientific description of PCT 170.

PCT 170 - CHENOPOD SANDPLAIN MALLEE WOODLAND/SHRUBLAND OF THE ARID AND SEMI-ARID (WARM) ZONES	
Characteristic floristic composition and structure	
Species upper stratum (6–8 m)	A mixed canopy of mallee Eucalypt species including *Eucalyptus dumosa, Eucalyptus oleosa, Eucalyptus socialis, Eucalyptus leptophylla* and *Eucalyptus gracilis.* Community also contained a sparse sub-canopy of *Pittosporum angustifolium, Acacia oswaldii, Myoporum platycarpum* subsp. *platycarpum* as well as the occasional *Santalum acuminatum* and *Santalum murrayanum.*
Species middle stratum (<2 m)	Subshrub species included *Chenopodium desertorum* subsp. *desertorum, Chenopodium desertorum* subsp. *rectum, Dissocarpus paradoxus, Enchylaena tomentosa, Maireana appressa, Maireana brevifolia, Maireana pentatropis, Maireana pyramidata, Maireana triptera, Olearia muelleri, Olearia pimeleoides, Rhagodia spinescens* and *Rhagodia ulicina.* Larger shrub species included *Acacia burkittii, Acacia colletioides, Acacia nyssophylla, Dodonaea viscosa* subsp. *angustissima*, *Grevillea huegelii, Eremophila sturtii, Exocarpos aphyllus, Senna artemisioides* subsp. x *coriacea, Senna artemisioides* subsp. x *petiolaris* and *Eremophila glabra.*
Species ground stratum (<1 m)	*Brachyscome lineariloba, Calandrinia eremaea, Dysphania cristata, Erodium crinitum, Enneapogon gracilis, Goodenia pinnatifida, Oxalis perennans, Ptilotus seminudus, Rhodanthe pygmaea, Roepera apiculata, Roepera ovata, Maireana sclerolaenoides, Sclerolaena diacantha and Sclerolaena obliquicuspis.* Exotic species included *Brassica tournefortii*, , Medicago laciniata*, Medicago minima*, Psilocaulon granulicaule** and *Sisymbrium erysimoides*.*
Vegetation condition	Mod-good_Bull: Vegetation assigned to mod-good_bull displayed larger stem classes and contained hollows. All areas recorded were subject to varying degrees of grazing with some areas displaying a less diverse mid and understorey due to intense grazing pressures Mod-good_Whip: Vegetation assigned to mod-good_whip generally displayed smaller stem classes and did not contain hollows. All areas recorded were subject to varying degrees of grazing with some areas displaying a less diverse mid and understorey due to intense grazing pressures. Derived: Vegetation assigned to derived condition lacking a canopy stratum. The understorey in this condition was >50% native and was recorded in areas adjacent to modified whip or modified bull PCT 170.



PCT 170_mod-good_whip (Q126E)



PCT 170_mod-good_whip (Q126E)



PCT 170_mod-good_whip (Q145E)



PCT 170_mod-good_whip



PCT 170_mod-good_bull (Q156E)



PCT 170_mod-good_bull – example of bull type mallee tree with hollows



PCT 170_mod-good_bull in the South Olary Plain subregion



PCT 170_mod-good_bull in the South Olary Plain subregion



PCT 170_mod-good_bull on H035



PCT 170_mod-good_bull on H035



PCT 170_derived (Q128E)



PCT 170_derived (Q128E)

PCT 171 – Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion

The occurrence of this vegetation type within the proposal study area is illustrated in Figure 4.3 and Appendix B-5. A profile summary of PCT 171 – Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion is provided in Table B-2.36 and is photographically represented below.

Table B-2.36 Summary of PCT 171 – Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion

PCT 171 – SPINIFEX LINEAR DUNE MALLEE MAINLY OF THE MURRAY DARLING DEPRESSION BIOREGION	
Vegetation formation	KF_CH11B Semi-arid Woodlands (Shrubby sub-formation)
Vegetation class	Dune Mallee Woodlands
PCT percent cleared	19%
TEC	Not listed
Landscape position	This vegetation was recorded in the Murray Darling Depression IBRA bioregion (South Olary Plain subregion) on east-west linear sand dunes.

PCT 171 – SPINIFEX LINEAR DUNE MALLEE MAINLY OF THE MURRAY DARLING DEPRESSION BIOREGION	
PCT justification	This community occurred on calcareous brown to red sandy soils that formed linear east to west sand dunes. PCT 171 is characterised by the east-west linear sand dunes and a groundcover dominated by *Triodia scariosa* var. *scariosa*. As clay content in the soil increases between the linear sand dunes swales occur which support another mallee community; being PCT 170. It is at these locations were *Triodia scariosa* var. *scariosa* drops out and is replaced with an understorey of chenopod species which prefer a higher clay content. PCT 171 within the proposal study area has been classified as two variants; being 'Bull' and 'Whipstick'. These variants were used to distinguish between areas which either contained a mature or semi-mature canopy cohort due to past disturbances such as fire regimes and past tree clearing. Where these disturbances were higher the canopy cohort was generally younger and had not yet had time to form hollows (whipstick variant). Where these disturbances were less the canopy cohort was generally older and contained hollow bearing trees. A quantitative analysis was undertaken for this community using the BioNet Vegetation Classification PCT filter tool (EES Group, 2020). The vegetation formation, vegetation class, IBRA region and subregion, dominant species in the canopy and ground stratum were used as search criteria. PCT 171 returned the highest number of matches. The vegetation recorded within the proposal study area was considered to be consistent with the floristics, geology, landscape position and scientific description of PCT 171.
Characteristic floristic composition and structure	
Species upper stratum (5–8 m)	A mixed canopy of mallee Eucalypt species including *Eucalyptus dumosa, Eucalyptus gracilis Eucalyptus oleosa, Eucalyptus socialis, Eucalyptus leptophylla* and *Eucalyptus costata.* Community also contained a sparse sub-canopy of *Pittosporum angustifolium, Acacia oswaldii, Myoporum platycarpum* subsp. *platycarpum* as well as the occasional *Callitris verrucosa, Santalum acuminatum* and *Santalum murrayanum.*
Species middle stratum (<2 m)	Subshrub species included *Atriplex stipitata* subsp. *miscella, Atriplex stipata* subsp. *stipata, Bossiaea walker, Beyeria opaca, Chenopodium desertorum* subsp. *desertorum, Chenopodium desertorum* subsp. *rectum, Chenopodium curvispicatum, Dissocarpus paradoxus, Enchylaena tomentosa, Eutaxia microphylla, Halgania cyanea, Maireana pentatropis, Maireana triptera, Olearia muelleri, Olearia pimeleoides, Cryptandra magniflora, Rhagodia ulicina, Templetonia sulcata* and *Westringia rigida.* Larger shrub species included *Acacia burkittii, Acacia colletioides, Acacia halliana, Acacia ligulata, Acacia nyssophylla, Acacia wilhelmiana, Acacia sclerophylla* subsp. *sclerophylla, Dodonaea viscosa* subsp. *angustissima*, *Grevillea huegelii, Eremophila sturtii, Exocarpos aphyllus, Senna artemisioides* subsp. x *coriacea, Senna artemisioides* subsp. x *petiolaris* and *Eremophila glabra.*
Species ground stratum (<1 m)	*Triodia scariosa* subsp. *scariosa* was the most characteristic understorey species present in PCT 171. The understorey was also comprised of a range of herbs and forbs including *Ajuga australis, Brachyscome lineariloba, Calandrinia eremaea, Calotis hispidula, Daucus glochidiatus, Dysphania cristata, Erodium crinitum, Omphalolappula concava, Podolepis capillaris, Lomandra effusa, Lomandra leucocephala* subsp. *leucocephala, Sclerolaena diacantha, Sclerolaena parviflora, Stenopetalum lineare, Stenopetalum sphaerocarpum* and *Thysanotus bauera.*

PCT 171 – SPINIFEX LINEAR DUNE MALLEE MAINLY OF THE MURRAY DARLING DEPRESSION BIOREGION	
Vegetation condition	Mod-good_whip: Vegetation assigned to mod-good_whip generally displayed small stem classes and an absence of hollows. All areas recorded were subject to varying degrees of grazing with some areas displaying a less diverse mid and understorey due to intense grazing pressures. Derived: Modification of vegetation has led to the elimination of canopy species. Typically recorded in close proximity to PCT 171 with similar ground stratum composition to that of the parent PCT.



PCT 171_mod-good_whip (Q131E)



PCT 171_mod-good_whip (Q131E)



PCT 171_derived (Q144E)



PCT 171_derived (Q144E)

PCT 172 – Deep sand mallee of irregular dunefields of the semi-arid (warm) zone

The occurrence of this vegetation type within the proposal study area is illustrated in Figure 4.3 and Appendix B-5. A profile summary of PCT 172 – Deep sand mallee of irregular dunefields of the semi-arid (warm) zone is provided in Table B-2.37 and is photographically represented below.

Table B-2.37 Summary of PCT 172 – Deep sand mallee of irregular dunefields of the semi-arid (warm) zone

PCT 172 – DEEP SAND MALLEE OF IRREGULAR DUNEFIELDS OF THE SEMI-ARID (WARM) ZONE	
Vegetation formation	KF_CH11B Semi-arid Woodlands (Shrubby sub-formation)
Vegetation class	Dune Mallee Woodlands
PCT percent cleared	1%
TEC	Not listed
Landscape position	This vegetation was recorded in the Murray Darling Depression (South Olary Plain subregion) IBRA bioregion on aeolian dunefields in areas of highest elevation east from Buronga to the western bank of the Murrumbidgee River. PCT 172 formed a mosaic with PCT 170 on these parabolic dunefields where PCT 170 was recorded in the lower swales and PCT 172 was recorded in the areas of highest elevation. This vegetation graded into PCT 171 as sand masses became east-west linear sand dunes in areas of slightly lower elevation.
PCT justification	This community occurred on deep calcareous red sandy soils which formed large sand sheet masses. This community occurred as a stunted mallee shrubland largely occupied by whipstick mallee. These sand dunes support a variety of mallee specialist biota which are threatened or considered rare in NSW including *Santalum murrayanum.* Mallee Eucalypt species recorded in PCT 170 and PCT 171 also occur in PCT 172. Differences in canopy diversity include the higher dominance of *Eucalyptus costata.* A sparse to moderately dense shrub stratum was characteristic of PCT 172 within the proposal study area and contained various Acacia, Dodonaea, Eremophila and Myoporum species. The understorey was dominated by *Triodia scariosa* subsp. *scariosa* and contained a large range of forbs, herbs and grasses recorded, particularly after rainfall. A quantitative analysis was undertaken for this community using the BioNet Vegetation Classification PCT filter tool (EES Group, 2020). The vegetation formation, vegetation class, IBRA region and subregion, dominant species in all stratums were used as search criteria. PCT 172 had the highest number of matches. Based on floristic and geological characteristics, this vegetation type is considered consistent with the scientific description and distribution information outlined for PCT 172.
Characteristic floristic composition and structure	
Species upper stratum (3–6 m)	A mixed canopy of mallee Eucalypt species including *Eucalyptus dumosa, Eucalyptus gracilis Eucalyptus oleosa, Eucalyptus socialis, Eucalyptus leptophylla* and *Eucalyptus costata. Codonocarpus cotinifolius* occurred occasionally within the community. Other species which formed a sparse sub-canopy included *Pittosporum angustifolium, Acacia oswaldii, Callitris verrucosa* and the occasional *Santalum acuminatum* and *Santalum murrayanum*.

PCT 172 – DEEP SAND MALLEE OF IRREGULAR DUNEFIELDS OF THE SEMI-ARID (WARM) ZONE	
Species middle stratum (<2 m)	*Acacia colletioides, Acacia ligulata, Acacia rigens, Acacia wilhelmiana, Beyeria opaca, Daviesia arenaria, Dodonaea viscosa* subsp. *angustissima, Eremophila glabra, Grevillea huegelii, Myoporum platycarpum subsp. platycarpum, Chenopodium desertorum* subsp. *desertorum* and *Halgania cyanea.*
Species ground stratum (<1 m)	*Triodia scariosa* subsp. *scariosa* was the most characteristic understorey species present in PCT 172. The understorey was also comprised of a diverse range of herbs and forbs including *Actinobole uliginosum, Brachycome lineariloba, Calandrinia eremaea, Crassula colorata subsp. acuminatum, Calotis hispidula, Daucus glochidiatus, Dissocarpus paradoxus, Dysphania cristata, Goodenia pinnatifida, Haloragis odontocarpa, Isoetopsis graminifolia, Podolepis capillaris, Rhodanthe pygmaea, Roepera apiculata,* and *Sclerolaena parviflora.* Exotic species included *Brassica tournefortii*, Erodium cicutarium*, Hordeum glaucum*, Hypochaeris glabra*, Medicago minima*, Schismus barbatus** and *Sisymbrium erysimoides*.*
Vegetation condition	Mod-good_whip: Vegetation assigned to mod-good_whip generally displayed small stem classes and an absence of hollows. All areas recorded were either subject to varying degrees of grazing and/or fire regimes. This community generally contained a diverse array of species however its structure had been largely modified.



PCT 172_mod-good_whip (Q129E)



PCT 172_mod-good_whip (Q129E)



PCT 172_mod-good_whip (Q133E)



PCT 172_mod-good_whip (Q133E)



PCT 172_mod-good_whip in the South Olary Plain subregion



PCT 172_mod-good_whip in the South Olary Plain subregion

PCT 319 – Tumbledown Red Gum – White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion

The occurrence of this vegetation type within the proposal study area is illustrated in Figure 4.3 and Appendix B-5. A profile summary of PCT 319 – Tumbledown Red Gum – White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion is provided in Table B-2.38 and is photographically represented below.

Table B-2.38 Summary of PCT 319 – Tumbledown Red Gum – White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion.

PCT 319 – TUMBLEDOWN RED GUM – WHITE CYPRESS PINE HILL WOODLAND IN THE SOUTHERN PART OF THE NSW SOUTH WESTERN SLOPES BIOREGION.	
Vegetation formation	KF_CH11B Semi-arid Woodlands (Shrubby sub-formation)
Vegetation class	Inland Rocky Hill Woodlands
PCT percent cleared	60%
TEC	Not listed
Landscape position	This PCT was recorded in the NSW South Western Slopes (Inland Slopes subregion) IBRA bioregion in one location on the top of a rocky granite hill south of Wagga Wagga.
PCT justification	Vegetation assigned to PCT 319 occurs on rocky granite hills as mid-high woodland. Vegetation is dominated by *Eucalyptus dealbata* and *Callitris glaucophylla*. The shrub layer is typically sparse with high levels of weed invasion in the ground layer particularly in grazed sites. A quantitative analysis was undertaken for this community using the BioNet Vegetation Classification PCT filter tool (EES Group, 2020). The IBRA region and subregion, vegetation formation, vegetation class, community structure and dominant canopy species were used as search criteria. Mod-good condition vegetation was considered most representative of this community and was used to inform this analysis. Several PCTs were returned with the highest number of matches including PCT 186, 319, 319 and 329. PCT 319 was selected based on the clear dominance of *Eucalyptus dealbata*, and the presence other characteristic species in the shrub and ground strata.

PCT 319 – TUMBLEDOWN RED GUM – WHITE CYPRESS PINE HILL WOODLAND IN THE SOUTHERN PART OF THE NSW SOUTH WESTERN SLOPES BIOREGION.	
Characteristic floristic composition and structure	
Species upper stratum (8–15 m)	Dominated by *Eucalyptus dealbata;* other species include *Callitris glaucophylla* and *Eucalyptus blakelyi*. *Eucalyptus dealbata* and *E. blakelyi* occur as a hybrid in site where both species are present.
Species middle stratum (<2 m)	A mid dense to dense shrub strata occurs with several native shrubs, the most common being *Hibbertia obtusifolia* and *Melichrus urceolatus.*
Species ground stratum (<1 m)	The ground cover is typically mid-dense and comprises native grasses and forbs. Dominant grasses are *Austrostipa scabra* subsp. *falcata, Aristida ramosa, Austrostipa densiflora, Microlaena stipoides, Panicum decompositum, Rytidosperma erianthum, Rytidosperma caespitosum* and *Panicum effusum*. Common and dominant forbs include *Gonocarpus teucrioides, Stypandra glauca, Crassula sieberiana, Geranium homeanum, Hydrocotyle laxiflora, Arthropodium minus, Geranium homeanum, Hydrocotyle laxiflora* and *Oxalis perennans*. Exotic grasses are a major component of this unit in locations modified by thinning, cultivation, and grazing. Dominance of weeds varies depending on season, weather and land use. Common weeds include *Hordeum leporinum**, *Trifolium arvense**, *Lolium perenne**, *Medicago minima**, *Oxalis pes-caprae**, *Rumex acetosella**, *Schismus barbatus** and *Arctotheca calendula**.
Vegetation condition	Mod-good: Vegetation recorded to be in this condition had an intact canopy and middle stratum. The ground stratum was subject to grazing pressures and weed invasion. Poor: Vegetation recorded to be in this condition has an intact canopy. However, the middle stratum was non-existent, and the ground layer was subject to high levels of weed invasion. Derived: Vegetation assigned to derived condition displayed either a very sparse or absent canopy stratum. The understorey in this condition was >50% native and displayed diversity of grasses and forbs similar to the parent PCT.



PCT 319_mod-good (Q201E)



PCT 319_mod-good on a rocky hill near Wagga Wagga.



PCT 319_poor (Q240E)



PCT 319_poor (Q240E)



PCT 319_derived (Q244E)



PCT 319_derived (Q244E)

APPENDIX B-3
BAM vegetation integrity plot survey location details

Table B-3.1 Location and orientation of vegetation integrity plots

PLOT	VEGETATION TYPE AND ZONE	ZONE	EASTING	NORTHING	ORIENTATION
Q1E	PCT 11 – River Red Gum – Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zones (mainly Riverina bioregion and Murray Darling Depression Bioregion) (Moderate to good)	55	173781	6154840	325
Q2E	PCT 170 – Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones (moderate to good – bull)	54	715799	6164329	262
Q3E	PCT 170 – Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones (moderate to good – whipstick)	54	720083	6160361	123
Q4E	PCT 23 – Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones (moderate to good)	54	710914	6168432	288
Q5E	PCT 163 – Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones (moderate to good)	54	704677	6174087	191
Q6E	PCT 24 – Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains (moderate to good)	54	711634	6167869	171
Q7E	PCT 170 – Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones (moderate to good - whipstick)	54	696652	6176564	290
Q8E	PCT 23 – Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones (moderate to good)	54	693337	6177152	70
Q9E	PCT 171 – Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion (derived)	54	684109	6178831	272
Q10E	PCT 170 – Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones (moderate to good - bull)	54	701800	6175698	55
Q11E	PCT 171 – Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion (moderate to good – whipstick)	54	695188	6176730	210
Q12E	PCT 22 – Semi-arid shrubby Buloke – Slender Cypress Pine woodland, far south-western NSW (moderate to good)	54	664750	6179690	63
Q13E	PCT 22 – Semi-arid shrubby Buloke – Slender Cypress Pine woodland, far south-western NSW (moderate to good)	54	669746	6179934	235
Q14E	PCT 172 – Deep sand mallee of irregular dunefields of the semi-arid (warm) zone (moderate to good – whipstick)	54	670404	6179954	85
Q15E	PCT 22 – Semi-arid shrubby Buloke – Slender Cypress Pine woodland, far south-western NSW (moderate to good)	54	668334	6179812	0

PLOT	VEGETATION TYPE AND ZONE	ZONE	EASTING	NORTHING	ORIENTATION
Q16E	PCT 170 – Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones (moderate to good - whipstick)	54	639080	6195723	140
Q17E	PCT 171 – Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion (moderate to good – whipstick)	54	637568	6197791	170
Q18E	PCT 143 – Narrow-leaved Hopbush – Scrub Turpentine – Senna shrubland on semi-arid and arid sandplains and dunes (moderate to good)	54	655676	6180936	265
Q19E	PCT 170 – Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones (moderate to good - whipstick)	54	650497	6181719	250
Q20E	PCT 22 – Semi-arid shrubby Buloke – Slender Cypress Pine woodland, far south-western NSW (moderate to good)	54	663901	6179704	219
Q21E	PCT 172 – Deep sand mallee of irregular dunefields of the semi-arid (warm) zone (moderate to good – whipstick)	54	662719	6179996	255
Q22E	PCT 171 – Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion (moderate to good – whipstick)	54	643393	6190002	320
Q23E	PCT 8 – River Red Gum – Warrego Grass – Couch Grass riparian tall woodland wetland of the semi-arid (warm) climate zone (Riverina Bioregion and Murray Darling Depression Bioregion) (moderate to good)	54	722823	6158359	95
Q24E	PCT 170 – Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones (moderate to good – bull)	54	720187	6160484	315
Q25E	PCT 58 – Black Oak – Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion (moderate to good)	54	716750	6163293	310
Q26E	PCT 15 – Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (moderate to good)	54	729525	6158585	265
Q27E	PCT 26 – Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion (moderate to good)	55	351714	6141954	70
Q28E	PCT 26 – Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion (moderate to good)	55	359821	6141977	95
Q29E	PCT 157 – Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion (moderate to good)	55	280412	6136352	280

PLOT	VEGETATION TYPE AND ZONE	ZONE	EASTING	NORTHING	ORIENTATION
Q30E	PCT 164 – Cotton Bush open shrubland of the semi-arid (warm) zone (moderate to good)	55	240540	6139680	260
Q31E	PCT 75 – Yellow Box – White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion	55	465685	6129755	172
Q32E	PCT 76 – Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions (moderate to good)	55	484788	6118145	350
Q33E	Miscellaneous ecosystem – native plantings	55	534265	6104409	279
Q34E	PCT 80 – Western Grey Box – White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion (moderate to good)	55	484778	6104055	122
Q35E	PCT 164 – Cotton Bush open shrubland of the semi-arid (warm) zone (moderate to good)	54	762503	6144801	256
Q36E	PCT 58 – Black Oak – Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion (moderate to good)	54	757802	6144617	75
Q37E	PCT 17 – Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (moderate to good)	54	749367	6144974	95
Q38E	PCT 23 – Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones (moderate to good)	54	742521	6146161	273
Q39E	PCT 23 – Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones (Derived)	54	742252	6146166	275
Q40E	PCT 28 – White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone (moderate to good)	55	311022	6145281	88
Q41E	PCT 15 – Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (Derived)	55	320024	6145117	271
Q42E	PCT 163 – Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones (moderate to good)	55	325223	6144122	96
Q43E	PCT 58 – Black Oak – Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion (moderate to good)	54	622057	6218664	322

PLOT	VEGETATION TYPE AND ZONE	ZONE	EASTING	NORTHING	ORIENTATION
Q44E	PCT 172 – Deep sand mallee of irregular dunefields of the semi-arid (warm) zone (moderate to good – whipstick)	54	622711	6217712	143
Q45E	PCT 172 – Deep sand mallee of irregular dunefields of the semi-arid (warm) zone (moderate to good – whipstick)	54	623855	6216220	147
Q46E	PCT 170 – Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones (moderate to good – whipstick)	54	625265	6216263	103
Q47E	PCT 170 – Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones (moderate to good – whipstick)	54	626580	6212626	0
Q48E	PCT 157 – Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion (moderate to good)	55	238124	6139916	195
Q49E	PCT 157 – Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion (moderate to good)	55	239595	6139805	185
Q50E	PCT 157 – Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion (moderate to good)	55	242584	6139628	85
Q51E	PCT 157 – Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion (poor/potential Cat1) – does not fall within Cat 1 layer	55	244291	6139522	72
Q52E	PCT 164 – Cotton Bush open shrubland of the semi-arid (warm) zone (moderate to good)	55	246304	6139303	126
Q53E	PCT 157 – Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion (poor)	55	249314	6138995	82
Q54E	PCT 157 – Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion (poor)	55	250000	6139013	110
Q55E	PCT 157 – Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion (moderate to good)	55	252221	6138721	78
Q56E	PCT 164 – Cotton Bush open shrubland of the semi-arid (warm) zone (moderate to good)	55	254642	6138501	282
Q57E	PCT 163 – Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones (moderate to good)	55	256785	6138314	88
Q58E	PCT 58 – Black Oak – Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion (poor)	55	257905	6138239	74

PLOT	VEGETATION TYPE AND ZONE	ZONE	EASTING	NORTHING	ORIENTATION
Q59E	PCT 58 – Black Oak – Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion (Derived)	55	258240	6138182	82
Q60E	PCT 58 – Black Oak – Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion (poor)	55	258926	6138114	266
Q61E	PCT 163 – Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones (moderate to good)	55	260506	6138094	75
Q62E	PCT 163 – Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones (moderate to good)	54	772790	6141002	255
Q63E	PCT 17 – Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (moderate to good)	54	770489	6142037	110
Q64E	PCT 164 – Cotton Bush open shrubland of the semi-arid (warm) zone (moderate to good)	54	769895	6142382	296
Q65E	PCT 17 – Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (moderate to good)	54	767599	6143935	295
Q66E	PCT 163 – Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones (moderate to good)	54	766549	6144651	115
Q67E	PCT 163 – Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones (moderate to good)	54	764629	6144880	254
Q68E	PCT 157 – Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion (moderate to good)	55	276255	6136731	245
Q69E	PCT 163 – Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones (moderate to good)	55	279493	6136599	268
Q70E	PCT 24 – Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains (moderate to good)	55	277682	6136516	82
Q71E	PCT 24 – Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains (moderate to good)	55	277076	6136674	10
Q72E	PCT 157 – Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion (moderate to good)	55	282210	6136391	35
Q73E	PCT 24 – Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains (moderate to good)	55	281917	6136172	245

PLOT	VEGETATION TYPE AND ZONE	ZONE	EASTING	NORTHING	ORIENTATION
Q74E	PCT 17 – Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (moderate to good)	55	327171	6143802	260
Q75E	PCT 160 – Nitre Goosefoot shrubland wetland on clays of the inland floodplains (moderate to good)	55	324597	6144210	270
Q76E	PCT 160 – Nitre Goosefoot shrubland wetland on clays of the inland floodplains (moderate to good)	55	324242	6144269	32
Q77E	PCT 58 – Black Oak – Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion (Derived)	55	312014	6145255	262
Q78E	PCT 164 – Cotton Bush open shrubland of the semi-arid (warm) zone (poor)	55	333729	6142531	86
Q79E	PCT 44 – Forb-rich Speargrass – Windmill Grass – White Top grasslands of the Riverina Bioregion (Moderate to good)	55	334601	6142391	103
Q80E	PCT 216 – Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion (poor)	55	335257	6142238	35
Q81E	PCT 46 – Curly windmill Grass – speargrass – wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion (moderate to good)	55	339713	6142004	78
Q82E	PCT 160 – Nitre Goosefoot shrubland wetland on clays of the inland floodplains (poor)	55	347114	6142015	170
Q83E	PCT 164 – Cotton Bush open shrubland of the semi-arid (warm) zone (moderate to good)	55	293654	6144962	50
Q84E	PCT 160 – Nitre Goosefoot shrubland wetland on clays of the inland floodplains (poor)	55	297209	6146203	84
Q85E	PCT 15 – Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (Derived)	55	316332	6145228	263
Q86E	PCT 44 – Forb-rich Speargrass – Windmill Grass – White Top grasslands of the Riverina Bioregion (Moderate to good)	55	313003	6145252	81
Q87E	PCT 15 – Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (Moderate to good)	55	286832	6139894	216
Q88E	PCT 163 – Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones (Moderate to good)	55	288357	6141046	68
Q89E	PCT 267 – White Box – White Cypress Pine – Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion (moderate to good)	55	511665	6104938	180

PLOT	VEGETATION TYPE AND ZONE	ZONE	EASTING	NORTHING	ORIENTATION
Q90E	Miscellaneous ecosystem – native plantings	55	534482	6104386	100
Q91E	PCT 23 – Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones (Derived)	54	761508	6144774	248
Q92E	PCT 23 – Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones (Derived)	54	759926	6144678	260
Q93E	PCT 58 – Black Oak – Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion (Moderate to good)	54	759032	6144664	76
Q94E	PCT 23 – Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones (Derived)	54	756689	6144554	76
Q95E	PCT 160 – Nitre Goosefoot shrubland wetland on clays of the inland floodplains (moderate to good)	55	359086	6142073	260
Q96E	PCT 26 – Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion (poor)	55	359608	6142074	86
Q97E	PCT 26 – Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion (poor)	55	362601	6142069	70
Q98E	PCT 26 – Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion (moderate to good)	55	363715	6142105	80
Q99E	PCT 11 – River Red Gum – Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (moderate to good)	55	365767	6142055	295
Q100E	PCT 26 – Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion (derived)	55	365974	6142091	78
Q101E	PCT 28 – White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone (poor)	55	367807	6142094	74
Q102E	PCT 26 – Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion (derived)	55	369896	6142053	88
Q103E	PCT 26 – Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion (derived)	55	370831	6142044	67

PLOT	VEGETATION TYPE AND ZONE	ZONE	EASTING	NORTHING	ORIENTATION
Q104E	PCT 11 – River Red Gum – Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (Moderate to good)	55	403473	6109183	356
Q105E	Cat 1	55	403715	6109103	165
Q106E	PCT 5 – River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion (poor)	55	403345	6109671	125
Q107E	PCT 216 – Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion (poor)	55	392497	6119961	206
Q108E	PCT 216 – Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion (poor)	55	392814	6121668	123
Q109E	PCT 26 – Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion (derived)	55	393543	6121287	190
Q110E	PCT 75 – Yellow Box – White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion (moderate to good)	55	482968	6103828	60
Q111E	PCT 75 – Yellow Box – White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion (moderate to good)	55	484069	6104147	90
Q112E	PCT 5 – River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion (moderate to good)	55	494367	6102704	90
Q113E	PCT 110 – Western Grey Box – Cypress Pine shrubby woodland on stony footslopes in the NSW South Western Slopes Bioregion and Riverina Bioregion (Moderate to good)	55	528259	6102532	60
Q114E	PCT 319 – Tumbledown Red Gum – White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion (moderate to good)	55	528515	6102520	75
Q115E	PCT 170 – Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones (moderate to good - bull)	54	703247	6175415	20

PLOT	VEGETATION TYPE AND ZONE	ZONE	EASTING	NORTHING	ORIENTATION
Q116E	PCT 170 – Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones (moderate to good – bull)	54	701895	6175719	95
Q117E	PCT 171 – Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion (moderate to good – whipstick)	54	689529	6177902	342
Q118E	PCT 271 – Spotted Fuchsia shrubland wetland in drainage depressions on inland plains (moderate to good)	54	684308	6179070	260
Q119E	PCT 199 – Hooked Needlewood – Needlewood – Mulga – Turpentine Bush open shrubland of the semi-arid and arid plains (Moderate to good)	54	669597	6180014	254
Q120E	PCT 170 – Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones (moderate to good - bull)	54	664531	6179720	260
Q121E	PCT 171 – Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion (moderate to good – whipstick)	54	662310	6180025	84
Q122E	PCT 23 – Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones (moderate to good)	54	742111	6146113	346
Q123E	PCT 58 – Black Oak – Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion (moderate to good)	54	744362	6146274	88
Q124E	PCT 58 – Black Oak – Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion (moderate to good)	54	750129	6144570	54
Q125E	PCT 58 – Black Oak – Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion (moderate to good)	54	626809	6212256	70
Q126E	PCT 170 – Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones (moderate to good - whipstick)	54	629880	6208157	76
Q127E	PCT 143 – Narrow-leaved Hopbush – Scrub Turpentine – Senna shrubland on semi-arid and arid sandplains and dunes (moderate to good)	54	631459	6206095	
Q128E	PCT 170 – Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones (derived)	54	631942	6205410	55
Q129E	PCT 172 – Deep sand mallee of irregular dunefields of the semi-arid (warm) zone (moderate to good – whipstick)	54	633456	6203418	80

PLOT	VEGETATION TYPE AND ZONE	ZONE	EASTING	NORTHING	ORIENTATION
Q130E	PCT 143 – Narrow-leaved Hopbush – Scrub Turpentine – Senna shrubland on semi-arid and arid sandplains and dunes (moderate to good)	54	638559	6196599	65
Q131E	PCT 171 – Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion (moderate to good – whipstick)	54	640710	6193755	32
Q132E	PCT 170 – Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones (derived)	54	644376	6188841	64
Q133E	PCT 172 – Deep sand mallee of irregular dunefields of the semi-arid (warm) zone (moderate to good – whipstick)	54	648706	6183167	47
Q134E	PCT 143 – Narrow-leaved Hopbush – Scrub Turpentine – Senna shrubland on semi-arid and arid sandplains and dunes (moderate to good)	54	654364	6181156	0
Q135E	PCT 22 – Semi-arid shrubby Buloke - Slender Cypress Pine woodland, far south-western NSW (moderate to good)	54	657023	6180816	15
Q136E	PCT 199 – Hooked Needlewood – Needlewood – Mulga – Turpentine Bush open shrubland of the semi-arid and arid plains (Moderate to good)	54	657772	6180704	324
Q137E	PCT 22 – Semi-arid shrubby Buloke – Slender Cypress Pine woodland, far south-western NSW (moderate to good)	54	663172	6179919	350
Q138E	PCT 22 – Semi-arid shrubby Buloke – Slender Cypress Pine woodland, far south-western NSW (moderate to good)	54	665104	6179711	115
Q139E	PCT 171 – Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion (moderate to good – whip)	54	664616	6179726	41
Q140E	PCT 22 – Semi-arid shrubby Buloke – Slender Cypress Pine woodland, far south-western NSW (moderate to good)	54	666263	6179803	0
Q141E	PCT 22 – Semi-arid shrubby Buloke – Slender Cypress Pine woodland, far south-western NSW (moderate to good)	54	671681	6180209	242
Q142E	PCT 23 – Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones (moderate to good)	54	677192	6180434	98
Q143E	PCT 143 – Narrow-leaved Hopbush – Scrub Turpentine – Senna shrubland on semi-arid and arid sandplains and dunes (moderate to good)	54	681551	6179424	30
Q144E	PCT 171 – Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion (derived)	54	683599	6178979	2
Q145E	PCT 170 – Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones (moderate to good – whipstick)	54	687292	6178360	46

PLOT	VEGETATION TYPE AND ZONE	ZONE	EASTING	NORTHING	ORIENTATION
Q146E	PCT 163 – Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones (moderate to good)	54	705174	6173649	60
Q147E	PCT 170 – Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones (moderate to good – bull)	54	706274	6172683	22
Q148E	PCT 163 – Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones (moderate to good)	54	711269	6168297	10
Q149E	PCT 24 – Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains (moderate to good)	54	711511	6168081	49
Q150E	PCT 163 – Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones (moderate to good)	54	711915	6167762	50
Q151E	PCT 163 – Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones (moderate to good)	54	712529	6167161	58
Q152E	PCT 163 – Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones (moderate to good)	54	712838	6166902	8
Q153E	PCT 15 – Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (moderate to good)	54	713468	6166445	53
Q154E	PCT 15 – Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (derived)	54	713498	6166357	135
Q155E	PCT 15 – Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (derived)	54	713588	6166220	32
Q156E	PCT 170 – Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones (moderate to good – bull)	54	714030	6165943	12
Q157E	PCT 170 – Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones (moderate to good – bull)	54	714356	6165700	256
Q158E	PCT 58 – Black Oak – Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion (moderate to good)	54	714764	6165378	202
Q159E	PCT 58 – Black Oak – Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion (moderate to good)	54	716119	6164021	14

PLOT	VEGETATION TYPE AND ZONE	ZONE	EASTING	NORTHING	ORIENTATION
Q160E	PCT 58 – Black Oak – Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion (moderate to good)	54	717098	6163196	256
Q161E	PCT 163 – Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones (moderate to good)	54	718502	6161939	92
Q162E	PCT 15 – Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (moderate to good)	54	739863	6146109	20
Q163E	PCT 15 – Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (moderate to good)	54	739767	6146039	230
Q164E	PCT 58 – Black Oak – Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion (moderate to good)	54	734922	6145797	266
Q165E	PCT 58 – Black Oak – Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion (moderate to good)	54	734999	6145852	169
Q166E	PCT 199 – Hooked Needlewood – Needlewood – Mulga – Turpentine Bush open shrubland of the semi-arid and arid plains (Moderate to good)	54	730788	6149534	170
Q167E	PCT 44 – Forb-rich Speargrass – Windmill Grass – White Top grasslands of the Riverina Bioregion (Moderate to good)	54	731470	6148653	124
Q168E	PCT 26 – Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion (moderate to good)	55	370739	6141059	322
Q169E	PCT 13 – Black Box – Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (moderate to good)	55	370870	6140849	184
Q170E	PCT 28 – White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone (poor)	55	371291	6139581	100
Q171E	PCT 26 – Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion (moderate to good)	55	370999	6140406	340
Q172E	PCT 13 – Black Box – Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (moderate to good)	55	370918	6140699	32

PLOT	VEGETATION TYPE AND ZONE	ZONE	EASTING	NORTHING	ORIENTATION
Q173E	PCT 13 – Black Box – Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (moderate to good)	55	371624	6139261	75
Q174E	PCT 26 – Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion (derived)	55	372398	6138251	285
Q175E	PCT 26 – Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion (moderate to good)	55	373589	6136677	63
Q176E	PCT 13 – Black Box – Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (moderate to good)	55	376391	6133060	106
Q177E	PCT 216 – Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion (poor)	55	376266	6133115	282
Q178E	PCT 46 – Curly windmill Grass – speargrass – wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion (moderate to good)	55	375766	6133764	168
Q179E	PCT 46 – Curly windmill Grass – speargrass – wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion (moderate to good)	55	376684	6132583	332
Q180E	PCT 28 – White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone (poor)	55	377037	6132022	180
Q181E	PCT 26 – Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion (poor)	55	380475	6127499	298
Q182E	PCT 46 – Curly windmill Grass – speargrass – wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion (moderate to good)	55	381280	6126491	114
Q183E	PCT 26 – Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion (poor)	55	381872	6125798	340
Q184E	PCT 80 – Western Grey Box – White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion (moderate to good)	55	444121	6100833	65
Q185E	PCT 75 – Yellow Box – White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion (poor)	55	441644	6101704	182

PLOT	VEGETATION TYPE AND ZONE	ZONE	EASTING	NORTHING	ORIENTATION
Q186E	PCT 75 – Yellow Box – White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion (poor)	55	440895	6101908	265
Q187E	PCT 75 – Yellow Box – White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion (poor)	55	439673	6102254	282
Q188E	PCT 75 – Yellow Box – White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion (moderate to good)	55	438818	6102514	272
Q189E	PCT 44 – Forb-rich Speargrass – Windmill Grass – White Top grasslands of the Riverina Bioregion (Moderate to good)	55	434601	6103729	271
Q190E	PCT 45 – Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion (moderate to good)	55	408260	6107393	42
Q191E	PCT 46 – Curly windmill Grass – speargrass – wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion (moderate to good)	55	408768	6107569	36
Q192E	PCT 17 – Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (moderate to good)	55	382800	6124468	178
Q193E	PCT 45 – Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion (moderate to good)	55	383092	6124002	270
Q194E	PCT 47 – Swamp grassland wetland of the Riverine Plain (moderate to good)	55	383602	6123437	48
Q195E	PCT 44 – Forb-rich Speargrass – Windmill Grass – White Top grasslands of the Riverina Bioregion (Moderate to good)	55	383800	6123224	28
Q196E	PCT 45 – Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion (moderate to good)	55	384603	6122142	81
Q197E	PCT 26 – Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion (poor)	55	388433	6119961	68
Q198E	PCT 5 – River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion (moderate to good)	55	403083	6110032	10

PLOT	VEGETATION TYPE AND ZONE	ZONE	EASTING	NORTHING	ORIENTATION
Q199E	PCT 7 – River Red Gum – Warrego Grass – herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion (moderate to good)	55	424808	6109243	197
Q200E	PCT 75 – Yellow Box – White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion (moderate to good)	55	467759	6099062	317
Q201E	PCT 319 – Tumbledown Red Gum – White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion (moderate to good)	55	528706	6102434	148
Q202E	PCT 277 – Blakely's Red Gum – Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion (poor)	55	532351	6104659	170
Q203E	PCT 80 – Western Grey Box – White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion (moderate to good)	55	476495	6100922	24
Q204E	PCT 75 – Yellow Box – White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion (moderate to good)	55	461871	6097102	250
Q205E	PCT 75 – Yellow Box – White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion (derived)	55	462005	6097105	8
Q206E	PCT 75 – Yellow Box – White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion (derived)	55	462294	6097155	340
Q207E	PCT 80 – Western Grey Box – White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion (moderate to good)	55	468471	6099472	262
Q208E	PCT 319 – Tumbledown Red Gum – White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion (derived)	55	513537	6105187	350
Q209E	PCT 160 – Nitre Goosefoot shrubland wetland on clays of the inland floodplains (moderate to good)	55	303876	6143442	265
Q210E	PCT 24 – Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains (moderate to good)	55	299542	6145964	275

PLOT	VEGETATION TYPE AND ZONE	ZONE	EASTING	NORTHING	ORIENTATION
Q211E	PCT 24 – Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains (moderate to good)	55	298958	6146047	232
Q212E	PCT 44 – Forb-rich Speargrass – Windmill Grass – White Top grasslands of the Riverina Bioregion (Moderate to good)	55	380169	6127957	242
Q213E	PCT 44 – Forb-rich Speargrass – Windmill Grass – White Top grasslands of the Riverina Bioregion (Moderate to good)	55	412804	6109146	62
Q214E	PCT 216 – Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion (poor)	55	415335	6110087	65
Q215E	PCT 216 – Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion (poor)	55	415001	6109984	65
Q216E	PCT 46 – Curly windmill Grass – speargrass – wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion (moderate to good)	55	409564	6107955	228
Q217E	PCT 46 – Curly windmill Grass – speargrass – wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion (moderate to good)	55	408764	6107621	232
Q218E	PCT 45 – Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion (moderate to good)	55	421375	6111422	196
Q219E	PCT 45 – Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion (moderate to good)	55	421968	6111057	152
Q220E	PCT 45 – Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion (moderate to good)	55	455402	6097619	93
Q221E	PCT 45 – Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion (moderate to good)	55	455176	6097696	82
Q222E	PCT 249 – River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW (derived)	55	451558	6098910	175
Q223E	PCT 249 – River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW (derived)	55	451387	6098887	247
Q224E	PCT 249 – River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW (moderate to good)	55	451021	6098860	22

PLOT	VEGETATION TYPE AND ZONE	ZONE	EASTING	NORTHING	ORIENTATION
Q225E	PCT 249 – River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW (moderate to good)	55	451576	6099663	136
Q226E	PCT 75 – Yellow Box – White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion (moderate to good)	55	446504	6100364	94
Q227E	PCT 80 – Western Grey Box – White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion (moderate to good)	55	468195	6099366	71
Q228E	PCT 80 – Western Grey Box – White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion (derived)	55	476393	6101006	21
Q229E	PCT 22 – Semi-arid shrubby Buloke – Slender Cypress Pine woodland, far south-western NSW (moderate to good)	54	731371	6148674	0
Q230E	PCT 80 – Western Grey Box – White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion (moderate to good)	55	476365	6100895	115
Q231E	PCT 76 – Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions	55	491877	6102971	7
Q232E	PCT 319 – Tumbledown Red Gum – White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion (moderate to good)	55	513624	6105157	24
Q233E	PCT 80 – Western Grey Box – White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion (poor)	55	513537	6105187	320
Q234E	PCT 5 – River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion (poor)	55	513537	6105187	330
Q235E	PCT 5 – River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion (poor)	55	733995	932544	30
Q236E	Unassigned	55			
QE	Unassigned	55			
Q238E	Unassigned	55			

PLOT	VEGETATION TYPE AND ZONE	ZONE	EASTING	NORTHING	ORIENTATION
Q239E	PCT 74 – Yellow Box – River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion (moderate to good)	55	471759	6099121	105
Q240E	PCT 319 – Tumbledown Red Gum – White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion (poor)	55	514123	6105238	337
Q241E	PCT 277 – Blakely's Red Gum – Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion (derived)	55	530067	6103792	150
Q242E	PCT 277 – Blakely's Red Gum – Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion (moderate to good)	55	530121	6103800	170
Q243E	PCT 319 – Tumbledown Red Gum – White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion (derived)	55	529935	6103680	235
Q244E	PCT 319 – Tumbledown Red Gum – White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion (derived)	55	529794	6103575	170
Q245E	PCT 110 – Western Grey Box – Cypress Pine shrubby woodland on stony footslopes in the NSW South Western Slopes Bioregion and Riverina bioregion (moderate to good)	55	528744	6102508	291
Q246E	PCT 319 – Tumbledown Red Gum – White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion (moderate to good)	55	529273	6102806	130

APPENDIX B-4
BAM vegetation integrity plot data

Q1E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	723402
PCT 11 - River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-aris (warm) climate zones (mainly Riverina bioregion and Murray Darling Depression Bioregion) (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6157906
Date: 10/02/2020			13	10	2	2	2	4	0	0	3	1		Orientation	325°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			37.1	**36.7**	28	4.4	3.3	1	0	0	**0.4**	0.2		**BAM Attributes 20x50m plot**	
Acacia stenophylla	3	2	TG		3									**Stem classes**	
Atriplex lindleyi	0.1	1	FG					0.1						**80+**	1
Cynodon dactylon	0.3	19	GG				0.3							**50-79**	0
Duma florulenta	4	12	SG			4								**30-49**	Yes
Eclipta platyglossa	0.3	8	FG					0.3						**20-29**	Yes
Eucalyptus camaldulensis	25	37	TG		25									**10-19**	Yes
Euphorbia dallachyana	0.5	10	FG					0.5						**5-9**	Yes
Goodenia heteromera	0.1	3	FG					0.1						**<5**	Yes
Medicago minima	0.1	1	EX								0.1			**Hollows**	0
Paspalidium jubiflorum	3	100	GG				3							**Length logs (m)**	115
Phyla canescens	0.2	3	HT									0.2			
Sclerolaena muricata var. muricata	0.4	13	SG			0.4								**BAM Attributes 1x1 plot (%)**	
Vicia sp.	0.1	1	EX								0.1			**Litter (%)**	26.2

Q2E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	715799
PCT 170 – Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones (moderate to good - bull)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6164329
Date: 10/02/20			12	8	1	5	0	2	0	0	4	0		Orientation	262°
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
			31.4	24.2	20	2.6	0	1.6	0	0	7.2	0		BAM Attributes 20x50m plot	
Atriplex pseudocampanulata	0.6	40	SG			0.6								Stem classes	
Brachyscome lineariloba	0.6	100	FG					0.6						80+	0
Eucalyptus dumosa	20	2	TG		20									50-79	0
Hordeum leporinum	6	260	EX								6			30-49	No
Maireana decalvans	1	14	SG			1								20-29	Yes
Maireana triptera	0.4	16	SG			0.4								10-19	Yes
Medicago minima	0.1	10	EX								0.1			5-9	No
Nitraria billardierei	0.5	1	SG			0.5								<5	No
Roepera apiculata	1	36	FG					1						Hollows	0
Schismus barbatus	1	170	EX								1			Length logs (m)	6
Sclerolaena muricata var. muricata	0.1	2	SG			0.1									
Tribulus terrestris	0.1	3	EX								0.1			BAM Attributes 1x1 plot (%)	
														Litter (%)	54

Q4E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	710914
PCT 23 – Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6168432
Date: 11/02/20			13	9	1	7	0	1	0	0	4	0		Orientation	288°
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
			20.2	17.5	12	5.2	0	0.3	0	0	2.7	0		BAM Attributes 20x50m plot	
Acacia melvillei	12	36	TG		12									Stem classes	
Hordeum leporinum	2	120	EX								2			80+	0
Maireana decalvans	0.3	3	SG			0.3								50-79	0
Maireana erioclada	0.1	2	SG			0.1								30-49	1
Maireana triptera	1	6	SG			1								20-29	No
Medicago minima	0.1	500	EX								0.1			10-19	Yes
Nitraria billardierei	2	4	SG			2								5-9	Yes
Rhagodia spinescens	1	7	SG			1								<5	Yes
Salsola australis	0.3	4	SG			0.3								Hollows	0
Schismus barbatus	0.4	20	EX								0.4			Length logs (m)	0
Sclerolaena divaricata	0.5	10	SG			0.5									
Sida cunninghamii	0.3	8	FG					0.3						BAM Attributes 1x1 plot (%)	
Tribulus terrestris	0.2	6	EX								0.2			Litter (%)	20.8

Q5E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	704677
PCT 163 – Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6174087
Date: 11/02/20			16	12	0	6	1	5	0	0	4	1		Orientation	191°
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
			37.7	34	0	32.3	1	0.7	0	0	3.7	0.4		BAM Attributes 20x50m plot	
Austrostipa sp.	1	50	GG				1							Stem classes	
Brachyscome lineariloba	0.3	50	FG					0.3						80+	0
Leontodon rhagadioloidea	0.1	1	EX								0.1			50-79	0
Maireana erioclada	0.1	2	SG			0.1								30-49	No
Maireana georgei	1	50	SG			1								20-29	No
Maireana triptera	0.5	20	SG			0.5								10-19	No
Medicago minima	3	200	EX								3			5-9	No
Nitraria billardierei	30	200	SG			30								<5	No
Opuntia elata	0.4	2	HT									0.4		Hollows	0
Oxalis perennans	0.1	1	FG					0.1						Length logs (m)	0
Roepera apiculata	0.1	10	FG					0.1							
Schismus barbatus	0.2	5	EX								0.2			BAM Attributes 1x1 plot (%)	
Sclerolaena diacantha	0.4	15	SG			0.4								Litter (%)	0
Sclerolaena obliquicuspis	0.3	2	SG			0.3									
Teucrium racemosum	0.1	30	FG					0.1							
Vittadinia sp.	0.1	1	FG					0.1							

Q6E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	711634
PCT 24 – Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6167869
Date: 11/02/20			15	13	0	3	3	6	1	0	2	0		Orientation	171°
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
			22.4	20.7	0	1.4	17.1	2	0.2	0	1.7	0		BAM Attributes 20x50m plot	
Alternanthera denticulata	0.1	1	FG					0.1						Stem classes	
Enneapogon avenaceus	2	16	GG				2							80+	0
Eragrostis australasica	15	140	GG				15							50-79	0
Euphorbia drummondii	0.8	28	FG					0.8						30-49	No
Goodenia willisiana	0.1	1	FG					0.1						20-29	No
Hordeum leporinum	0.7	190	EX								0.7			10-19	No
Maireana brevifolia	0.3	2	SG			0.3								5-9	No
Marsilea drummondii	0.2	5	EG						0.2					<5	No
Oxalis perennans	0.1	1	FG					0.1						Hollows	0
Poaceae sp.	0.1	2	GG				0.1							Length logs (m)	0
Schismus barbatus	1	200	EX								1				
Sclerolaena diacantha	0.9	28	SG			0.9								BAM Attributes 1x1 plot (%)	
Sclerolaena muricata var. muricata	0.2	1	SG			0.2								Litter (%)	15.6
Sida corrugata	0.3	4	FG					0.3							
Teucrium racemosum	0.6	18	FG					0.6							

Q7E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	696652
PCT 170 – Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones (moderate to good - whipstick)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6176564
Date: 13/02/20			14	14	3	8	1	2	0	0	0	0		Orientation	290°
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
			48.8	48.8	32	16.4	0.1	0.3	0	0	0	0		BAM Attributes 20x50m plot	
Austrostipa scabra subsp. falcata	0.1	2	GG				0.1							Stem classes	
Eremophila longifolia	0.2	1	SG			0.2								80+	0
Eucalyptus dumosa	6	4	TG		6									50-79	0
Eucalyptus gracilis	23	19	TG		23									30-49	No
Eucalyptus socialis	3	2	TG		3									20-29	Yes
Maireana pentatropis	0.8	18	SG			0.8								10-19	Yes
Maireana trichoptera	0.2	5	SG			0.2								5-9	Yes
Olearia muelleri	6	90	SG			6								<5	Yes
Roepera apiculata	0.2	10	FG					0.2						Hollows	0
Roepera aurantiaca	0.1	4	FG					0.1						Length logs (m)	43
Sclerolaena parviflora	0.1	1	SG			0.1									
Senna artemisioides subsp. x coriacea	8	9	SG			8								BAM Attributes 1x1 plot (%)	
Senna artemisioides subsp. x petiolaris	1	1	SG			1								Litter (%)	80
Westringia rigida	0.1	1	SG			0.1									

Q8E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	693337
PCT 23 – Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6177152
Date: 13/02/20			23	20	2	13	3	2	0	0	3	0		Orientation	70°
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
			76.3	76	40	34.2	1.2	0.6	0	0	0.3	0		BAM Attributes 20x50m plot	
Acacia melvillei	35	25	TG		35									Stem classes	
Alectryon oleifolius subsp. canescens	5	3	TG		5									80+	0
Alyssum linifolium	0.1	4	EX								0.1			50-79	0
Atriplex pseudocampanulata	0.1	1	SG			0.1								30-49	No
Austrostipa scabra subsp. falcata	1	50	GG				1							20-29	Yes
Brassicaceae sp.	0.1	30	EX								0.1			10-19	Yes
Chenopodium curvispicatum	2	20	SG			2								5-9	Yes
Einadia nutans subsp. nutans	0.2	3	FG					0.2						<5	Yes
Enchylaena tomentosa	0.1	1	SG			0.1								Hollows	0
Eremophila deserti	1	6	SG			1								Length logs (m)	13
Maireana brevifolia	0.3	5	SG			0.3									
Maireana decalvans	0.3	8	SG			0.3								BAM Attributes 1x1 plot (%)	
Maireana sclerolaenoides	3	40	SG			3								Litter (%)	6.4
Maireana triptera	0.4	5	SG			0.4									
Medicago minima	0.1	1	EX								0.1				
Nitraria billardierei	25	80	SG			25									
Poaceae sp. (no fertile material)	0.1	1	GG				0.1								
Poaceae sp. 2 (no fertile material)	0.1	1	GG				0.1								
Roepera apiculata	0.4	10	FG					0.4							
Sclerolaena obliquicuspis	1	40	SG			1									
Senna artemisioides subsp. x coriacea	0.5	2	SG			0.5									
Senna artemisioides subsp. x petiolaris	0.1	1	SG			0.1									
Templetonia egena	0.4	2	SG			0.4									

Q9E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	684109
PCT 171 – Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion (derived)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6178831
Date: 13/02/20			22	15	0	6	6	3	0	0	7	1		Orientation	272°
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
			39.7	35.7	0	5.8	28.7	1.2	0	0	4	0.1		BAM Attributes 20x50m plot	
Acacia colletioides	1	2	SG			1								Stem classes	
Actinobole uliginosum	0.8	500	FG					0.8						80+	0
Aira caryophyllea	2	100	EX								2			50-79	0
Asphodelus fistulosus	1	40	EX								1			30-49	No
Asteraceae sp. (no fertile material)	0.1	1	EX								0.1			20-29	No
Austrostipa scabra subsp. falcata	0.5	40	GG				0.5							10-19	No
Brachyscome lineariloba	0.1	10	FG					0.1						5-9	No
Carthamus lanatus	0.1	1	HT									0.1		<5	No
Cryptandra magniflora	0.2	1	SG			0.2								Hollows	0
Dodonaea viscosa subsp. angustissima	0.3	1	SG			0.3								Length logs (m)	0
Goodenia willisiana	0.3	20	FG					0.3							
Halgania cyanea	0.1	1	SG			0.1								BAM Attributes 1x1 plot (%)	
Lomandra effusa	0.4	10	GG				0.4							Litter (%)	7.2
Maireana pentatropis	0.2	1	SG			0.2									
Medicago polymorpha	0.1	20	EX								0.1				
Olearia pimeleoides	4	18	SG			4									
Poaceae sp. (no fertile material)	0.5	50	GG				0.5								
Rytidosperma setaceum	0.2	40	GG				0.2								
Rytidosperma caespitosum	0.1	4	GG				0.1								
Schismus barbatus	0.4	200	EX								0.4				
Triodia scariosa subsp. Scariosa	27	36	GG				27								
Vulpia myuros	0.3	30	EX								0.3				

Q10E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	701800
PCT 170 – Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones (moderate to good - bull)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6175698
Date: 13/02/20			21	19	4	12	1	2	0	0	2	0		Orientation	55°
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
			80.4	80.2	31	47.8	0.2	1.2	0	0	0.2	0		BAM Attributes 20x50m plot	
Acacia nyssophylla	9	5	SG			9								Stem classes	
Acacia oswaldii	3	1	TG		3									80+	0
Alectryon oleifolius subsp. canescens	4	4	TG		4									50-79	0
Atriplex stipitata subsp. miscella	3	40	SG			3								30-49	3
Chenopodium curvispicatum	3	30	SG			3								20-29	Yes
Eucalyptus gracilis	22	5	TG		22									10-19	Yes
Eucalyptus socialis	2	1	TG		2									5-9	No
Hordeum leporinum	0.1	1	EX								0.1			<5	No
Maireana appressa	4	20	SG			4								Hollows	6
Maireana pentatropis	3	40	SG			3								Length logs (m)	19
Maireana trichoptera	0.4	5	SG			0.4									
Medicago minima	0.1	1	EX								0.1			BAM Attributes 1x1 plot (%)	
Olearia pimeleoides	8	40	SG			8								Litter (%)	46
Poaceae sp. (no fertile material)	0.2	2	GG				0.2								
Roepera apiculata	0.8	30	FG					0.8							
Roepera aurantiaca	0.4	8	FG					0.4							
Sclerolaena diacantha	2	40	SG			2									
Sclerolaena obliquicuspis	0.1	1	SG			0.1									
Senna artemisioides subsp. x coriacea	5	12	SG			5									
Senna artemisioides subsp. x petiolaris	10	20	SG			10									
Westringia rigida	0.3	3	SG			0.3									

Q11E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	695188
PCT 171 – Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion (moderate to good – whipstick)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6176730
Date: 13/02/20			13	13	2	6	3	2	0	0	0	0		Orientation	210°
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
			93.1	93.1	27	10.2	55.4	0.5	0	0	0	0		BAM Attributes 20x50m plot	
Chenopodium desertorum subsp. desertorum	0.1	1	SG			0.1								Stem classes	
Crassula colorata var. acuminata	0.1	1	FG					0.1						80+	0
Dianella sp. Euston	0.4	3	FG					0.4						50-79	0
Eucalyptus dumosa	18	15	TG		18									30-49	No
Eucalyptus socialis	9	5	TG		9									20-29	Yes
Lomandra effusa	0.3	1	GG				0.3							10-19	Yes
Maireana pentatropis	1	30	SG			1								5-9	Yes
Poaceae sp. (no fertile material)	0.1	1	GG				0.1							<5	Yes
Sclerolaena diacantha	4	40	SG			4								Hollows	0
Sclerolaena parviflora	0.1	1	SG			0.1								Length logs (m)	4
Senna artemisioides subsp. x petiolaris	1	1	SG			1									
Triodia scariosa subsp. scariosa	55	90	GG				55							BAM Attributes 1x1 plot (%)	
Westringia rigida	4	12	SG			4								Litter (%)	25

Q12E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	664750
PCT 22 - Semi-arid shrubby Buloke - Slender Cypress Pine woodland, far south-western NSW (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6179690
Date:			31	27	3	16	3	3	0	2	4	0		Orientation	63°
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
			70.2	68.4	37.3	26.2	1.4	1.3	0	2.2	1.8	0		BAM Attributes 20x50m plot	
Acacia oswaldii	0.3	1	TG		0.3									Stem classes	
Alectryon oleifolius subsp. canescens	23	12	TG		23									80+	0
Asteraceae sp. (no fertile material)	0.1	3	EX								0.1			50-79	1
Austrostipa scabra subsp. falcata	0.7	20	GG				0.7							30-49	3
Brassicaceae sp. (no fertile material)	0.3	30	EX								0.3			20-29	Yes
Casuarina pauper	14	13	TG		14									10-19	Yes
Chenopodium desertorum subsp. desertorum	1	30	SG			1								5-9	Yes
Crassula colorata var. acuminata	0.1	4	FG					0.1						<5	Yes
Dodonaea viscosa subsp. angustissima	10	17	SG			10								Hollows	2
Einadia nutans subsp. nutans	0.3	5	FG					0.3						Length logs (m)	28
Exocarpos aphyllus	7	3	SG			7									
Jasminum lineare	2	12	OG							2				BAM Attributes 1x1 plot (%)	
Maireana coronata	0.2	4	SG			0.2								Litter (%)	60
Maireana pentatropis	1	25	SG			1									
Maireana trichoptera	0.3	15	SG			0.3									
Maireana triptera	0.4	20	SG			0.4									
Marsdenia australis	0.2	2	OG							0.2					
Olearia muelleri	2	13	SG			2									
Olearia pimeleoides	1	12	SG			1									
Opuntia sp.	0.4	1	EX								0.4				
Pittosporum angustifolium	0.3	1	SG			0.3									
Poaceae sp. (no fertile material)	0.5	50	GG				0.5								
Poaceae sp. 2 (no fertile material)	0.2	5	GG				0.2								
Rhagodia spinescens	0.1	1	SG			0.1									
Roepera apiculata	0.9	16	FG					0.9							
Salsola australis	0.7	10	SG			0.7									
Schismus barbatus	1	200	EX								1				
Sclerolaena diacantha	0.6	16	SG			0.6									
Sclerolaena obliquicuspis	0.2	4	SG			0.2									
Senna artemisioides subsp. x coriacea	1	10	SG			1									
Senna artemisioides subsp. x petiolaris	0.4	6	SG			0.4									

Q13E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	669746
PCT 22 - Semi-arid shrubby Buloke - Slender Cypress Pine woodland, far south-western NSW (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6179934
Date: 15/02/20			19	15	2	7	2	3	0	1	4	0		Orientation	235°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			24.2	23.6	16	3.7	0.5	0.4	0	3	0.6	0		BAM Attributes 20x50m plot	
Alectryon oleifolius subsp. canescens	10	4	TG		10									Stem classes	
Asteraceae sp. (no fertile material)	0.1	1	EX								0.1			80+	0
Atriplex stipitata subsp. miscella	0.1	1	SG			0.1								50-79	0
Callitris glaucophylla	6	3	TG		6									30-49	1
Calotis erinacea	0.1	1	SG			0.1								20-29	Yes
Crassula colorata var. acuminata	0.1	5	FG					0.1						10-19	No
Hakea tephrosperma	3	1	SG			3								5-9	No
Lysiana exocarpi subsp. exocarpi	3	4	OG							3				<5	No
Maireana pentatropis	0.1	1	SG			0.1								Hollows	0
Maireana sp. (no fertile material)	0.1	1	FG					0.1						Length logs (m)	26
Medicago laciniata	0.1	100	EX								0.1				
Medicago polymorpha	0.1	100	EX								0.1			BAM Attributes 1x1 plot (%)	
Poaceae sp. (no fertile material)	0.3	30	GG				0.3							Litter (%)	12
Poaceae sp. 2 (no fertile material)	0.2	50	GG				0.2								
Roepera apiculata	0.2	3	FG					0.2							
Salsola australis	0.1	2	SG			0.1									
Schismus barbatus	0.3	200	EX								0.3				
Sclerolaena diacantha	0.2	4	SG			0.2									
Sclerolaena obliquicuspis	0.1	1	SG			0.1									

Q14E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	670404
PCT 172 – Deep sand mallee of irregular dunefields of the semi-arid (warm) zone (moderate to good – whipstick)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6179954
Date: 15/02/20			14	12	3	3	5	0	0	1	2	0		Orientation	85°
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
			86.4	86.2	33	7.1	45.7	0	0	0.4	0.2	0		BAM Attributes 20x50m plot	
Acacia colletioides	3	1	SG			3								Stem classes	
Austrostipa scabra subsp. falcata	0.2	10	GG				0.2							80+	0
Callitris verrucosa	7	2	TG		7									50-79	0
Caryophyllaceae sp.	0.1	1	EX								0.1			30-49	No
Cassytha melantha	0.4	1	OG							0.4				20-29	No
Eucalyptus costata	23	14	TG		23									10-19	Yes
Eucalyptus socialis	3	1	TG		3									5-9	Yes
Lomandra leucocephala subsp. leucocephala	0.2	1	GG				0.2							<5	No
Medicago laciniata	0.1	10	EX								0.1			Hollows	0
Poaceae sp. (no fertile material)	0.1	1	GG				0.1							Length logs (m)	0
Poaceae sp. 2 (no fertile material)	0.2	10	GG				0.2								
Salsola australis	0.1	1	SG			0.1								BAM Attributes 1x1 plot (%)	
Triodia scariosa subsp. scariosa	45	190	GG				45							Litter (%)	16.4
Westringia rigida	4	20	SG			4									

Q15E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	668334
PCT 22 - Semi-arid shrubby Buloke - Slender Cypress Pine woodland, far south-western NSW (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6179812
Date: 15/02/20			17	16	2	11	1	1	0	1	1	0		Orientation	0°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			55.5	55.3	34	20.3	0.2	0.6	0	0.2	0.2	0		BAM Attributes 20x50m plot	
Alectryon oleifolius subsp. canescens	4	3	TG		4									Stem classes	
Atriplex stipitata subsp. miscella	1	17	SG			1								80+	0
Brassicaceae sp.	0.2	30	EX								0.2			50-79	1
Casuarina pauper	30	7	TG		30									30-49	2
Chenopodium curvispicatum	3	15	SG			3								20-29	Yes
Dissocarpus paradoxus	0.1	1	SG			0.1								10-19	Yes
Exocarpos aphyllus	3	2	SG			3								5-9	No
Maireana erioclada	0.6	12	SG			0.6								<5	Yes
Maireana pyramidata	0.3	1	SG			0.3								Hollows	1
Maireana sp.	1	26	SG			1								Length logs (m)	11
Marsdenia australis	0.2	1	OG							0.2					
Myoporum platycarpum subsp. platycarpum	3	1	SG			3								BAM Attributes 1x1 plot (%)	
Olearia pimeleoides	0.3	1	SG			0.3								Litter (%)	77.8
Poaceae sp. (no fertile material)	0.2	20	GG				0.2								
Roepera apiculata	0.6	18	FG					0.6							
Sclerolaena diacantha	3	50	SG			3									
Sclerolaena obliquicuspis	5	100	SG			5									

Q16E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	639080
PCT 170 – Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones (moderate to good - whipstick)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6195723
Date: 17/02/20			11	11	3	7	0	1	0	0	0	0		Orientation	140°
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
			23.6	23.6	21	2.5	0	0.1	0	0	0	0		BAM Attributes 20x50m plot	
Atriplex stipitata subsp. miscella	0.1	1	SG			0.1								Stem classes	
Eucalyptus gracilis	12	8	TG		12									80+	0
Eucalyptus leptophylla	6	3	TG		6									50-79	0
Eucalyptus oleosa	3	1	TG		3									30-49	No
Maireana brevifolia	0.1	1	SG			0.1								20-29	Yes
Maireana pentatropis	1	26	SG			1								10-19	Yes
Maireana sp.	0.2	2	SG			0.2								5-9	Yes
Maireana triptera	0.2	2	SG			0.2								<5	No
Roepera aurantiaca	0.1	1	FG					0.1						Hollows	2
Sclerolaena diacantha	0.8	30	SG			0.8								Length logs (m)	11
Sclerolaena obliquicuspis	0.1	1	SG			0.1									
														BAM Attributes 1x1 plot (%)	
														Litter (%)	72

Q17E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	637568
PCT 171 – Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion (moderate to good – whipstick)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6197791
Date: 17/02/20			17	15	3	7	4	1	0	0	2	0		Orientation	170°
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
			58	57.8	23	2.5	32.2	0.1	0	0	0.2	0		BAM Attributes 20x50m plot	
Acacia rigens	1	1	SG			1								Stem classes	
Asphodelus fistulosus	0.1	1	EX								0.1			80+	0
Austrostipa scabra subsp. falcata	0.1	1	GG				0.1							50-79	0
Chenopodium desertorum subsp. desertorum	0.1	2	SG			0.1								30-49	No
Cryptandra magniflora	0.4	2	SG			0.4								20-29	No
Eucalyptus dumosa	7	5	TG		7									10-19	Yes
Eucalyptus gracilis	14	10	TG		14									5-9	Yes
Eucalyptus socialis	2	2	TG		2									<5	Yes
Lomandra leucocephala subsp. leucocephala	2	10	GG				2							Hollows	0
Maireana pentatropis	0.4	20	SG			0.4								Length logs (m)	0
Maireana sclerolaenoides	0.2	20	SG			0.2									
Olearia passerinoides subsp. passerinoides	0.2	2	SG			0.2								BAM Attributes 1x1 plot (%)	
Poaceae sp. (no fertile material)	0.1	2	GG				0.1							Litter (%)	21.5
Schismus barbatus	0.1	1	EX								0.1				
Sclerolaena parviflora	0.2	10	SG			0.2									
Solanum coactiliferum	0.1	1	FG					0.1							
Triodia scariosa subsp. scariosa	30	200	GG				30								

Q18E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	655676
PCT 143 – Narrow-leaved Hopbush – Scrub Turpentine – Senna shrubland on semi-arid and arid sandplains and dunes (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6180936
Date: 18/02/20			14	10	0	8	1	1	0	0	4	1		Orientation	265°
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
			42.7	42.1	0	41.9	0.1	0.1	0	0	0.6	0.1		BAM Attributes 20x50m plot	
Acacia colletioides	0.7	2	SG			0.7								Stem classes	
Atriplex stipitata subsp. miscella	0.2	10	SG			0.2								80+	0
Austrostipa scabra subsp. falcata	0.1	2	GG				0.1							50-79	0
Brassicaceae sp.	0.1	1	EX								0.1			30-49	No
Maireana pentatropis	3	60	SG			3								20-29	No
Maireana triptera	0.5	15	SG			0.5								10-19	No
Medicago laciniata	0.1	1	EX								0.1			5-9	No
Psilocaulon granulicaule	0.1	1	HT									0.1		<5	No
Rhagodia spinescens	2	10	SG			2								Hollows	0
Roepera apiculata	0.1	1	FG					0.1						Length logs (m)	0
Schismus barbatus	0.3	50	EX								0.3				
Sclerolaena obliquicuspis	0.3	10	SG			0.3								BAM Attributes 1x1 plot (%)	
Senna artemisioides subsp. x petiolaris	35	60	SG			35								Litter (%)	39.4
Westringia rigida	0.2	1	SG			0.2									

Q19E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	650497
PCT 170 – Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones (moderate to good - whipstick)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6181719
Date: 17/02/20			16	16	2	10	1	3	0	0	0	0		Orientation	250°
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
			38.9	38.9	22	10.6	0.2	6.1	0	0	0	0		BAM Attributes 20x50m plot	
Atriplex holocarpa	4	8	FG					4						Stem classes	
Atriplex stipitata subsp. miscella	0.1	1	SG			0.1								80+	0
Austrostipa scabra subsp. falcata	0.2	10	GG				0.2							50-79	0
Eucalyptus gracilis	18	12	TG		18									30-49	No
Eucalyptus oleosa	4	2	TG		4									20-29	Yes
Maireana appressa	0.1	4	SG			0.1								10-19	Yes
Maireana erioclada	3	20	SG			3								5-9	Yes
Maireana georgei	4	30	SG			4								<5	No
Maireana pentatropis	1	15	SG			1								Hollows	0
Maireana sclerolaenoides	0.1	6	SG			0.1								Length logs (m)	6
Maireana trichoptera	0.1	2	SG			0.1									
Maireana triptera	0.1	1	SG			0.1								BAM Attributes 1x1 plot (%)	
Roepera apiculata	0.1	2	FG					0.1						Litter (%)	54
Roepera aurantiaca	2	40	FG					2							
Sclerolaena diacantha	2	30	SG			2									
Sclerolaena obliquicuspis	0.1	4	SG			0.1									

Q20E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	663901
PCT 22 - Semi-arid shrubby Buloke - Slender Cypress Pine woodland, far south-western NSW (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6179704
Date: 18/02/20			23	19	2	10	4	3	0	0	4	0		Orientation	219°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			64.1	**63.5**	15.4	46.5	1.3	0.3	0	0	**0.6**	0		**BAM Attributes 20x50m plot**	
Alectryon oleifolius subsp. canescens	0.4	3	TG		0.4									**Stem classes**	
Aristida sp.	1	50	GG				1							**80+**	0
Atriplex stipitata subsp. miscella	0.8	15	SG			0.8								**50-79**	1
Austrostipa acrociliata	0.1	5	GG				0.1							**30-49**	1
Austrostipa elegantissima	0.1	5	GG				0.1							**20-29**	Yes
Brassicaceae sp.	0.1	1	EX								0.1			**10-19**	Yes
Callitris gracilis subsp. murrayensis	15	20	TG		15									**5-9**	Yes
Caryophyllaceae sp.	0.2	20	EX								0.2			**<5**	No
Chenopodium desertorum	0.1	1	SG			0.1								**Hollows**	0
Crassula colorata var. acuminata	0.1	1	FG					0.1						**Length logs (m)**	41
Dodonaea viscosa subsp. angustissima	35	80	SG			35									
Einadia nutans subsp. nutans	0.1	3	FG					0.1						**BAM Attributes 1x1 plot (%)**	
Eremophila glabra	1	1	SG			1								**Litter (%)**	58
Grevillea huegelii	1	1	SG			1									
Maireana trichoptera	0.1	1	SG			0.1									
Olearia pimeleoides	4	50	SG			4									
Roepera apiculata	0.1	10	FG					0.1							
Rytidosperma caespitosum	0.1	10	GG				0.1								
Schismus barbatus	0.2	30	EX								0.2				
Sclerolaena diacantha	4	100	SG			4									
Sclerolaena obliquicuspis	0.1	4	SG			0.1									
Senna artemisioides subsp. x petiolaris	0.4	4	SG			0.4									
Vulpia myuros	0.1	20	EX								0.1				

Q21E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	662719
PCT 172 – Deep sand mallee of irregular dunefields of the semi-arid (warm) zone (moderate to good – whipstick)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6179996
Date: 18/02/20			23	23	2	15	2	3	0	1	0	0		Orientation	255°
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
			74.6	74.6	21	52.7	0.5	0.3	0	0.1	0	0		BAM Attributes 20x50m plot	
Acacia colletioides	20	25	SG			20								Stem classes	
Alectryon oleifolius subsp. canescens	3	10	TG		3									80+	0
Austrostipa acrociliata	0.3	20	GG				0.3							50-79	0
Chenopodium curvispicatum	0.8	20	SG			0.8								30-49	No
Crassula colorata var. acuminata	0.1	5	FG					0.1						20-29	Yes
Dodonaea viscosa subsp. angustissima	10	15	SG			10								10-19	Yes
Enchylaena tomentosa	0.3	20	SG			0.3								5-9	Yes
Eremophila glabra	2	2	SG			2								<5	No
Eucalyptus socialis	18	7	TG		18									Hollows	0
Grevillea huegelii	1	3	SG			1								Length logs (m)	20
Halgania cyanea	2	40	SG			2									
Maireana pentatropis	0.3	20	SG			0.3								BAM Attributes 1x1 plot (%)	
Marsdenia australis	0.1	1	OG							0.1				Litter (%)	66
Myoporum platycarpum subsp. platycarpum	3	8	SG			3									
Olearia pimeleoides	0.2	1	SG			0.2									
Poaceae sp. (no fertile material)	0.2	10	GG				0.2								
Ptilotus seminudus	0.1	1	FG					0.1							
Roepera apiculata	0.1	10	FG					0.1							
Sclerolaena diacantha	0.2	10	SG			0.2									
Sclerolaena parviflora	0.1	5	SG			0.1									
Senna artemisioides subsp. x coriacea	0.6	2	SG			0.6									
Senna artemisioides subsp. x petiolaris	12	30	SG			12									
Westringia rigida	0.2	4	SG			0.2									

Q22E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	643393
PCT 171 – Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion (moderate to good – whipstick)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6190002
Date: 18/02/20			17	15	4	6	3	2	0	0	2	0		Orientation	320°
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
			71.3	71.1	23	2.5	45.4	0.2	0	0	0.2	0		BAM Attributes 20x50m plot	
Asphodelus fistulosus	0.1	1	EX								0.1			Stem classes	
Austrostipa acrociliata	0.2	20	GG				0.2							80+	0
Callitris verrucosa	7	5	TG		7									50-79	0
Calotis hispidula	0.1	1	FG					0.1						30-49	No
Caryophyllaceae sp.	0.1	20	EX								0.1			20-29	Yes
Chenopodium desertorum	0.1	1	SG			0.1								10-19	Yes
Crassula colorata var. acuminata	0.1	30	FG					0.1						5-9	Yes
Eucalyptus dumosa	4	1	TG		4									<5	No
Eucalyptus gracilis	2	2	TG		2									Hollows	0
Eucalyptus socialis	10	3	TG		10									Length logs (m)	9
Lomandra leucocephala subsp. leucocephala	0.2	4	GG				0.2								
Maireana pentatropis	0.1	1	SG			0.1								BAM Attributes 1x1 plot (%)	
Maireana sclerolaenoides	0.1	5	SG			0.1								Litter (%)	60.6
Santalum murrayanum	2	1	SG			2									
Sclerolaena diacantha	0.1	6	SG			0.1									
Sclerolaena obliquicuspis	0.1	4	SG			0.1									
Triodia scariosa subsp. scariosa	45	140	GG				45								

Q23E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	722823
PCT 8 – River Red Gum - Warrego Grass - Couch Grass riparian tall woodland wetland of the semi-arid (warm) climate zone (Riverina Bioregion and Murray Darling Depression Bioregion) (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6158359
Date: 19/03/20			15	13	2	1	3	7	0	0	2	1		Orientation	95°
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
			49.8	49.3	45.1	0.2	2.2	1.8	0	0	0.5	0.4		BAM Attributes 20x50m plot	
Acacia stenophylla	0.1	1	TG		0.1									Stem classes	
Cirsium vulgare	0.1	1	EX								0.1			80+	3
Cynodon dactylon	0.1	1	GG				0.1							50-79	2
Eclipta platyglossa	0.6	100	FG					0.6						30-49	Yes
Eucalyptus camaldulensis	45	50	TG		45									20-29	Yes
Euphorbia dallachyana	0.4	40	FG					0.4						10-19	Yes
Goodenia heteromera	0.1	1	FG					0.1						5-9	Yes
Lobelia concolor	0.1	1	FG					0.1						<5	Yes
Oxalis perennans	0.1	4	FG					0.1						Hollows	8
Panicum decompositum	0.1	1	GG				0.1							Length logs (m)	165
Paspalidium jubiflorum	2	20	GG				2								
Phyla canescens	0.4	20	HT									0.4		BAM Attributes 1x1 plot (%)	
Rumex brownii	0.3	30	FG					0.3						Litter (%)	70
Sclerolaena muricata var. semiglabra	0.2	3	SG			0.2									
Wahlenbergia fluminalis	0.2	20	FG					0.2							

Q24E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	720187
PCT 170 – Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones (moderate to good - bull)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6160484
Date: 19/03/20			7	7	3	3	0	1	0	0	0	0		Orientation	315°
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
			35.8	35.8	35	0.7	0	0.1	0	0	0	0		BAM Attributes 20x50m plot	
Eucalyptus dumosa	15	6	TG		15									Stem classes	
Eucalyptus oleosa	15	7	TG		15									80+	0
Eucalyptus socialis	5	3	TG		5									50-79	0
Maireana georgei	0.1	1	SG			0.1								30-49	No
Roepera apiculata	0.1	1	FG					0.1						20-29	No
Salsola australis	0.1	1	SG			0.1								10-19	Yes
Sclerolaena divaricata	0.5	40	SG			0.5								5-9	Yes
														<5	No
														Hollows	1
														Length logs (m)	7
														BAM Attributes 1x1 plot (%)	
														Litter (%)	53

Q25E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	716750
PCT 58 – Black Oak – Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6163293
Date: 19/03/20			23	19	2	10	2	5	0	0	4	0		Orientation	310°
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
			19.2	18.6	6	11.3	0.4	0.9	0	0	0.6	0		BAM Attributes 20x50m plot	
Alectryon oleifolius subsp. canescens	2	3	TG		2									Stem classes	
Aristida sp.	0.2	5	GG				0.2							80+	0
Asteraceae sp. (no fertile material)	0.1	1	EX								0.1			50-79	0
Atriplex stipitata subsp. miscella	0.2	6	SG			0.2								30-49	1
Austrostipa acrociliata	0.2	10	GG				0.2							20-29	No
Brachyscome lineariloba	0.4	100	FG					0.4						10-19	Yes
Calotis hispidula	0.1	2	FG					0.1						5-9	No
Casuarina pauper	4	1	TG		4									<5	Yes
Crassula colorata var. acuminata	0.2	50	FG					0.2						Hollows	0
Enchylaena tomentosa	0.3	6	SG			0.3								Length logs (m)	30.5
Geijera parviflora	6	2	SG			6									
Maireana brevifolia	0.3	4	SG			0.3								BAM Attributes 1x1 plot (%)	
Maireana pyramidata	0.2	2	SG			0.2								Litter (%)	30
Maireana triptera	0.1	2	SG			0.1									
Medicago laciniata	0.1	2	EX								0.1				
Nitraria billardierei	3	4	SG			3									
Rhagodia spinescens	0.5	4	SG			0.5									
Roepera aurantiaca	0.1	1	FG					0.1							
Salsola australis	0.3	15	SG			0.3									
Schismus barbatus	0.3	30	EX								0.3				
Sclerolaena divaricata	0.4	20	SG			0.4									
Sida corrugata	0.1	6	FG					0.1							
Vulpia myuros	0.1	1	EX								0.1				

Q26E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	729525
PCT 15 – Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6158585
Date: 20/03/20			27	18	2	8	2	6	0	0	9	1		Orientation	265°
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
			65.8	56.9	19	29.7	4.2	4	0	0	8.9	6		BAM Attributes 20x50m plot	
Alectryon oleifolius subsp. canescens	4	7	TG		4									Stem classes	
Alyssum linifolium	2	200	EX								2			80+	0
Apophyllum anomalum	0.3	1	SG			0.3								50-79	2
Asteraceae sp. (no fertile material)	0.1	1	EX								0.1			30-49	Yes
Brachyscome lineariloba	0.3	20	FG					0.3						20-29	Yes
Calotis hispidula	3	200	FG					3						10-19	No
Caryophyllaceae sp.	0.2	40	EX								0.2			5-9	No
Chenopodium nitrariaceum	0.2	1	SG			0.2								<5	No
Crassula colorata var. acuminata	0.3	100	FG					0.3						Hollows	0
Einadia nutans subsp. nutans	0.1	1	FG					0.1						Length logs (m)	2.2
Enchylaena tomentosa	2	30	SG			2									
Enteropogon acicularis	4	40	GG				4							BAM Attributes 1x1 plot (%)	
Eucalyptus largiflorens	15	3	TG		15									Litter (%)	27
Hordeum leporinum	0.1	3	EX								0.1				
Maireana pyramidata	0.1	1	SG			0.1									
Maireana trichoptera	4	20	SG			4									
Malva parviflora	0.1	1	EX								0.1				
Medicago laciniata	0.2	20	EX								0.2				
Panicum decompositum	0.2	5	GG				0.2								
Psilocaulon granulicaule	6	80	HT									6			
Rhagodia spinescens	8	40	SG			8									
Roepera apiculata	0.2	30	FG					0.2							
Salsola australis	0.1	2	SG			0.1									
Schismus barbatus	0.1	30	EX								0.1				
Sclerolaena obliquicuspis	15	400	SG			15									
Sida sp.	0.1	1	FG					0.1							
Tribulus terrestris	0.1	2	EX								0.1				

Q27E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	351714
PCT 26 – Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6141954
Date: 24/05/19			26	24	1	10	5	8	0	0	2	1		Orientation	70°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			90.3	**89.8**	20	51.3	2.6	15.9	0	0	**0.5**	0.4		**BAM Attributes 20x50m plot**	
Acacia pendula	20	9	TG		20									**Stem classes**	
Atriplex semibaccata	5	100	SG			5								**80+**	0
Atriplex sp.	0.1	5	SG			0.1								**50-79**	0
Austrostipa scabra subsp. scabra	0.4	10	GG				0.4							**30-49**	No
Calotis hispidula	0.1	1	FG					0.1						**20-29**	Yes
Calotis scabiosifolia var. scabiosifolia	0.6	30	FG					0.6						**10-19**	Yes
Einadia hastata	2	30	FG					2						**5-9**	Yes
Einadia nutans subsp. linifolia	12	100	FG					12						**<5**	Yes
Enteropogon acicularis	0.8	10	GG				0.8							**Hollows**	0
Erodium crinitum	0.2	20	FG					0.2						**Length logs (m)**	0
Lycium ferocissimum	0.4	2	HT									0.4			
Maireana aphylla	1	6	SG			1								**BAM Attributes 1x1 plot (%)**	
Maireana decalvans	7	200	SG			7								**Litter (%)**	32
Maireana pentagona	0.6	20	FG					0.6							
Medicago sp.	0.1	5	EX								0.1				
Oxalis perennans	0.1	3	FG					0.1							
Panicum decompositum	0.8	10	GG				0.8								
Rhagodia spinescens	12	60	SG			12									
Rytidosperma caespitosum	0.4	10	GG				0.4								
Salsola australis	5	200	SG			5									
Sclerolaena muricata var. muricata	1	8	SG			1									
Sclerolaena muricata var. villosa	18	200	SG			18									
Sclerolaena patenticuspis	0.2	5	SG			0.2									
Sclerolaena stelligera	2	25	SG			2									
Sida corrugata	0.3	20	FG					0.3							
Sporobolus caroli	0.2	10	GG				0.2								

Q28E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	359821
PCT 26 – Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	61419977
Date: 24/05/2019			27	26	1	8	4	13	0	0	1	0		Orientation	95°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			90	**89.2**	18	55.8	8.5	6.9	0	0	**0.8**	0		**BAM Attributes 20x50m plot**	
Acacia pendula	18	6	TG		18									**Stem classes**	
Atriplex semibaccata	3	40	SG			3								**80+**	0
Austrostipa scabra subsp. scabra	2	50	GG				2							**50-79**	0
Calotis hispidula	0.4	10	FG					0.4						**30-49**	4
Daucus glochidiatus	0.1	10	FG					0.1						**20-29**	Yes
Einadia nutans subsp. nutans	2	50	FG					2						**10-19**	Yes
Enchylaena tomentosa	10	100	SG			10								**5-9**	Yes
Enteropogon acicularis	4	70	GG				4							**<5**	Yes
Euphorbia drummondii	0.1	2	FG					0.1						**Hollows**	0
Geijera parviflora	0.8	5	SG			0.8								**Length logs (m)**	6
Leiocarpa panaetioides	0.6	10	FG					0.6							
Maireana decalvans	8	100	SG			8								**BAM Attributes 1x1 plot (%)**	
Maireana pentagona	0.6	10	FG					0.6						**Litter (%)**	41
Medicago sp.	0.8	100	EX								0.8				
Oxalis perennans	0.2	5	FG					0.2							
Plantago varia	1	50	FG					1							
Rhagodia spinescens	22	100	SG			22									
Rytidosperma sp.	2	100	GG				2								
Salsola australis	4	80	SG			4									
Sclerolaena muricata var. muricata	5	60	SG			5									
Sclerolaena stelligera	3	50	SG			3									
Sida sp.	0.4	20	FG					0.4							
Sida trichopoda	0.4	10	FG					0.4							
Solanum esuriale	0.8	40	FG					0.8							
Sporobolus caroli	0.5	20	GG				0.5								
Teucrium racemosum	0.1	10	FG					0.1							
Vittadinia cuneata	0.2	2	FG					0.2							

Q29E			**Covers**	**Native**	Trees	Shrubs	Grass	Forb	Fern	Other	**Exotic**	HighThreat	55	**Easting**	280412
PCT 157 – Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion (moderate to good)			**# spp**	**Count**	Count	Count	Count	Count	Count	Count	**Count**	Count		**Northing**	6136352
Date: 24/05/19			**9**	**8**	0	5	1	2	0	0	**1**	0		**Orientation**	280°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			67.5	**52.5**	0	49	1	2.5	0	0	**15**	0		**BAM Attributes 20x50m plot**	
Abutilon halophilum	0.4	4	SG			0.4								**Stem classes**	
Asteraceae sp.	2	20	FG					2						**80+**	0
Atriplex vesicaria subsp. vesicaria	40	500	SG			40								**50-79**	0
Eragrostis australasica	1	3	GG				1							**30-49**	No
Maireana aphylla	5	60	SG			5								**20-29**	No
Maireana pentagona	0.5	10	FG					0.5						**10-19**	No
Medicago sp.	15	1000	EX								15			**5-9**	No
Nitraria billardierei	3	8	SG			3								**<5**	No
Sclerolaena divaricata	0.6	10	SG			0.6								**Hollows**	0
														Length logs (m)	0
														BAM Attributes 1x1 plot (%)	
														Litter (%)	5

Q30E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	240540
PCT 164 – Cotton Bush open shrubland of the semi-arid (warm) zone (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6139680
Date: 25/05/19			7	5	0	4	1	0	0	0	2	0		Orientation	260°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			31.6	**24.6**	0	24.4	0.2	0	0	0	**7**	0		**BAM Attributes 20x50m plot**	
Atriplex vesicaria subsp. vesicaria	5	50	SG			5								**Stem classes**	
Avena sp. (no fertile material)	1	200	EX								1			**80+**	0
Eragrostis australasica	0.2	2	GG				0.2							**50-79**	0
Maireana aphylla	18	100	SG			18								**30-49**	No
Medicago sp. (no fertile material)	6	1000	EX								6			**20-29**	No
Nitraria billardierei	0.4	1	SG			0.4								**10-19**	No
Sclerolaena divaricata	1	10	SG			1								**5-9**	No
														<5	No
														Hollows	0
														Length logs (m)	0
														BAM Attributes 1x1 plot (%)	
														Litter (%)	7

Q31E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	465685
PCT 75 – Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6129755
Date: 26/05/19			0	0	0	0	0	0	0	0	0	0		Orientation	172°
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
			0	0	0	0	0	0	0	0	0	0		BAM Attributes 20x50m plot	
														Stem classes	
														80+	0
														50-79	1
														30-49	Yes
														20-29	Yes
														10-19	Yes
														5-9	Yes
														<5	Yes
														Hollows	2
														Length logs (m)	56
														BAM Attributes 1x1 plot (%)	
														Litter (%)	65

Not entered. Plot is 33 km away from current alignment (07/07/2021)
Can be found in fieldsheets if needed.

Q32E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	484788
PCT 76 – Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6118145
Date: 26/05/19			0	0	0	0	0	0	0	0	0	0		Orientation	350°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			0	0	0	0	0	0	0	0	0	0		**BAM Attributes 20x50m plot**	
														Stem classes	
														80+	2
														50-79	6
														30-49	1
														20-29	No
														10-19	No
														5-9	Yes
														<5	No
														Hollows	2
														Length logs (m)	0
														BAM Attributes 1x1 plot (%)	
														Litter (%)	77

Not entered. Plot is 15 km away from current alignment (07/07/2021)
Can be found in fieldsheets if needed.

Q33E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	534265
Miscellaneous ecosystem – native plantings			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6104409
Date: 20/10/20			22	8	3	0	5	0	0	0	14	1		Orientation	275°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			117.3	19.6	15	0	4.6	0	0	0	97.7	0		BAM Attributes 20x50m plot	
Aira caryophyllea	0.1	5	EX								0.1			Stem classes	
Arctotheca calendula	0.4	20	EX								0.4			80+	0
Austrostipa setacea	0.2	10	GG				0.2							50-79	0
Avena barbata	0.5	40	EX								0.5			30-49	No
Carthamus lanatus	0	10	HT									0		20-29	No
Cynodon dactylon	0.5	10	GG				0.5							10-19	No
Cyperus sp. (no fertile material)	3	100	GG				3							5-9	Yes
Echium plantagineum	20	400	EX								20			<5	Yes
Eucalyptus albens	2	6	TG		2									Hollows	0
Eucalyptus blakelyi	10	18	TG		10									Length logs (m)	10
Eucalyptus sideroxylon	3	8	TG		3										
Hordeum sp. (no fertile material)	0.1	2	EX								0.1			BAM Attributes 1x1 plot (%)	
Hypochaeris radicata	0.5	20	EX								0.5			Litter (%)	16
Juncus sp. (no fertile material)	0.8	20	GG				0.8								
Lolium sp. (no fertile material)	45	1000	EX								45				
Rytidosperma sp. (no fertile material)	0.1	5	GG				0.1								
Sonchus oleraceus	0.2	5	EX								0.2				
Trifolium arvense	5	100	EX								5				
Trifolium campestre	10	300	EX								10				
Trifolium glomeratum	15	500	EX								15				
Vulpia myuros	0.8	50	EX								0.8				
Vulpia bromoides	0.1	5	EX								0.1				

Q34E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	484778
PCT 80 – Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion (moderate)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6104055
Date: 21/10/20			32	13	3	1	1	8	0	0	19	1		Orientation	122°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			124.5	**53.4**	37	0.1	5	11.3	0	0	**71.1**	0.5		**BAM Attributes 20x50m plot**	
Allocasuarina luehmannii	5	3	TG		5									**Stem classes**	
Arctotheca calendula	5	100	EX								5			**80+**	0
Atriplex sp. (no fertile material)	0.1	10	SG			0.1								**50-79**	2
Austrostipa scabra	5	100	GG				5							**30-49**	1
Avena barbata	0.1	10	EX								0.1			**20-29**	Yes
Brassica rapa	0.8	10	EX								0.8			**10-19**	Yes
Callitris glaucophylla	22	12	TG		22									**5-9**	No
Capsella bursa-pastoris	0.8	30	EX								0.8			**<5**	No
Cichorium intybus	0.1	5	EX								0.1			**Hollows**	3
Crassula sieberiana	3	100	FG					3						**Length logs (m)**	8
Dactylis glomerata	0.1	5	EX								0.1				
Echium plantagineum	0.4	10	EX								0.4			**BAM Attributes 1x1 plot (%)**	
Einadia nutans	3	100	FG					3						**Litter (%)**	21
Erodium crinitum	3	80	FG					3							
Eucalyptus microcarpa	10	2	TG		10										
Hordeum sp. (no fertile material)	20	500	EX								20				
Hypochaeris radicata	0.4	10	EX								0.4				
Lactuca serriola	0.2	8	EX								0.2				
Lolium perenne	20	500	EX								20				
Maireana enchylaenoides	1	80	FG					1							
Malva parviflora	10	300	EX								10				
Oxalis perennans	0.1	2	FG					0.1							
Polygonum aviculare	0.1	3	EX								0.1				
Rhodanthe corymbiflora	0.5	20	FG					0.5							
Romulea rosea	0.5	30	HT									0.5			
Sida cunninghamii	0.6	20	FG					0.6							
Sonchus oleraceus	1	40	EX								1				
Trifolium arvense	1	40	EX								1				
Trifolium glomeratum	8	200	EX								8				
Trifolium pratense	2	60	EX								2				
Urtica incisa	0.1	2	FG					0.1							
Vulpia myuros	0.6	30	EX								0.6				

Q35E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	762503
PCT 164 – Cotton Bush open shrubland of the semi-arid (warm) zone (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6144801
Date: 05/09/20			40	31	0	8	3	19	0	1	9	0		Orientation	256°
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
			87.6	84.5	0	58.6	2.6	23.2	0	0.1	3.1	0		BAM Attributes 20x50m plot	
Arthropodium minus	0.1	1	FG					0.1						Stem classes	
Atriplex vesicaria subsp. vesicaria	0.2	1	SG			0.2								80+	0
Austrostipa sp. (no fertile material)	0.2	20	GG				0.2							50-79	0
Brachyscome lineariloba	0.4	100	FG					0.4						30-49	0
Bulbine semibarbata	0.1	1	FG					0.1						20-29	No
Calandrinia eremaea	0.1	1	FG					0.1						10-19	No
Calotis hispidula	0.2	40	FG					0.2						5-9	No
Chloris virgata	0.1	10	EX								0.1			<5	No
Convolvulus sp. (no fertile material)	0.1	1	OG							0.1				Hollows	0
Cressa australis	0.5	60	FG					0.5						Length logs (m)	0
Erodium cicutarium	0.2	40	EX								0.2				
Euphorbia drummondii	0.1	2	FG					0.1						BAM Attributes 1x1 plot (%)	
Goodenia pusilliflora	5	500	FG					5						Litter (%)	-
Hypochaeris glabra	0.1	1	EX								0.1				
Isoetopsis graminifolia	4	800	FG					4							
Lepidium papillosum	0.3	30	FG					0.3							
Limonium lobatum	0.1	1	EX								0.1				
Maireana aphylla	42	100	SG			42									
Malacocera tricornis	0.3	5	SG			0.3									
Medicago laciniata	0.4	50	EX								0.4				
Medicago minima	1	200	EX								1				
Medicago polymorpha	0.8	100	EX								0.8				
Minuria cunninghamii	0.5	10	FG					0.5							
Nitraria billardierei	4	5	SG			4									
Plantago drummondii	8	1000	FG					8							
Pogonolepis muelleriana	0.1	3	FG					0.1							
Rhodanthe corymbiflora	3	200	FG					3							
Rhodanthe stuartiana	0.1	2	FG					0.1							
Roepera glauca	0.1	2	FG					0.1							
Rytidosperma setaceum	0.4	40	GG				0.4								
Sarcozona praecox	0.2	1	FG					0.2							
Sclerolaena brachyptera	8	100	SG			8									
Sclerolaena divaricata	0.1	1	SG			0.1									
Sclerolaena tricuspis	1	40	SG			1									
Sida trichopoda	0.2	30	FG					0.2							
Sisymbrium erysimoides	0.3	10	EX								0.3				
Sporobolus caroli	2	100	GG				2								
Taraxacum officinale	0.1	2	EX								0.1				
Tecticornia tenuis	3	6	SG			3									
Vittadinia cuneata var. cuneata	0.2	30	FG					0.2							

Q36E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	757802
PCT 58 – Black Oak – Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6144617
Date: 05/09/20			28	23	1	12	1	9	0	0	5	0		Orientation	75°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			86.2	**84.5**	10	40.3	1	33.2	0	0	**1.7**	0		**BAM Attributes 20x50m plot**	
Atriplex leptocarpa	0.6	10	SG			0.6								**Stem classes**	
Atriplex acutibractea subsp. acutibractea	0.2	8	SG			0.2								**80+**	0
Atriplex lindleyi	0.8	10	FG					0.8						**50-79**	0
Austrostipa elegantissima	1	10	GG				1							**30-49**	1
Brachyscome lineariloba	0.8	60	FG					0.8						**20-29**	Yes
Calandrinia eremaea	2	200	FG					2						**10-19**	Yes
Calotis hispidula	0.5	50	FG					0.5						**5-9**	No
Casuarina pauper	10	8	TG		10									**<5**	No
Einadia nutans subsp. nutans	0.6	10	FG					0.6						**Hollows**	0
Enchylaena tomentosa	8	40	SG			8								**Length logs (m)**	72
Lamarckia aurea	0.1	2	EX								0.1				
Maireana brevifolia	4	40	SG			4								**BAM Attributes 1x1 plot (%)**	
Maireana georgei	1	10	SG			1								**Litter (%)**	28
Maireana pyramidata	11	16	SG			11									
Maireana aphylla	2	5	SG			2									
Malva parviflora	0.2	2	EX								0.2				
Medicago laciniata	0.8	100	EX								0.8				
Medicago minima	0.3	50	EX								0.3				
Rhagodia spinescens	8	30	SG			8									
Roepera similis	16	200	FG					16							
Roepera iodocarpa	0.4	30	FG					0.4							
Salsola australis	0.8	30	SG			0.8									
Sclerolaena brachyptera	0.1	1	SG			0.1									
Sclerolaena diacantha	4	60	SG			4									
Sclerolaena obliquicuspis	0.6	20	SG			0.6									
Senecio glossanthus	0.1	1	FG					0.1							
Sisymbrium erysimoides	0.3	10	EX								0.3				
Tetragonia moorei	12	200	FG					12							

Q37E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	749367
PCT 17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6144974
Date: 05/09/20			36	27	0	11	2	14	0	0	9	0		Orientation	95°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			134.6	**112.5**	0	71.4	2	39.1	0	0	**22.1**	0		**BAM Attributes 20x50m plot**	
Atriplex leptocarpa	3	60	SG			3								**Stem classes**	
Atriplex lindleyi	4	80	FG					4						**80+**	0
Austrostipa elegantissima	1	10	GG				1							**50-79**	0
Brachyscome lineariloba	6	1000	FG					6						**30-49**	0
Bromus rubens	0.1	2	EX								0.1			**20-29**	No
Calotis hispidula	0.4	30	FG					0.4						**10-19**	No
Chenopodium desertorum subsp. desertorum	1	5	SG			1								**5-9**	No
Crassula colorata var. acuminata	0.2	50	FG					0.2						**<5**	No
Daucus glochidiatus	3	200	FG					3						**Hollows**	-
Duma florulenta	36	30	SG			36								**Length logs (m)**	-
Einadia nutans subsp. nutans	0.3	10	FG					0.3							
Enchylaena tomentosa	6	30	SG			6								**BAM Attributes 1x1 plot (%)**	
Enteropogon acicularis	1	10	GG				1							**Litter (%)**	-
Erodium cicutarium	2	200	EX								2				
Geococcus pusillus	0.1	2	FG					0.1							
Hordeum leporinum	5	200	EX								5				
Maireana brevifolia	5	50	SG			5									
Malva parviflora	0.6	30	EX								0.6				
Medicago laciniata	5	500	EX								5				
Medicago minima	3	300	EX								3				
Nitraria billardierei	4	5	SG			4									
Oxalis perennans	0.5	30	FG					0.5							
Pycnosorus pleiocephalus	0.3	15	FG					0.3							
Rhagodia spinescens	6	20	SG			6									
Rhodanthe corymbiflora	0.5	30	FG					0.5							
Roepera similis	16	500	FG					16							
Salsola australis	0.5	40	SG			0.5									
Schismus barbatus	4	200	EX								4				
Scleroblitum atriplicinum	3	60	FG					3							
Sclerolaena brachyptera	0.9	30	SG			0.9									
Sclerolaena diacantha	3	50	SG			3									
Sclerolaena obliquicuspis	6	500	SG			6									
Senecio glossanthus	0.8	80	FG					0.8							
Sisymbrium erysimoides	2	50	EX								2				
Sisymbrium orientale	0.4	20	EX								0.4				
Tetragonia moorei	4	200	FG					4							

Q38E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	742521
PCT 23 – Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6146161
Date: 06/09/20			38	31	1	10	3	16	0	1	7	1		Orientation	273°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			60.3	**51.1**	7	31.1	3.6	9.3	0	0.1	**9.2**	4		**BAM Attributes 20x50m plot**	
Acacia melvillei	7	5	TG		7									**Stem classes**	
Alyssum linifolium	0.6	200	EX								0.6			**80+**	0
Austrostipa elegantissima	0.6	20	GG				0.6							**50-79**	0
Brachyscome lineariloba	1	100	FG					1						**30-49**	1
Calandrinia eremaea	0.4	50	FG					0.4						**20-29**	Yes
Calotis hispidula	0.3	40	FG					0.3						**10-19**	Yes
Carrichtera annua	4	500	HT									4		**5-9**	Yes
Convolvulus sp. (no fertile material)	0.1	2	OG							0.1				**<5**	Yes
Einadia nutans subsp. nutans	0.3	10	FG					0.3						**Hollows**	0
Enchylaena tomentosa	3	30	SG			3								**Length logs (m)**	5
Enteropogon acicularis	2	80	GG				2								
Erodium crinitum	0.2	20	FG					0.2						**BAM Attributes 1x1 plot (%)**	
Exocarpos aphyllus	1	1	SG			1								**Litter (%)**	22
Goodenia pusilliflora	4	200	FG					4							
Hypoxis glabella var. glabella	0.5	50	FG					0.5							
Isoetopsis graminifolia	0.7	60	FG					0.7							
Maireana brevifolia	3	30	SG			3									
Maireana sclerolaenoides	8	200	SG			8									
Medicago laciniata	3	500	EX								3				
Medicago minima	0.6	100	EX								0.6				
Mesembryanthemum nodiflorum	0.1	10	EX								0.1				
Nitraria billardierei	5	6	SG			5									
Oxalis perennans	0.1	10	FG					0.1							
Pittosporum angustifolium	0.1	1	SG			0.1									
Plantago drummondii	0.5	100	FG					0.5							
Pogonolepis muelleriana	0.4	50	FG					0.4							
Pycnosorus pleiocephalus	0.4	40	FG					0.4							
Rhagodia spinescens	7	20	SG			7									
Roepera iodocarpa	0.1	6	FG					0.1							
Rytidosperma setaceum	1	60	GG				1								
Salsola australis	0.6	100	SG			0.6									
Sclerolaena diacantha	3	50	SG			3									
Sclerolaena obliquicuspis	0.4	30	SG			0.4									
Senecio glossanthus	0.1	5	FG					0.1							
Sida corrugata	0.2	30	FG					0.2							
Silene apetala	0.1	2	EX								0.1				
Sisymbrium erysimoides	0.8	40	EX								0.8				
Solanum esuriale	0.1	1	FG					0.1							

Q39E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	742252
PCT 23 – Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones (Derived)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6146166
Date: 06/09/20			37	28	0	7	6	15	0	0	9	1		Orientation	275°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			72.8	**55.1**	0	8.8	24.7	21.6	0	0	**17.7**	4		**BAM Attributes 20x50m plot**	
Austrostipa nitida	3	60	GG				3							**Stem classes**	
Brachyscome lineariloba	0.4	50	FG					0.4						**80+**	0
Brassica tournefortii	0.4	30	EX								0.4			**50-79**	0
Bromus rubens	3	100	EX								3			**30-49**	0
Calotis hispidula	0.6	100	FG					0.6						**20-29**	No
Carrichtera annua	4	300	HT									4		**10-19**	No
Enchylaena tomentosa	0.1	1	SG			0.1								**5-9**	No
Enneapogon avenaceus	2	80	GG				2							**<5**	No
Enteropogon acicularis	4	30	GG				4							**Hollows**	-
Erodium cicutarium	3	100	EX								3			**Length logs (m)**	-
Erodium crinitum	2	100	FG					2							
Euphorbia drummondii	0.1	10	FG					0.1						**BAM Attributes 1x1 plot (%)**	
Goodenia pinnatifida	0.4	30	FG					0.4						**Litter (%)**	-
Goodenia pusilliflora	6	200	FG					6							
Hypochaeris glabra	0.1	1	EX								0.1				
Isoetopsis graminifolia	2	200	FG					2							
Limonium lobatum	0.1	1	EX								0.1				
Lomandra effusa	0.1	1	GG				0.1								
Maireana brevifolia	7	50	SG			7									
Maireana sclerolaenoides	0.5	30	SG			0.5									
Medicago laciniata	3	400	EX								3				
Medicago minima	4	500	EX								4				
Pycnosorus pleiocephalus	6	400	FG					6							
Rhodanthe corymbiflora	0.2	10	FG					0.2							
Rhodanthe pygmaea	0.1	10	FG					0.1							
Roepera crenata	1	100	FG					1							
Roepera similis	2	100	FG					2							
Rytidosperma setaceum	0.6	30	GG				0.6								
Rytidosperma sp. (no fertile material)	15	200	GG				15								
Salsola australis	0.2	10	SG			0.2									
Scleranthus minusculus	0.1	5	FG					0.1							
Sclerolaena diacantha	0.6	20	SG			0.6									
Sclerolaena obliquicuspis	0.3	20	SG			0.3									
Sida corrugata	0.3	20	FG					0.3							
Sida intricata	0.1	4	SG			0.1									
Silene apetala	0.1	1	EX								0.1				
Solanum esuriale	0.4	20	FG					0.4							

Q40E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	311022
PCT 28 - White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6145281
Date: 09/09/20			17	10	1	4	1	4	0	0	7	0		Orientation	88°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			72.7	29.1	7	0.5	0.1	21.5	0	0	43.6	0		BAM Attributes 20x50m plot	
Alectryon oleifolius subsp. canescens	7	2	TG		7									Stem classes	
Arctotheca calendula	0.4	20	EX								0.4			80+	0
Atriplex leptocarpa	0.1	5	SG			0.1								50-79	0
Atriplex vesicaria	0.2	10	SG			0.2								30-49	0
Crassula colorata var. acuminata	0.4	30	FG					0.4						20-29	No
Echium plantagineum	1	50	EX								1			10-19	Yes
Enneapogon sp. (no fertile material)	0.1	5	GG				0.1							5-9	No
Erodium crinitum	1	50	FG					1						<5	No
Hordeum sp. (no fertile material)	3	100	EX								3			Hollows	0
Lolium sp. (no fertile material)	2	80	EX								2			Length logs (m)	0
Malva parviflora	0.2	10	EX								0.2				
Medicago minima	35	1000	EX								35			BAM Attributes 1x1 plot (%)	
Salsola australis	0.1	6	SG			0.1								Litter (%)	2.2
Schismus barbatus	2	60	EX								2				
Sclerolaena obliquicuspis	0.1	3	SG			0.1									
Sida corrugata	0.1	3	FG					0.1							
Tetragonia moorei	20	1000	FG					20							

Q41E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	320024
PCT 15 – Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (derived)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6145117
Date: 09/09/20			31	26	0	4	2	20	0	0	5	0		Orientation	271°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			109.3	**26.2**	0	1.6	0.2	24.4	0	0	**83.1**	0		**BAM Attributes 20x50m plot**	
Asperula conferta	0.2	20	FG					0.2						**Stem classes**	
Atriplex leptocarpa	0.6	30	SG			0.6								**80+**	0
Avena barbata	3	100	EX								3			**50-79**	0
Brachyscome sp. (no fertile material)	0.1	5	FG					0.1						**30-49**	0
Bulbine semibarbata	0.2	10	FG					0.2						**20-29**	No
Calotis hispidula	0.1	5	FG					0.1						**10-19**	No
Calotis scabiosifolia var. scabiosifolia	0.1	5	FG					0.1						**5-9**	No
Chthonocephalus pseudevax	0.4	50	FG					0.4						**<5**	No
Crassula sp. (no fertile material)	0.1	2	FG					0.1						**Hollows**	-
Daucus glochidiatus	0.2	30	FG					0.2						**Length logs (m)**	-
Einadia nutans subsp. nutans	0.1	1	FG					0.1							
Enteropogon acicularis	0.1	20	GG				0.1							**BAM Attributes 1x1 plot (%)**	
Erodium cicutarium	0.1	5	EX								0.1			**Litter (%)**	0.2
Erodium crinitum	3	100	FG					3							
Euphorbia drummondii	0.1	3	FG					0.1							
Goodenia pinnatifida	0.1	2	FG					0.1							
Goodenia pusilliflora	0.2	10	FG					0.2							
Hordeum sp. (no fertile material)	5	200	EX								5				
Leiocarpa sp. (no fertile material)	0.5	10	FG					0.5							
Lolium sp. (no fertile material)	55	2000	EX								55				
Maireana aphylla	0.8	4	SG			0.8									
Maireana excavata	0.1	2	SG			0.1									
Medicago polymorpha	20	500	EX								20				
Oxalis perennans	0.1	10	FG					0.1							
Plantago cunninghamii	0.1	3	FG					0.1							
Plantago drummondii	0.3	20	FG					0.3							
Rhodanthe corymbiflora	18	500	FG					18							
Rytidosperma setaceum	0.1	3	GG				0.1								
Scleroblitum atriplicinum	0.4	20	FG					0.4							
Sclerolaena muricata var. villosa	0.1	5	SG			0.1									
Vittadinia sp. (no fertile material)	0.1	2	FG					0.1							

Q42E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	325223
PCT 163 – Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6144122
Date: 09/09/20			31	22	0	4	3	15	0	0	9	0		Orientation	96°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			137.8	72.5	0	31.2	0.5	40.8	0	0	65.3	0		BAM Attributes 20x50m plot	
Austrostipa nitida	0.1	2	GG				0.1							Stem classes	
Avena barbata	0.4	20	EX								0.4			80+	0
Brachyscome lineariloba	0.6	40	FG					0.6						50-79	0
Brachyscome smithwhitei	0.6	40	FG					0.6						30-49	0
Bromus rubens	0.7	60	EX								0.7			20-29	No
Bulbine semibarbata	0.1	5	FG					0.1						10-19	No
Chthonocephalus pseudevax	0.4	80	FG					0.4						5-9	No
Cotula bipinnata	0.1	5	EX								0.1			<5	No
Enteropogon acicularis	0.2	10	GG				0.2							Hollows	-
Eragrostis australasica	0.2	1	GG				0.2							Length logs (m)	-
Erodium cicutarium	2	100	EX								2				
Erodium crinitum	0.4	30	FG					0.4						BAM Attributes 1x1 plot (%)	
Goodenia pinnatifida	0.6	100	FG					0.6						Litter (%)	-
Goodenia pusilliflora	18	1000	FG					18							
Hordeum sp. (no fertile material)	3	80	EX								3				
Lolium sp. (no fertile material)	35	2000	EX								35				
Maireana aphylla	22	100	SG			22									
Maireana pentatropis	0.8	50	SG			0.8									
Medicago minima	20	500	EX								20				
Medicago polymorpha	4	60	EX								4				
Nitraria billardierei	8	10	SG			8									
Plantago cunninghamii	10	1000	FG					10							
Plantago drummondii	1	80	FG					1							
Rhodanthe corymbiflora	8	500	FG					8							
Sclerolaena brachyptera	0.4	20	SG			0.4									
Senecio glossanthus	0.2	5	FG					0.2							
Sida sp. (no fertile material)	0.1	1	FG					0.1							
Swainsona murrayana	0.3	130	FG					0.3							
Swainsona procumbens	0.1	5	FG					0.1							
Teucrium racemosum	0.4	40	FG					0.4							
Vulpia myuros	0.1	5	EX								0.1				

Q43E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	622057
PCT 58 – Black Oak – Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6218664
Date: 21/10/20			47	36	1	18	5	11	0	1	11	2		Orientation	322°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		Plot size	20 X 20 X 50
			80.2	**73.5**	12	53.9	5.7	1.8	0	0.1	**6.7**	4.1		BAM Attributes 20x50m plot	
Asphodelus fistulosus	1	30	EX								1			Stem classes	
Atriplex stipitata subsp. miscella	0.4	8	SG			0.4								80+	0
Austrostipa elegantissima	2	40	GG				2							50-79	0
Calandrinia eremaea	0.2	20	FG					0.2						30-49	0
Carrichtera annua	4	100	HT									4		20-29	Yes
Carthamus lanatus	0.1	1	HT									0.1		10-19	Yes
Casuarina pauper	12	15	TG		12									5-9	Yes
Chenopodium desertorum subsp. desertorum	1	20	SG			1								<5	Yes
Convolvulus crispifolius	0.1	1	FG					0.1						Hollows	0
Dodonaea viscosa subsp. angustissima	15	20	SG			15								Length logs (m)	25
Einadia nutans subsp. nutans	0.1	2	FG					0.1							
Enchylaena tomentosa	0.8	20	SG			0.8								BAM Attributes 1x1 plot (%)	
Enneapogon avenaceus	0.2	10	GG				0.2							Litter (%)	33
Euphorbia drummondii	0.2	20	FG					0.2							
Exocarpos aphyllus	1	1	SG			1									
Goodenia pinnatifida	0.1	5	FG					0.1							
Hypochaeris glabra	0.1	2	EX								0.1				
Maireana radiata	0.1	1	SG			0.1									
Maireana georgei	2	30	SG			2									
Maireana sclerolaenoides	1	40	SG			1									
Marrubium vulgare	0.1	10	EX								0.1				
Medicago minima	0.1	20	EX								0.1				
Myoporum platycarpum subsp. platycarpum	2	2	SG			2									
Olearia pimeleoides	20	80	SG			20									
Oxalis perennans	0.2	10	FG					0.2							
Paspalidium constrictum	0.6	20	GG				0.6								
Plantago drummondii	0.1	1	FG					0.1							
Rhagodia spinescens	3	8	SG			3									
Rhyncharrhena linearis	0.1	1	OG							0.1					
Roepera apiculata	0.3	30	FG					0.3							
Roepera eremaea	0.2	20	FG					0.2							
Rytidosperma setaceum	0.9	40	GG				0.9								
Rytidosperma caespitosum	2	30	GG				2								
Salsola australis	0.1	1	SG			0.1									
Scaevola spinescens	0.3	1	SG			0.3									
Sclerolaena diacantha	2	50	SG			2									
Sclerolaena obliquicuspis	0.6	40	SG			0.6									
Scorzonera laciniata	0.2	6	EX								0.2				
Senna artemisioides subsp. x coriacea	1	1	SG			1									
Sida intricata	0.6	40	SG			0.6									
Silene apetala	0.3	30	EX								0.3				
Sisymbrium erysimoides	0.1	2	EX								0.1				
Sonchus oleraceus	0.4	30	EX								0.4				
Stenopetalum lineare	0.1	5	FG					0.1							
Templetonia egena	3	1	SG			3									
Vittadinia cervicularis var. cervicularis	0.2	10	FG					0.2							
Reichardia tingitana	0.3	10	EX								0.3				

Q44E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	622711
PCT 172 – Deep sand mallee of irregular dunefields of the semi-arid (warm) zone (moderate to good – whipstick)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6217712
Date: 27/10/20			36	34	5	8	5	15	0	1	2	0		Orientation	143°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			93.1	**92.8**	33	7	50.1	2.6	0	0.1	**0.3**	0		**BAM Attributes 20x50m plot**	
Acacia colletioides	1	1	SG			1								**Stem classes**	
Acacia rigens	2	3	SG			2								**80+**	0
Alyssum linifolium	0.2	20	EX								0.2			**50-79**	0
Austrostipa acrociliata	3	80	GG				3							**30-49**	0
Austrostipa nitida	0.9	30	GG				0.9							**20-29**	No
Brachyscome lineariloba	0.1	20	FG					0.1						**10-19**	No
Calandrinia eremaea	0.2	30	FG					0.2						**5-9**	Yes
Calotis hispidula	0.1	10	FG					0.1						**<5**	Yes
Cassytha melantha	0.1	1	OG							0.1				**Hollows**	0
Chenopodium desertorum subsp. desertorum	0.1	1	SG			0.1								**Length logs (m)**	0
Daucus glochidiatus	0.1	20	FG					0.1							
Dodonaea viscosa subsp. angustissima	0.8	1	SG			0.8								**BAM Attributes 1x1 plot (%)**	
Elachanthus pusillus	0.2	30	FG					0.2						**Litter (%)**	31
Erodium crinitum	0.1	10	FG					0.1							
Eucalyptus costata	2	2	TG		2										
Eucalyptus dumosa	15	7	TG		15										
Eucalyptus gracilis	4	3	TG		4										
Eucalyptus leptophylla	7	6	TG		7										
Eucalyptus socialis	5	1	TG		5										
Goodenia willisiana	0.2	15	FG					0.2							
Halgania cyanea	0.2	1	SG			0.2									
Haloragis odontocarpa	0.2	12	FG					0.2							
Lepidium leptopetalum	2	6	SG			2									
Lomandra leucocephala subsp. leucocephala	0.2	1	GG				0.2								
Pimelea trichostachya	0.5	50	SG			0.5									
Podolepis capillaris	0.4	20	FG					0.4							
Ptilotus exaltatus	0.1	1	FG					0.1							
Ptilotus seminudus	0.1	5	FG					0.1							
Reichardia tingitana	0.1	1	EX								0.1				
Schoenus subaphyllus	1	10	GG				1								
Sclerolaena parviflora	0.4	50	SG			0.4									
Stenopetalum lineare	0.3	80	FG					0.3							
Stenopetalum sphaerocarpum	0.1	1	FG					0.1							
Trachymene cyanopetala	0.3	40	FG					0.3							
Trachymene glaucifolia	0.1	1	FG					0.1							
Triodia scariosa subsp. scariosa	45	100	GG				45								

Q45E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	623855
PCT 172 – Deep sand mallee of irregular dunefields of the semi-arid (warm) zone (moderate to good – whipstick)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6216220
Date: 27/10/20			23	23	3	7	5	7	0	1	0	0		Orientation	147°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			86.3	**86.3**	51	10.2	21.2	3.6	0	0.3	**0**	0		**BAM Attributes 20x50m plot**	
Austrostipa acrociliata	2	50	GG				2							**Stem classes**	
Austrostipa nitida	0.1	6	GG				0.1							**80+**	0
Calandrinia eremaea	0.2	30	FG					0.2						**50-79**	0
Callitris verrucosa	21	8	TG		21									**30-49**	0
Cassytha melantha	0.3	1	OG							0.3				**20-29**	0
Chenopodium desertorum subsp. desertorum	0.2	1	SG			0.2								**10-19**	Yes
Chrysocephalum apiculatum	1	40	FG					1						**5-9**	Yes
Cryptandra magniflora	2	2	SG			2								**<5**	Yes
Dodonaea viscosa subsp. angustissima	5	7	SG			5								**Hollows**	0
Eucalyptus costata	18	10	TG		18									**Length logs (m)**	0
Eucalyptus leptophylla	12	6	TG		12										
Goodenia willisiana	0.6	40	FG					0.6						**BAM Attributes 1x1 plot (%)**	
Haloragis odontocarpa	0.1	1	FG					0.1						**Litter (%)**	29
Halgania cyanea	2	20	SG			2									
Lomandra effusa	0.1	1	GG				0.1								
Pimelea trichostachya	0.2	10	SG			0.2									
Podolepis capillaris	0.2	20	FG					0.2							
Schoenus subaphyllus	1	8	GG				1								
Sclerolaena parviflora	0.7	100	SG			0.7									
Stenopetalum lineare	0.5	100	FG					0.5							
Triodia scariosa subsp. scariosa	18	80	GG				18								
Waitzia acuminata	1	50	FG					1							
Westringia rigida	0.1	1	SG			0.1									

Q46E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	625265
PCT 170 – Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones (moderate to good - whipstick)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6216263
Date: 27/10/20			34	33	3	13	2	15	0	0	1	0		Orientation	103°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			71	70.9	39	26.3	3.1	2.5	0	0	0.1	0		BAM Attributes 20x50m plot	
Acacia colletioides	6	3	SG			6								Stem classes	
Atriplex stipitata subsp. miscella	0.1	1	SG			0.1								80+	0
Austrostipa elegantissima	3	100	GG				3							50-79	0
Austrostipa nitida	0.1	3	GG				0.1							30-49	0
Brachyscome lineariloba	0.1	2	FG					0.1						20-29	0
Calandrinia eremaea	0.2	20	FG					0.2						10-19	Yes
Calotis hispidula	0.1	3	FG					0.1						5-9	Yes
Chenopodium desertorum subsp. desertorum	0.5	10	SG			0.5								<5	Yes
Chenopodium desertorum subsp. rectum	2	20	SG			2								Hollows	0
Crassula colorata var. acuminata	0.1	5	FG					0.1						Length logs (m)	14
Einadia nutans subsp. nutans	0.3	6	FG					0.3							
Enchylaena tomentosa	0.3	10	SG			0.3								BAM Attributes 1x1 plot (%)	
Eremophila glabra	1	1	SG			1								Litter (%)	49
Erodium crinitum	0.1	5	FG					0.1							
Eucalyptus dumosa	13	5	TG		13										
Eucalyptus oleosa	22	8	TG		22										
Eucalyptus socialis	4	1	TG		4										
Maireana georgei	1	15	SG			1									
Maireana pentatropis	2	40	SG			2									
Olearia pimeleoides	1	1	SG			1									
Oxalis perennans	0.1	2	FG					0.1							
Pimelea microcephala subsp. microcephala	4	6	SG			4									
Plantago drummondii	0.1	1	FG					0.1							
Ptilotus seminudus	0.1	1	FG					0.1							
Roepera ammophila	0.1	6	FG					0.1							
Roepera apiculata	0.3	20	FG					0.3							
Roepera eremaea	0.1	1	FG					0.1							
Sclerolaena diacantha	5	100	SG			5									
Sclerolaena parviflora	0.4	30	SG			0.4									
Senna artemisioides subsp. x coriacea	3	2	SG			3									
Sisymbrium erysimoides	0.1	1	EX								0.1				
Stenopetalum lineare	0.5	100	FG					0.5							
Thysanotus baueri	0.1	2	FG					0.1							
Vittadinia condyloides	0.2	9	FG					0.2							

Q47E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	626580
PCT 170 – Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones (moderate to good - whipstick)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6212626
Date: 27/10/20			19	17	2	10	2	3	0	0	2	1		Orientation	0°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			51	50.7	31	16.4	1.6	1.7	0	0	0.3	0.1		BAM Attributes 20x50m plot	
Atriplex stipitata subsp. stipitata	0.5	2	SG			0.5								Stem classes	
Austrostipa acrociliata	1	40	GG				1							80+	0
Austrostipa nitida	0.6	20	GG				0.6							50-79	0
Carrichtera annua	0.1	2	HT									0.1		30-49	0
Chenopodium desertorum subsp. desertorum	0.1	2	SG			0.1								20-29	No
Einadia nutans subsp. nutans	0.1	2	FG					0.1						10-19	Yes
Eucalyptus oleosa	22	12	TG		22									5-9	Yes
Eucalyptus socialis	9	3	TG		9									<5	Yes
Maireana radiata	0.3	5	SG			0.3								Hollows	0
Maireana pentatropis	3	80	SG			3								Length logs (m)	40
Myoporum platycarpum subsp. platycarpum	2	1	SG			2									
Olearia muelleri	5	20	SG			5								BAM Attributes 1x1 plot (%)	
Pimelea microcephala subsp. microcephala	1	1	SG			1								Litter (%)	58
Pittosporum angustifolium	0.5	1	SG			0.5									
Roepera apiculata	0.6	30	FG					0.6							
Roepera ovata	1	100	FG					1							
Sclerolaena diacantha	3	200	SG			3									
Sisymbrium erysimoides	0.2	4	EX								0.2				
Westringia rigida	1	2	SG			1									

Q48E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	238124
PCT 157 – Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6139916
Date: 24/03/21			18	15	0	8	2	5	0	0	3	0		Orientation	195°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			74.5	**73**	0	70	0.3	2.7	0	0	**1.5**	0		**BAM Attributes 20x50m plot**	
Atriplex lindleyi	1	50	FG					1						**Stem classes**	
Atriplex vesicaria	15	100	SG			15								**80+**	0
Austrostipa sp. (no fertile material)	0.2	10	GG				0.2							**50-79**	0
Brachyscome lineariloba	0.2	50	FG					0.2						**30-49**	No
Cressa australis	0.6	40	FG					0.6						**20-29**	No
Enteropogon acicularis	0.1	5	GG				0.1							**10-19**	No
Hordeum sp. (no fertile material)	0.8	80	EX								0.8			**5-9**	No
Maireana aphylla	10	60	SG			10								**<5**	No
Maireana pentagona	0.8	20	FG					0.8						**Hollows**	0
Malacocera tricornis	2	80	SG			2								**Length logs (m)**	0
Medicago minima	0.1	30	EX								0.1				
Nitraria billardierei	1	5	SG			1								**BAM Attributes 1x1 plot (%)**	
Osteocarpum acropterum	10	100	SG			10								**Litter (%)**	34
Plantago drummondii	0.1	5	FG					0.1							
Schismus barbatus	0.6	50	EX								0.6				
Sclerolaena brachyptera	10	100	SG			10									
Sclerolaena obliquicuspis	2	40	SG			2									
Sclerolaena tricuspis	20	200	SG			20									

Q49E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	239595
PCT 157 – Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6139805
Date: 24/03/21			18	17	0	9	3	5	0	0	1	0		Orientation	185°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			60.5	**60**	0	56.4	0.6	3	0	0	**0.5**	0		**BAM Attributes 20x50m plot**	
Atriplex vesicaria	15	100	SG			15								**Stem classes**	
Austrostipa sp. (no fertile material)	0.1	5	GG				0.1							**80+**	0
Brachyscome lineariloba	0.4	50	FG					0.4						**50-79**	0
Enteropogon acicularis	0.4	20	GG				0.4							**30-49**	No
Maireana aphylla	10	60	SG			10								**20-29**	No
Maireana pentagona	0.8	50	FG					0.8						**10-19**	No
Malacocera tricornis	5	100	SG			5								**5-9**	No
Nitraria billardierei	0.4	1	SG			0.4								**<5**	No
Osteocarpum acropterum	0.2	5	SG			0.2								**Hollows**	0
Panicum decompositum	0.1	10	GG				0.1							**Length logs (m)**	0
Plantago drummondii	0.2	20	FG					0.2							
Rhodanthe corymbiflora	0.8	50	FG					0.8						**BAM Attributes 1x1 plot (%)**	
Rhodanthe pygmaea	0.8	40	FG					0.8						**Litter (%)**	21
Schismus barbatus	0.5	30	EX								0.5				
Sclerolaena brachyptera	15	200	SG			15									
Sclerolaena obliquicuspis	0.6	10	SG			0.6									
Sclerolaena tricuspis	10	200	SG			10									
Tecticornia triandra	0.2	5	SG			0.2									

Q50E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	242584
PCT 157 – Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6139628
Date: 24/03/21			13	11	0	6	0	5	0	0	2	0		Orientation	85°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			54.7	54.5	0	52.4	0	2.1	0	0	0.2	0		BAM Attributes 20x50m plot	
Atriplex vesicaria	18	100	SG			18								Stem classes	
Brachyscome lineariloba	0.2	50	FG					0.2						**80+**	0
Maireana aphylla	8	100	SG			8								**50-79**	0
Maireana pentagona	0.8	50	FG					0.8						**30-49**	No
Malacocera tricornis	1	20	SG			1								**20-29**	No
Medicago minima (mostly seed)	0.1	50	EX								0.1			**10-19**	No
Plantago drummondii	0.4	30	FG					0.4						**5-9**	No
Rhodanthe corymbiflora (mostly died back)	0.5	80	FG					0.5						**<5**	No
Rhodanthe pygmaea	0.2	10	FG					0.2						Hollows	0
Schismus barbatus	0.1	10	EX								0.1			Length logs (m)	0
Sclerolaena brachyptera	10	100	SG			10									
Sclerolaena tricuspis	15	200	SG			15								BAM Attributes 1x1 plot (%)	
Tecticornia triandra	0.4	5	SG			0.4								**Litter (%)**	-

Q51E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	244291
PCT 157 – Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion (**poor/potential Cat1**)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6139522
Date: 24/03/21			9	8	0	6	0	2	0	0	1	0		Orientation	72°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			48.7	**48.5**	0	47.9	0	0.6	0	0	**0.2**	0		**BAM Attributes 20x50m plot**	
Atriplex lindleyi	0.4	10	FG					0.4						**Stem classes**	
Atriplex pseudocampanulata	6	50	SG			6								**80+**	0
Malacocera tricornis	0.1	1	SG			0.1								**50-79**	0
Nitraria billardierei	0.6	2	SG			0.6								**30-49**	No
Osteocarpum acropterum	0.4	10	SG			0.4								**20-29**	No
Plantago drummondii	0.2	10	FG					0.2						**10-19**	No
Schismus barbatus	0.2	20	EX								0.2			**5-9**	No
Sclerolaena brachyptera	0.8	30	SG			0.8								**<5**	No
Sclerolaena tricuspis	40	1000	SG			40								**Hollows**	0
														Length logs (m)	0
														BAM Attributes 1x1 plot (%)	
														Litter (%)	-

Q52E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	246304
PCT 164 – Cotton Bush open shrubland of the semi-arid (warm) zone (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6139303
Date: 24/06/21			17	14	0	8	1	5	0	0	3	0		Orientation	126°
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
			60	59.4	0	57.3	0.6	1.5	0	0	0.6	0		BAM Attributes 20x50m plot	
Atriplex pseudocampanulata	0.4	10	SG			0.4								Stem classes	
Atriplex vesicaria	0.1	1	SG			0.1								80+	0
Brachyscome lineariloba	0.3	50	FG					0.3						50-79	0
Calandrinia eremaea	0.1	2	FG					0.1						30-49	No
Calocephalus sonderi	0.4	20	FG					0.4						20-29	No
Eragrostis australasica	0.6	5	GG				0.6							10-19	No
Hordeum sp. (no fertile material)	0.1	10	EX								0.1			5-9	No
Maireana aphylla	35	500	SG			35								<5	No
Malacocera tricornis	5	100	SG			5								Hollows	0
Medicago minima (mostly seed)	0.1	50	EX								0.1			Length logs (m)	0
Nitraria billardierei	0.8	30	SG			0.8									
Osteocarpum acropterum	1	20	SG			1								BAM Attributes 1x1 plot (%)	
Plantago drummondii	0.2	40	FG					0.2						Litter (%)	-
Rhodanthe pygmaea	0.5	50	FG					0.5							
Schismus barbatus	0.4	40	EX								0.4				
Sclerolaena brachyptera	8	100	SG			8									
Sclerolaena tricuspis	7	50	SG			7									

Q53E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	249314
PCT 157 – Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6138995
Date: 25/03/21			17	16	0	9	4	3	0	0	1	0		Orientation	82°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			60.8	**58.8**	0	48.4	1.4	9	0	0	**2**	0		**BAM Attributes 20x50m plot**	
Atriplex leptocarpa	2	70	SG			2								**Stem classes**	
Atriplex pseudocampanulata	15	300	SG			15								**80+**	0
Austrostipa sp. (no fertile material)	0.1	5	GG				0.1							**50-79**	0
Enteropogon acicularis	0.8	80	GG				0.8							**30-49**	No
Hordeum sp. (no fertile material)	2	300	EX								2			**20-29**	No
Maireana appressa	0.4	10	SG			0.4								**10-19**	No
Maireana pentagona	3	100	FG					3						**5-9**	No
Malacocera tricornis	2	70	SG			2								**<5**	No
Nitraria billardierei	2	5	SG			2								**Hollows**	0
Osteocarpum acropterum	3	60	SG			3								**Length logs (m)**	0
Plantago drummondii	4	100	FG					4							
Rhodanthe pygmaea (mostly died back)	2	400	FG					2						**BAM Attributes 1x1 plot (%)**	
Rytidosperma caespitosum	0.1	5	GG				0.1							**Litter (%)**	-
Sclerolaena brachyptera	8	100	SG			8									
Sclerolaena tricuspis	10	100	SG			10									
Sporobolus caroli	0.4	50	GG				0.4								
Tecticornia pergranulata subsp. pergranulat	6	10	SG			6									

Q54E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	250000
PCT 157 – Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6139013
Date: 25/03/21			15	13	0	6	5	2	0	0	2	0		Orientation	110°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			88.2	**72.8**	0	58.7	2.1	12	0	0	**15.4**	0		**BAM Attributes 20x50m plot**	
Atriplex leptocarpa	0.8	20	SG			0.8								**Stem classes**	
Atriplex pseudocampanulata	45	500	SG			45								**80+**	0
Austrostipa scabra	0.5	10	GG				0.5							**50-79**	0
Calocephalus sonderi	10	300	FG					10						**30-49**	No
Enteropogon acicularis	0.5	10	GG				0.5							**20-29**	No
Eragrostis australasica	0.1	2	GG				0.1							**10-19**	No
Hordeum sp. (no fertile material)	15	500	EX								15			**5-9**	No
Maireana appressa	0.8	10	SG			0.8								**<5**	No
Medicago minima	0.4	100	EX								0.4			**Hollows**	0
Plantago drummondii	2	80	FG					2						**Length logs (m)**	0
Rytidosperma caespitosum	0.4	10	GG				0.4								
Salsola australis	0.1	1	SG			0.1								**BAM Attributes 1x1 plot (%)**	
Sclerolaena muricata var. muricata	8	90	SG			8								**Litter (%)**	-
Sclerolaena tricuspis	4	50	SG			4									
Sporobolus caroli	0.6	10	GG				0.6								

Q55E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	252221
PCT 157 – Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6138721
Date: 25/03/21			18	16	0	8	2	6	0	0	2	0		Orientation	78°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			58.7	55.9	0	27.6	0.8	27.5	0	0	2.8	0		BAM Attributes 20x50m plot	
Atriplex vesicaria	15	100	SG			15								Stem classes	
Brachyscome lineariloba	0.8	50	FG					0.8						80+	0
Calandrinia eremaea	0.2	10	FG					0.2						50-79	0
Calocephalus sonderi	0.4	10	FG					0.4						30-49	No
Hordeum sp. (no fertile material)	0.8	100	EX								0.8			20-29	No
Maireana aphylla	1	10	SG			1								10-19	No
Maireana pentagona	25	200	FG					25						5-9	No
Malacocera tricornis	0.5	10	SG			0.5								<5	No
Medicago minima	2	500	EX								2			Hollows	0
Osteocarpum acropterum	0.1	1	SG			0.1								Length logs (m)	0
Plantago drummondii	0.6	40	FG					0.6							
Rhodanthe pygmaea	0.5	20	FG					0.5						BAM Attributes 1x1 plot (%)	
Rytidosperma caespitosum	0.4	20	GG				0.4							Litter (%)	-
Sclerolaena brachyptera	3	50	SG			3									
Sclerolaena stelligera	3	40	SG			3									
Sclerolaena tricuspis	4	30	SG			4									
Sporobolus caroli	0.4	30	GG				0.4								
Tecticornia pergranulata subsp. pergranulat	1	5	SG			1									

Q56E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	254642
PCT 164 – Cotton Bush open shrubland of the semi-arid (warm) zone (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6138501
Date: 25/03/21			19	16	0	9	2	5	0	0	3	0		Orientation	282°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			53.8	**49.4**	0	45.7	1.4	2.3	0	0	**4.4**	0		**BAM Attributes 20x50m plot**	
Atriplex leptocarpa	5	80	SG			5								**Stem classes**	
Brachyscome lineariloba	0.4	50	FG					0.4						**80+**	0
Calocephalus sonderi	0.7	40	FG					0.7						**50-79**	0
Einadia nutans subsp. nutans	0.1	1	FG					0.1						**30-49**	No
Eragrostis australasica	1	10	GG				1							**20-29**	No
Hordeum sp. (no fertile material)	1	100	EX								1			**10-19**	No
Maireana aphylla	20	100	SG			20								**5-9**	No
Maireana appressa	3	90	SG			3								**<5**	No
Maireana pentagona	1	40	FG					1						**Hollows**	0
Malacocera tricornis	0.6	10	SG			0.6								**Length logs (m)**	0
Medicago minima	3	200	EX								3				
Minuria cunninghamii	0.1	5	FG					0.1						**BAM Attributes 1x1 plot (%)**	
Nitraria billardierei	1	5	SG			1								**Litter (%)**	-
Osteocarpum acropterum	0.2	5	SG			0.2									
Schismus barbatus	0.4	30	EX								0.4				
Sclerolaena brachyptera	0.4	5	SG			0.4									
Sclerolaena muricata var. muricata	0.5	5	SG			0.5									
Sclerolaena tricuspis	15	100	SG			15									
Sporobolus caroli	0.4	10	GG				0.4								

Q57E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	256785
PCT 163 – Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6138314
Date: 25/03/21			20	17	0	11	3	3	0	0	3	1		Orientation	88°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			53.6	**46.5**	0	44	0.6	1.9	0	0	**7.1**	0.1		**BAM Attributes 20x50m plot**	
Atriplex leptocarpa	3	100	SG			3								**Stem classes**	
Atriplex pseudocampanulata	0.8	10	SG			0.8								**80+**	0
Enteropogon acicularis	0.4	30	GG				0.4							**50-79**	0
Heliotropium amplexicaule	0.1	3	HT									0.1		**30-49**	No
Hordeum sp. (no fertile material)	3	200	EX								3			**20-29**	No
Maireana appressa	0.4	5	SG			0.4								**10-19**	No
Maireana pentagona	1	30	FG					1						**5-9**	No
Malacocera tricornis	2	60	SG			2								**<5**	No
Medicago minima	4	500	EX								4			**Hollows**	0
Nitraria billardierei	18	40	SG			18								**Length logs (m)**	0
Osteocarpum acropterum	0.6	10	SG			0.6									
Plantago drummondii	0.4	20	FG					0.4						**BAM Attributes 1x1 plot (%)**	
Rhagodia spinescens	4	5	SG			4								**Litter (%)**	-
Rhodanthe pygmaea	0.5	50	FG					0.5							
Rytidosperma caespitosum	0.1	1	GG				0.1								
Salsola australis	0.2	2	SG			0.2									
Sclerolaena brachyptera	3	70	SG			3									
Sclerolaena divaricata	4	80	SG			4									
Sclerolaena tricuspis	8	100	SG			8									
Sporobolus caroli	0.1	3	GG				0.1								

Q58E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	257905
PCT 58 – Black Oak – Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion (moderate)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6138239
Date: 25/03/21			27	22	1	12	5	4	0	0	5	1		Orientation	74°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			58	52.1	8	39	2.5	2.6	0	0	5.9	0.3		BAM Attributes 20x50m plot	
Alectryon oleifolius subsp. canescens	8	4	TG		8									Stem classes	
Atriplex leptocarpa	0.4	10	SG			0.4								80+	0
Atriplex semibaccata	3	60	SG			3								50-79	0
Austrostipa scabra	0.5	20	GG				0.5							30-49	No
Enchylaena tomentosa	10	40	SG			10								20-29	Yes
Enteropogon acicularis	0.6	20	GG				0.6							10-19	Yes
Heliotropium amplexicaule	0.3	10	HT									0.3		5-9	No
Hordeum sp. (no fertile material)	0.4	100	EX								0.4			<5	No
Maireana brevifolia	2	10	SG			2								Hollows	0
Maireana pentagona	1.4	50	FG					1.4						Length logs (m)	0
Maireana trichoptera	0.6	5	SG			0.6									
Medicago minima	5	500	EX								5			BAM Attributes 1x1 plot (%)	
Osteocarpum acropterum	0.4	5	SG			0.4								Litter (%)	44
Panicum decompositum	0.5	40	GG				0.5								
Plantago drummondii	0.4	30	FG					0.4							
Portulaca oleracea	0.6	30	FG					0.6							
Rhagodia spinescens	15	50	SG			15									
Rytidosperma caespitosum	0.4	20	GG				0.4								
Salsola australis	0.2	3	SG			0.2									
Schismus barbatus	0.1	10	EX								0.1				
Sclerolaena diacantha	2	50	SG			2									
Sclerolaena divaricata	0.6	10	SG			0.6									
Sclerolaena muricata var. muricata	0.8	20	SG			0.8									
Sclerolaena tricuspis	4	60	SG			4									
Sida corrugata	0.2	5	FG					0.2							
Sisymbrium orientale	0.1	10	EX								0.1				
Sporobolus caroli	0.5	10	GG				0.5								

Q59E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	258240
PCT 58 – Black Oak – Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion (Derived)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6138182
Date: 25/03/21			11	9	0	0	5	4	0	0	2	0		Orientation	82°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			51.1	**47**	0	0	14.9	32.1	0	0	**4.1**	0		**BAM Attributes 20x50m plot**	
Aira caryophyllea	0.1	10	EX								0.1			**Stem classes**	
Austrostipa sp. (no fertile material)	4	100	GG				4							**80+**	0
Enteropogon acicularis	5	100	GG				5							**50-79**	0
Eragrostis sp. (no fertile material)	0.5	60	GG				0.5							**30-49**	No
Lemooria burkittii	1	80	FG					1						**20-29**	No
Medicago minima (cotyledon)	4	500	EX								4			**10-19**	No
Panicum decompositum	5	100	GG				5							**5-9**	No
Rhodanthe corymbiflora (mostly died back)	30	500	FG					30						**<5**	No
Rytidosperma caespitosum	0.4	10	GG				0.4							**Hollows**	0
Sida corrugata	0.8	90	FG					0.8						**Length logs (m)**	0
Solanum esuriale	0.3	20	FG					0.3							
														BAM Attributes 1x1 plot (%)	
														Litter (%)	-

Q60E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	258926
PCT 58 – Black Oak – Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion (moderate)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6138114
Date: 25/03/21			16	13	0	5	3	5	0	0	3	0		Orientation	266°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			45	32.2	0	10.3	15	6.9	0	0	12.8	0		BAM Attributes 20x50m plot	
Aira caryophyllea	0.8	60	EX								0.8			Stem classes	
Atriplex lindleyi	0.5	10	FG					0.5						**80+**	0
Austrostipa scabra	10	200	GG				10							**50-79**	0
Enchylaena tomentosa	0.6	4	SG			0.6								**30-49**	No
Enteropogon acicularis	4	100	GG				4							**20-29**	No
Eragrostis cilianensis	7	200	EX								7			**10-19**	No
Lemooria burkittii	0.4	30	FG					0.4						**5-9**	No
Maireana pyramidata	1	3	SG			1								**<5**	No
Medicago minima	5	500	EX								5			Hollows	0
Panicum decompositum	1	100	GG				1							Length logs (m)	1
Rhagodia spinescens	8	25	SG			8									
Rhodanthe corymbiflora	5	100	FG					5						BAM Attributes 1x1 plot (%)	
Salsola australis	0.2	1	SG			0.2								**Litter (%)**	38
Sclerolaena divaricata	0.5	10	SG			0.5									
Sida corrugata	0.4	30	FG					0.4							
Solanum esuriale	0.6	40	FG					0.6							

Q61E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	260506
PCT 163 – Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6138094
Date: 25/03/21			22	21	0	6	5	10	0	0	1	0		Orientation	75°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			52.5	**52.1**	0	40	5.4	6.7	0	0	**0.4**	0		**BAM Attributes 20x50m plot**	
Asteraceae sp. 1 (no fertile material)	0.1	10	FG					0.1						**Stem classes**	
Asteraceae sp. 2 (no fertile material)	0.1	2	FG					0.1						**80+**	0
Atriplex holocarpa	0.5	1	FG					0.5						**50-79**	0
Atriplex vesicaria	5	12	SG			5								**30-49**	No
Austrostipa scabra	1	60	GG				1							**20-29**	No
Enteropogon acicularis	3	80	GG				3							**10-19**	No
Lemooria burkittii	0.2	10	FG					0.2						**5-9**	No
Maireana aphylla	10	15	SG			10								**<5**	No
Maireana pentagona	3	50	FG					3						**Hollows**	0
Medicago minima	0.4	50	EX								0.4			**Length logs (m)**	0
Minuria cunninghamii	0.4	5	FG					0.4							
Nitraria billardierei	12	10	SG			12								**BAM Attributes 1x1 plot (%)**	
Panicum decompositum	0.2	5	GG				0.2							**Litter (%)**	-
Plantago drummondii	0.8	100	FG					0.8							
Rhagodia spinescens	1	4	SG			1									
Rhodanthe corymbiflora	0.8	70	FG					0.8							
Rhodanthe pygmaea	0.4	50	FG					0.4							
Rytidosperma caespitosum	0.6	20	GG				0.6								
Sclerolaena brachyptera	10	70	SG			10									
Sclerolaena tricuspis	2	15	SG			2									
Solanum esuriale	0.4	15	FG					0.4							
Sporobolus caroli	0.6	10	GG				0.6								

Q62E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	772790
PCT 163 – Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6141002
Date: 26/03/21			15	13	0	6	1	6	0	0	2	0		Orientation	255°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			49.7	**49**	0	47.1	0.1	1.8	0	0	**0.7**	0		**BAM Attributes 20x50m plot**	
Atriplex vesicaria	8	40	SG			8								**Stem classes**	
Austrostipa sp. (no fertile material)	0.1	1	GG				0.1							**80+**	0
Brachyscome lineariloba	0.4	60	FG					0.4						**50-79**	0
Brachyscome sp. (no fertile material)	0.1	5	FG					0.1						**30-49**	No
Cressa australis	0.6	10	FG					0.6						**20-29**	No
Maireana aphylla	3	40	SG			3								**10-19**	No
Medicago minima	0.5	100	EX								0.5			**5-9**	No
Nitraria billardierei	25	100	SG			25								**<5**	No
Osteocarpum acropterum	0.1	1	SG			0.1								**Hollows**	0
Plantago drummondii	0.2	10	FG					0.2						**Length logs (m)**	0
Rhodanthe pygmaea	0.4	80	FG					0.4							
Schismus barbatus	0.2	20	EX								0.2			**BAM Attributes 1x1 plot (%)**	
Sclerolaena brachyptera	7	100	SG			7								**Litter (%)**	-
Sclerolaena tricuspis	4	80	SG			4									
Sida corrugata	0.1	5	FG					0.1							

Q63E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	770489
PCT 17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (moderate			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6142037
Date: 26/03/21			23	18	0	7	1	10	0	0	5	1		Orientation	110°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			22.9	**21.4**	0	19.4	0.1	1.9	0	0	**1.5**	0.1		**BAM Attributes 20x50m plot**	
Aira caryophyllea	0.1	10	EX								0.1			**Stem classes**	
Asteraceae sp. (mostly died back)	0.1	2	FG					0.1						**80+**	0
Brachyscome smithwhitei	0.4	10	FG					0.4						**50-79**	0
Brachyscome sp. (no fertile material)	0.1	10	FG					0.1						**30-49**	No
Bulbine semibarbata	0.2	15	FG					0.2						**20-29**	No
Centaurea solstitialis	0.1	2	EX								0.1			**10-19**	No
Chenopodium nitrariaceum	7	30	SG			7								**5-9**	No
Daucus glochidiatus	0.1	5	FG					0.1						**<5**	No
Duma florulenta	10	50	SG			10								**Hollows**	0
Eragrostis australasica	0.1	3	GG				0.1							**Length logs (m)**	0
Hibiscus trionum	0.1	2	FG					0.1							
Hordeum sp. (no fertile material)	0.4	100	EX								0.4			**BAM Attributes 1x1 plot (%)**	
Maireana aphylla	1	10	SG			1								**Litter (%)**	-
Medicago laciniata	0.8	50	EX								0.8				
Plantago drummondii	0.1	5	FG					0.1							
Rhodanthe corymbiflora	0.4	50	FG					0.4							
Roepera glauca	0.3	20	FG					0.3							
Sclerolaena brachyptera	0.1	1	SG			0.1									
Sclerolaena divaricata	0.8	40	SG			0.8									
Sclerolaena muricata var. muricata	0.4	10	SG			0.4									
Sclerolaena stelligera	0.1	1	SG			0.1									
Solanum esuriale	0.1	5	FG					0.1							
Xanthium spinosum	0.1	5	HT									0.1			

Q64E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	769895
PCT 164 – Cotton Bush open shrubland of the semi-arid (warm) zone (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6142382
Date: 26/03/21			25	24	0	7	4	12	0	1	1	0		Orientation	296°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		Plot size	20 X 20 X 50
			36.6	**36.2**	0	30.8	2.1	3.2	0	0.1	**0.4**	0		BAM Attributes 20x50m plot	
Abutilon halophilum	0.1	2	SG			0.1								Stem classes	
Austrostipa scabra	1	90	GG				1							**80+**	0
Brachyscome lineariloba	0.2	30	FG					0.2						**50-79**	0
Brachyscome sp. (no fertile material)	0.1	1	FG					0.1						**30-49**	No
Bulbine semibarbata	0.1	10	FG					0.1						**20-29**	No
Convolvulus clementii	0.1	1	OG							0.1				**10-19**	No
Einadia nutans subsp. nutans	0.1	1	FG					0.1						**5-9**	No
Enneapogon avenaceus	0.1	10	GG				0.1							**<5**	No
Enteropogon acicularis	0.6	40	GG				0.6							Hollows	0
Euphorbia drummondii	0.2	20	FG					0.2						Length logs (m)	0
Lepidium papillosum	0.1	5	FG					0.1							
Maireana aphylla	25	80	SG			25								BAM Attributes 1x1 plot (%)	
Medicago minima	0.4	50	EX								0.4			**Litter (%)**	-
Nitraria billardierei	2	5	SG			2									
Plantago drummondii	0.4	50	FG					0.4							
Rhodanthe corymbiflora	0.6	80	FG					0.6							
Rhodanthe pygmaea	0.3	40	FG					0.3							
Roepera glauca	0.8	40	FG					0.8							
Rytidosperma setaceum	0.4	20	GG				0.4								
Salsola australis	0.5	10	SG			0.5									
Sclerolaena brachyptera	0.1	2	SG			0.1									
Sclerolaena diacantha	3	50	SG			3									
Sida corrugata	0.2	20	FG					0.2							
Sida intricata	0.1	5	SG			0.1									
Teucrium racemosum	0.1	4	FG					0.1							

Q65E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	767599
PCT 17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6143935
Date: 26/03/21			30	28	0	12	5	10	0	1	2	0		Orientation	295°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			52.8	48	0	39.1	4.3	4.5	0	0.1	1.8	0		BAM Attributes 20x50m plot	
Alternanthera nana	0.1	5	FG					0.1						Stem classes	
Austrostipa scabra	0.1	5	GG				0.1							80+	0
Austrostipa sp. (no fertile material)	0.7	40	GG				0.7							50-79	0
Brachyscome sp. (dead)	0.1	1	FG					0.1						30-49	No
Bulbine semibarbata	0.1	1	FG					0.1						20-29	No
Chenopodium nitrariaceum	9	30	SG			9								10-19	No
Convolvulus clementii	0.1	1	OG							0.1				5-9	No
Duma florulenta	22	40	SG			22								<5	No
Einadia nutans subsp. nutans	0.1	1	FG					0.1						Hollows	0
Enteropogon acicularis	0.9	30	GG				0.9							Length logs (m)	0
Eragrostis australasica	2	5	GG				2								
Hordeum sp. (no fertile material)	1	80	EX								1			BAM Attributes 1x1 plot (%)	
Lepidium papillosum	0.1	1	FG					0.1						Litter (%)	-
Maireana brevifolia	0.2	5	SG			0.2									
Maireana georgei	0.2	4	SG			0.2									
Medicago minima	0.8	100	EX								0.8				
Osteocarpum acropterum	0.1	2	SG			0.1									
Oxalis perennans	0.1	1	FG					0.1							
Panicum decompositum	0.6	20	GG				0.6								
Rhagodia spinescens	0.8	5	SG			0.8									
Rhodanthe corymbiflora	2	80	FG					2							
Rhodanthe pygmaea	0.4	20	FG					0.4							
Salsola australis	2	20	SG			2									
Sclerolaena brachyptera	0.2	5	SG			0.2									
Sclerolaena diacantha	1	20	SG			1									
Sclerolaena divaricata	3	50	SG			3									
Sclerolaena muricata var. muricata	3	40	SG			0									
Sclerolaena tricuspis	0.6	10	SG			0.6									
Sida sp. (no fertile material)	0.5	30	FG					0.5							
Solanum esuriale	1	50	FG					1							

Q66E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	766549
PCT 163 – Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6144651
Date: 26/03/21			22	20	0	6	4	9	0	1	2	0		Orientation	115°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			43.1	**42.3**	0	35.8	3.4	3	0	0.1	**0.8**	0		**BAM Attributes 20x50m plot**	
Alternanthera nana	0.1	5	FG					0.1						**Stem classes**	
Austrostipa scabra	0.5	20	GG				0.5							**80+**	0
Bulbine semibarbata	0.4	30	FG					0.4						**50-79**	0
Calocephalus sonderi	0.6	20	FG					0.6						**30-49**	No
Convolvulus clementii	0.1	5	OG							0.1				**20-29**	No
Cressa australis	0.4	20	FG					0.4						**10-19**	No
Einadia nutans subsp. nutans	0.1	2	FG					0.1						**5-9**	No
Enteropogon acicularis	2	80	GG				2							**<5**	No
Maireana aphylla	8	25	SG			8								**Hollows**	0
Maireana pentagona	0.4	50	FG					0.4						**Length logs (m)**	0
Medicago minima	0.6	100	EX								0.6				
Nitraria billardierei	18	40	SG			18								**BAM Attributes 1x1 plot (%)**	
Panicum decompositum	0.5	20	GG				0.5							**Litter (%)**	-
Plantago drummondii	0.2	30	FG					0.2							
Rhagodia spinescens	2	5	SG			2									
Rhodanthe corymbiflora	0.7	20	FG					0.7							
Sclerolaena brachyptera	4	60	SG			4									
Sclerolaena divaricata	3	30	SG			3									
Sclerolaena tricuspis	0.8	30	SG			0.8									
Sida corrugata	0.1	5	FG					0.1							
Sisymbrium orientale	0.2	20	EX								0.2				
Sporobolus caroli	0.4	10	GG				0.4								

Q67E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	764629
PCT 163 – Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6144880
Date: 26/03/21			26	25	0	8	5	12	0	0	1	0		Orientation	254°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			46.8	**46.3**	0	37.9	4.3	4.1	0	0	**0.1**	0		**BAM Attributes 20x50m plot**	
Austrostipa scabra	0.8	30	GG				0.8							**Stem classes**	
Brachyscome lineariloba	0.1	10	FG					0.1						**80+**	0
Bulbine semibarbata	0.2	10	FG					0.2						**50-79**	0
Calandrinia eremaea	0.1	1	FG					0.1						**30-49**	No
Calocephalus sonderi	0.7	30	FG					0.7						**20-29**	No
Cressa australis	0.2	20	FG					0.2						**10-19**	No
Dysphania cristata	0.1	5	FG					0.1						**5-9**	No
Einadia nutans subsp. nutans	0.4	10	FG					0						**<5**	No
Enteropogon acicularis	1	60	GG				1							**Hollows**	0
Eragrostis australasica	0.4	2	GG				0.4							**Length logs (m)**	0
Hordeum sp. (no fertile material)	0.1	5	EX								0.1				
Maireana aphylla	9	40	SG			9								**BAM Attributes 1x1 plot (%)**	
Maireana cheelii	0.4	30	SG			0.4								**Litter (%)**	-
Maireana pentagona	0.6	40	FG					0.6							
Nitraria billardierei	16	50	SG			16									
Osteocarpum acropterum	0.4	5	SG			0.4									
Plantago drummondii	0.6	40	FG					0.6							
Rhodanthe corymbiflora	1	80	FG					1							
Rytidosperma setaceum	0.1	5	GG				0.1								
Sclerolaena brachyptera	6	80	SG			6									
Sclerolaena diacantha	0.1	1	SG			0.1									
Sclerolaena divaricata	2	40	SG			2									
Sclerolaena tricuspis	4	50	SG			4									
Sida corrugata	0.3	10	FG					0.3							
Sida trichopoda	0.2	10	FG					0.2							
Sporobolus caroli	2	80	GG				2								

Q68E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	276255
PCT 157 – Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6136731
Date: 27/03/21			19	16	0	9	1	6	0	0	3	0		Orientation	245°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			71.1	54.7	0	52.1	0.4	2.2	0	0	16.4	0		BAM Attributes 20x50m plot	
Atriplex leptocarpa	0.2	5	SG			0.2								Stem classes	
Atriplex vesicaria	25	100	SG			25								80+	0
Brachyscome lineariloba	0.1	10	FG					0.1						50-79	0
Hordeum sp. (no fertile material)	12	500	EX								12			30-49	No
Lolium sp. (no fertile material)	0.4	20	EX								0.4			20-29	No
Maireana aphylla	10	50	SG			10								10-19	No
Maireana appressa	0.1	1	SG			0.1								5-9	No
Malacocera tricornis	0.8	20	SG			0.8								<5	No
Medicago minima	4	100	EX								4			Hollows	0
Nitraria billardierei	3	5	SG			3								Length logs (m)	0
Plantago drummondii	0.6	30	FG					0.6							
Rhodanthe corymbiflora	0.5	30	FG					0.5						BAM Attributes 1x1 plot (%)	
Rhodanthe pygmaea	0.6	50	FG					0.6						Litter (%)	-
Rytidosperma setaceum	0.4	30	GG				0.4								
Sclerolaena brachyptera	4	40	SG			4									
Sclerolaena divaricata	1	30	SG			1									
Sclerolaena tricuspis	8	100	SG			8									
Sida corrugata	0.1	5	FG					0.1							
Sida trichopoda	0.3	10	FG					0.3							

Q69E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	279493
PCT 163 – Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6136399
Date: 27/03/21			25	22	0	7	4	11	0	0	3	0		Orientation	268°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			72.4	**66.2**	0	53	2.1	11.1	0	0	**6.2**	0		**BAM Attributes 20x50m plot**	
Atriplex vesicaria	5	50	SG			5								**Stem classes**	
Brachyscome lineariloba	0.7	60	FG					0.7						**80+**	0
Bulbine semibarbata	0.1	5	FG					0.1						**50-79**	0
Calocephalus sonderi	0.7	40	FG					0.7						**30-49**	No
Chrysocephalum apiculatum	0.1	5	FG					0.1						**20-29**	No
Enteropogon acicularis	0.5	30	GG				0.5							**10-19**	No
Eragrostis australasica	0.4	2	GG				0.4							**5-9**	No
Hordeum sp. (no fertile material)	3	200	EX								3			**<5**	No
Lolium sp. (no fertile material)	0.2	10	EX								0.2			**Hollows**	0
Maireana aphylla	8	50	SG			8								**Length logs (m)**	0
Maireana pentagona	3	100	FG					3							
Malacocera tricornis	2	30	SG			2								**BAM Attributes 1x1 plot (%)**	
Medicago minima	3	100	EX								3			**Litter (%)**	-
Nitraria billardierei	12	15	SG			12									
Plantago cunninghamii	0.4	20	FG					0.4							
Plantago drummondii	0.8	50	FG					0.8							
Rhodanthe corymbiflora	0.6	30	FG					0.6							
Rhodanthe pygmaea	4	100	FG					4							
Rytidosperma setaceum	0.8	50	GG				0.8								
Sclerolaena brachyptera	20	100	SG			20									
Sclerolaena divaricata	5	40	SG			5									
Sclerolaena tricuspis	1	20	SG			1									
Sida trichopoda	0.1	5	FG					0.1							
Sporobolus caroli	0.4	20	GG				0.4								
Vittadinia cuneata	0.6	20	FG					0.6							

Q70E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	277682
PCT 24 – Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6136516
Date: 27/03/2021			21	19	0	11	1	7	0	0	2	0		Orientation	82°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			60.6	**52.6**	0	27.2	22	3.4	0	0	**8**	0		**BAM Attributes 20x50m plot**	
Atriplex leptocarpa	0.1	1	SG			0.1								**Stem classes**	
Atriplex pseudocampanulata	8	80	SG			8								**80+**	0
Brachyscome lineariloba	0.3	20	FG					0.3						**50-79**	0
Calocephalus sonderi	0.2	10	FG					0.2						**30-49**	No
Chenopodium nitrariaceum	3	5	SG			3								**20-29**	No
Chrysocephalum apiculatum	0.1	2	FG					0.1						**10-19**	No
Einadia nutans subsp. nutans	0.1	5	FG					0.1						**5-9**	No
Eragrostis australasica	22	60	GG				22							**<5**	No
Hordeum sp. (no fertile material)	5	100	EX								5			**Hollows**	0
Maireana aphylla	3	20	SG			3								**Length logs (m)**	0
Malacocera tricornis	0.4	10	SG			0.4									
Medicago minima	3	200	EX								3			**BAM Attributes 1x1 plot (%)**	
Nitraria billardierei	0.6	2	SG			0.6								**Litter (%)**	-
Plantago cunninghamii	2	70	FG					2							
Plantago drummondii	0.2	10	FG					0.2							
Rhodanthe corymbiflora	0.5	40	FG					0.5							
Sclerolaena brachyptera	1	20	SG			1									
Sclerolaena diacantha	0.1	1	SG			0.1									
Sclerolaena divaricata	6	80	SG			6									
Sclerolaena muricata var. muricata	3	50	SG			3									
Sclerolaena tricuspis	2	40	SG			2									

Q71E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	277076
PCT 24 – Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6136674
Date: 27/03/21			13	11	0	8	1	2	0	0	2	0		Orientation	10°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			60.3	52.3	0	19.8	32	0.5	0	0	8	0		BAM Attributes 20x50m plot	
Atriplex leptocarpa	0.4	10	SG			0.4								Stem classes	
Atriplex pseudocampanulata	2	50	SG			2								**80+**	0
Chenopodium nitrariaceum	5	30	SG			5								**50-79**	0
Chrysocephalum apiculatum	0.1	2	FG					0.1						**30-49**	No
Einadia nutans subsp. nutans	0.4	20	FG					0.4						**20-29**	No
Eragrostis australasica	32	100	GG				32							**10-19**	No
Hordeum sp. (no fertile material)	6	500	EX								6			**5-9**	No
Maireana appressa	0.6	10	SG			0.6								**<5**	No
Medicago minima	2	200	EX								2			Hollows	0
Sclerolaena brachyptera	0.5	10	SG			0.5								Length logs (m)	0
Sclerolaena muricata var. muricata	4	100	SG			4									
Sclerolaena stelligera	0.3	5	SG			0.3								BAM Attributes 1x1 plot (%)	
Sclerolaena tricuspis	7	100	SG			7								**Litter (%)**	-

Q72E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	282210
PCT 157 – Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6136391
Date: 27/03/21			17	15	0	6	2	7	0	0	2	0		Orientation	35°
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
			53.9	30.9	0	23	2	5.9	0	0	23	0		BAM Attributes 20x50m plot	
Atriplex vesicaria	4	200	SG			4								Stem classes	
Brachyscome lineariloba	0.2	20	FG					0.2						80+	0
Chrysocephalum apiculatum	0.3	10	FG					0.3						50-79	0
Einadia nutans subsp. nutans	0.4	20	FG					0.4						30-49	No
Enteropogon acicularis	1	80	GG				1							20-29	No
Hordeum sp. (no fertile material)	1	80	EX								1			10-19	No
Maireana aphylla	3	20	SG			3								5-9	No
Malacocera tricornis	1	40	SG			1								<5	No
Medicago minima	22	1000	EX								22			Hollows	0
Nitraria billardierei	1	5	SG			1								Length logs (m)	0
Plantago cunninghamii	0.2	10	FG					0.2							
Plantago drummondii	1	90	FG					1						BAM Attributes 1x1 plot (%)	
Rhodanthe corymbiflora	0.8	50	FG					0.8						Litter (%)	-
Rhodanthe pygmaea	3	200	FG					3							
Rytidosperma setaceum	1	100	GG				1								
Sclerolaena brachyptera	6	80	SG			6									
Sclerolaena tricuspis	8	100	SG			8									

Q73E			**Covers**	**Native**	Trees	Shrubs	Grass	Forb	Fern	Other	**Exotic**	HighThreat	55	**Easting**	281917
PCT 24 – Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains (moderate to good)			**# spp**	**Count**	Count	Count	Count	Count	Count	Count	**Count**	Count		**Northing**	6136172
Date: 27/03/21			**25**	**20**	0	7	5	8	0	0	**5**	0		**Orientation**	245°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			55.9	**43.9**	0	20.9	20	3	0	0	**12**	0		**BAM Attributes 20x50m plot**	
Aira caryophyllea	0.4	40	EX								0.4			**Stem classes**	
Atriplex leptocarpa	0.1	1	SG			0.1								**80+**	0
Atriplex pseudocampanulata	3	30	SG			3								**50-79**	0
Atriplex vesicaria	0.8	3	SG			0.8								**30-49**	No
Austrostipa sp. (no fertile material)	0.1	10	GG				0.1							**20-29**	No
Brachyscome lineariloba	0.2	20	FG					0.2						**10-19**	No
Calocephalus sonderi	1	50	FG					1						**5-9**	No
Cressa australis	0.1	2	FG					0.1						**<5**	No
Enteropogon acicularis	1	50	GG				1							**Hollows**	0
Eragrostis australasica	18	40	GG				18							**Length logs (m)**	0
Goodenia pusilliflora	0.4	10	FG					0.4							
Hordeum sp. (mostly seedlings)	3	500	EX								3			**BAM Attributes 1x1 plot (%)**	
Lepidium africanum	0.1	1	EX								0.1			**Litter (%)**	-
Lolium sp. (mostly seedlings)	0.5	20	EX								0.5				
Maireana pentagona	0.1	5	FG					0.1							
Malacocera tricornis	0.4	5	SG			0.4									
Medicago minima (seedlings)	8	500	EX								8				
Plantago cunninghamii	0.7	50	FG					0.7							
Plantago drummondii	0.1	10	FG					0.1							
Rhodanthe corymbiflora	0.4	10	FG					0.4							
Rytidosperma caespitosum	0.1	5	GG				0.1								
Sclerolaena diacantha	0.6	20	SG			0.6									
Sclerolaena muricata var. muricata	1	30	SG			1									
Sclerolaena tricuspis	15	100	SG			15									
Sporobolus caroli	0.8	40	GG				0.8								

Q74E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	327171
PCT 17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (moderate			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6143802
Date: 28/03/21			33	29	0	5	7	15	1	1	4	0		Orientation	260°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			92.1	88	0	42.6	40.1	4.7	0.1	0.5	4.1	0		BAM Attributes 20x50m plot	
Alternanthera sp. A	0.1	2	FG					0.1						Stem classes	
Atriplex semibaccata	0.2	1	SG			0.2								80+	0
Austrostipa scabra	2	80	GG				2							50-79	0
Avena fatua	0.4	10	EX								0.4			30-49	No
Brachyscome lineariloba	0.3	10	FG					0.3						20-29	No
Centaurea solstitialis	0.6	10	EX								0.6			10-19	No
Chenopodium nitrariaceum	22	20	SG			22								5-9	No
Convolvulus clementii	0.5	20	OG							0.5				<5	No
Conyza sp. (no fertile material)	0.1	1	EX								0.1			Hollows	0
Duma florulenta	15	20	SG			15								Length logs (m)	0
Einadia nutans	0.2	10	FG					0.2							
Enteropogon acicularis	20	300	GG				20							BAM Attributes 1x1 plot (%)	
Eragrostis australasica	0.5	3	GG				0.5							Litter (%)	-
Eragrostis parviflora	3	80	GG				3								
Erodium crinitum	0.3	10	FG					0.3							
Euchiton sphaericus	0.1	5	FG					0.1							
Euphorbia drummondii	0.4	20	FG					0.4							
Helichrysum sp.	0.2	10	FG					0.2							
Hibiscus trionum	0.2	5	FG					0.2							
Lolium sp. (no fertile material)	3	100	EX								3				
Marsilea drummondii	0.1	5	EG						0.1						
Oxalis perennans	0.1	5	FG					0.1							
Panicum decompositum	10	200	GG				10								
Plantago cunninghamii	0.8	30	FG					0.8							
Rytidosperma caespitosum	0.6	20	GG				0.6								
Sclerolaena muricata var. muricata	5	70	SG			5									
Sclerolaena stelligera	0.4	10	SG			0.4									
Sida corrugata	0.1	5	FG					0.1							
Sida trichopoda	0.3	20	FG					0.3							
Solanum esuriale	0.2	10	FG					0.2							
Sporobolus caroli	4	80	GG				4								
Teucrium racemosum	1	40	FG					1							
Vittadinia cuneata	0.4	20	FG					0.4							

Q75E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	324597
PCT 160 - Nitre Goosefoot shrublannd wetland on clays of the inland floodplains (moderate to			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6144210
Date: 28/03/21			30	24	0	7	6	10	1	0	6	1		Orientation	270°
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
			84.4	78.9	0	32.5	41.2	4.8	0.4	0	5.5	0.5		BAM Attributes 20x50m plot	
Alternanthera nana	0.1	1	FG					0.1						Stem classes	
Atriplex leptocarpa	0.6	10	SG			0.6								80+	0
Calocephalus sonderi	0.8	20	FG					0.8						50-79	0
Chenopodium nitrariaceum	25	50	SG			25								30-49	No
Cucumis myriocarpus	0.2	5	EX								0.2			20-29	No
Dysphania cristata	0.4	15	FG					0.4						10-19	No
Echium plantagineum	0.6	20	EX								0.6			5-9	No
Einadia nutans	0.4	20	FG					0.4						<5	No
Enteropogon acicularis	10	200	GG				10							Hollows	0
Eragrostis australasica	3	7	GG				3							Length logs (m)	0
Eragrostis parviflora	12	100	GG				12								
Erodium crinitum	0.8	30	FG					0.8						BAM Attributes 1x1 plot (%)	
Euphorbia drummondii	0.4	20	FG					0.4						Litter (%)	-
Heliotropium amplexicaule	0.5	20	HT									0.5			
Hordeum sp. (no fertile material)	3	90	EX								3				
Juncus sp. (no fertile material)	0.8	20	GG				0.8								
Linum marginale	0.1	5	FG					0.1							
Lolium sp. (no fertile material)	0.7	30	EX								0.7				
Maireana aphylla	1	4	SG			1									
Malva preissiana	0.5	10	EX								0.5				
Marsilea drummondii	0.4	20	EG						0.4						
Nitraria billardierei	4	6	SG			4									
Oxalis perennans	0.6	30	FG					0.6							
Panicum decompositum	15	200	GG				15								
Rhagodia spinescens	0.5	2	SG			0.5									
Sclerolaena muricata var. muricata	0.6	10	SG			0.6									
Sclerolaena stelligera	0.8	10	SG			0.8									
Sida trichopoda	0.5	10	FG					0.5							
Solanum esuriale	0.7	30	FG					0.7							
Sporobolus caroli	0.4	10	GG				0.4								

Q76E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	324242
PCT 160 - Nitre Goosefoot shrublannd wetland on clays of the inland floodplains (moderate to			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6144269
Date: 28/03/21			25	18	0	6	4	7	0	1	7	1		Orientation	32°
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
			67.8	62.1	0	36.7	20	5	0	0.4	5.7	0.6		BAM Attributes 20x50m plot	
Austrostipa scabra	1	80	GG				1							Stem classes	
Avena sp. (no fertile material)	1	80	EX								1			80+	0
Brachyscome sp. (no fertile material)	0.6	10	FG					0.6						50-79	0
Chenopodium nitrariaceum	24	50	SG			24								30-49	No
Convolvulus clementii	0.4	5	OG							0.4				20-29	No
Einadia nutans	0.4	5	FG					0.4						10-19	No
Enteropogon acicularis	5	100	GG				5							5-9	No
Erodium crinitum	2	50	FG					2						<5	No
Euphorbia drummondii	0.4	20	FG					0.4						Hollows	0
Heliotropium amplexicaule	0.6	20	HT									0.6		Length logs (m)	0
Hordeum sp. (no fertile material)	0.8	50	EX								0.8				
Maireana aphylla	4	15	SG			4								BAM Attributes 1x1 plot (%)	
Malva preissiana	1	20	EX								1			Litter (%)	-
Medicago minima	1	90	EX								1				
Nitraria billardierei	5	10	SG			5									
Panicum decompositum	6	100	GG				6								
Plantago cunninghamii	0.4	20	FG					0.4							
Rhagodia spinescens	1	10	SG			1									
Sclerolaena divaricata	2	40	SG			2									
Sclerolaena tricuspis	0.7	10	SG			0.7									
Sida trichopoda	0.4	10	FG					0.4							
Sisymbrium orientale	1	50	EX								1				
Sporobolus caroli	8	100	GG				8								
Vittadinia cuneata	0.8	30	FG					0.8							
Xanthium occidentale	0.3	5	EX								0.3				

Q77E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	312014
PCT 58 – Black Oak – Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion (Derived)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6145255
Date: 28/03/21			19	17	0	9	3	5	0	0	2	0		Orientation	262°
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
			70	50	0	30.4	15.3	4.3	0	0	20	0		BAM Attributes 20x50m plot	
Atriplex leptocarpa	1	20	SG			1								Stem classes	
Atriplex semibaccata	15	90	SG			15								80+	0
Austrostipa scabra	0.3	10	GG				0.3							50-79	0
Einadia nutans	0.1	5	FG					0.1						30-49	No
Enteropogon acicularis	12	100	GG				12							20-29	No
Hordeum sp. (no fertile material)	10	500	EX								10			10-19	No
Lolium sp. (no fertile material)	10	500	EX								10			5-9	No
Maireana aphylla	7	30	SG			7								<5	No
Maireana georgei	0.1	2	SG			0.1								Hollows	0
Malacocera tricornis	0.2	10	SG			0.2								Length logs (m)	0
Osteocarpum acropterum	0.1	2	SG			0.1									
Plantago drummondii	0.6	20	FG					0.6						BAM Attributes 1x1 plot (%)	
Rhodanthe corymbiflora	3	60	FG					3						Litter (%)	-
Salsola australis	3	50	SG			3									
Sclerolaena divaricata	2	40	SG			2									
Sclerolaena muricata var. muricata	2	40	SG			2									
Sida trichopoda	0.4	10	FG					0.4							
Solanum esuriale	0.2	10	FG					0.2							
Sporobolus caroli	3	80	GG				3								

Q78E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	333729
PCT 164 – Cotton Bush open shrubland of the semi-arid (warm) zone (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6142531
Date: 29/03/21			22	17	0	3	5	8	0	1	5	1		Orientation	86°
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
			30.6	11.1	0	3	5.6	2.4	0	0.1	19.5	0.3		BAM Attributes 20x50m plot	
Austrostipa scabra	0.8	60	GG				0.8							Stem classes	
Calocephalus sonderi	0.8	50	FG					0.8						80+	0
Centaurea solstitialis	0.2	5	EX								0.2			50-79	0
Convolvulus clementii	0.1	1	OG							0.1				30-49	No
Enteropogon acicularis	2	80	GG				2							20-29	No
Heliotropium amplexicaule	0.3	10	HT									0.3		10-19	No
Hordeum sp. (no fertile material)	5	100	EX								5			5-9	No
Lolium sp. (no fertile material)	8	200	EX								8			<5	No
Maireana aphylla	2	15	SG			2								Hollows	0
Maireana pentagona	0.1	5	FG					0.1						Length logs (m)	0
Medicago minima	6	300	EX								6				
Nitraria billardierei	0.4	1	SG			0.4								BAM Attributes 1x1 plot (%)	
Panicum decompositum	2	40	GG				2							Litter (%)	-
Plantago cunninghamii	0.2	10	FG					0.2							
Plantago drummondii	0.1	5	FG					0.1							
Rhodanthe corymbiflora	0.5	40	FG					0.5							
Rhodanthe pygmaea	0.1	5	FG					0.1							
Rytidosperma setaceum	0.4	20	GG				0.4								
Sclerolaena divaricata	0.6	10	SG			0.6									
Solanum esuriale	0.5	40	FG					0.5							
Sporobolus caroli	0.4	10	GG				0.4								
Vittadinia cuneata	0.1	2	FG					0.1							

Q79E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	334601
PCT 44 - Forb-rich Speargrass - Windmill Grass - White Top grasslands of the Riverina Bioregion (Moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6142391
Date: 29/03/21			16	12	0	2	4	5	0	1	4	1		Orientation	103°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			49.2	**19.6**	0	0.7	17	1.8	0	0.1	**29.6**	1		**BAM Attributes 20x50m plot**	
Austrostipa scabra	10	100	GG				10							**Stem classes**	
Centaurea solstitialis	0.6	10	EX								0.6			**80+**	0
Convolvulus clementii	0.1	2	OG							0.1				**50-79**	0
Enteropogon acicularis	2	50	GG				2							**30-49**	No
Euphorbia drummondii	0.1	5	FG					0.1						**20-29**	No
Heliotropium amplexicaule	1	80	HT									1		**10-19**	No
Hordeum leporinum	22	500	EX								22			**5-9**	No
Medicago minima	6	200	EX								6			**<5**	No
Panicum decompositum	4	80	GG				4							**Hollows**	0
Rhagodia spinescens	0.1	1	SG			0.1								**Length logs (m)**	0
Rhodanthe corymbiflora	0.5	80	FG					0.5							
Sclerolaena divaricata	0.6	10	SG			0.6								**BAM Attributes 1x1 plot (%)**	
Sida trichopoda	0.1	5	FG					0.1						**Litter (%)**	-
Solanum esuriale	0.8	60	FG					0.8							
Sporobolus caroli	1	40	GG				1								
Vittadinia cuneata	0.3	40	FG					0.3							

Q80E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	335257
PCT 216 - Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6142238
Date: 29/03/21			15	11	0	2	4	4	0	1	4	1		Orientation	35°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			81.3	**29.1**	0	20.8	4.8	3.3	0	0.2	**52.2**	0.2		**BAM Attributes 20x50m plot**	
Calocephalus sonderi	2	80	FG					2						**Stem classes**	
Chenopodium nitrariaceum	0.8	3	SG			0.8								**80+**	0
Convolvulus clementii	0.2	15	OG							0.2				**50-79**	0
Echium plantagineum	3	50	EX								3			**30-49**	No
Enteropogon acicularis	0.6	20	GG				0.6							**20-29**	No
Heliotropium amplexicaule	0.2	5	HT									0.2		**10-19**	No
Hordeum leporinum	35	1000	EX								35			**5-9**	No
Juncus sp. (no fertile material)	0.4	20	GG				0.4							**<5**	No
Lolium perenne	14	500	EX								14			**Hollows**	0
Oxalis perennans	0.1	5	FG					0.1						**Length logs (m)**	0
Panicum decompositum	0.8	30	GG				0.8								
Plantago cunninghamii	0.4	10	FG					0.4						**BAM Attributes 1x1 plot (%)**	
Rytidosperma setaceum	3	90	GG				3							**Litter (%)**	-
Sclerolaena muricata var. muricata	20	100	SG			20									
Solanum esuriale	0.8	40	FG					0.8							

Q81E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	339713
PCT 46 - Curly windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion (moderate to			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6142004
Date: 29/09/21			14	8	0	1	4	3	0	0	6	1		Orientation	78°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			97.4	**49**	0	0.4	44.8	3.8	0	0	**48.4**	0.7		**BAM Attributes 20x50m plot**	
Austrostipa scabra	0.8	90	GG				0.8							**Stem classes**	
Cucumis myriocarpus	0.6	2	EX								0.6			**80+**	0
Enteropogon acicularis	40	500	GG				40							**50-79**	0
Hordeum leporinum	20	500	EX								20			**30-49**	No
Leiocarpa websteri	2	50	FG					2						**20-29**	No
Lolium perenne	15	300	EX								15			**10-19**	No
Lycium ferocissimum	0.7	1	HT									0.7		**5-9**	No
Maireana aphylla	0.4	1	SG			0.4								**<5**	No
Medicago minima	12	200	EX								12			**Hollows**	0
Panicum decompositum	3	100	GG				3							**Length logs (m)**	0
Rhodanthe corymbiflora	0.8	40	FG					0.8							
Rytidosperma setaceum	1	80	GG				1							**BAM Attributes 1x1 plot (%)**	
Solanum esuriale	1	50	FG					1						**Litter (%)**	-
Xanthium occidentale	0.1	1	EX								0.1				

Q82E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	347114
PCT 160 - Nitre Goosefoot shrublannd wetland on clays of the inland floodplains (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6142015
Date: 29/03/21			8	8	0	3	2	2	1	0	0	0		Orientation	170°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			47.5	47.5	0	38.1	8.8	0.2	0.4	0	0	0		BAM Attributes 20x50m plot	
Alternanthera nana	0.1	1	FG					0.1						Stem classes	
Atriplex pseudocampanulata	0.1	5	SG			0.1								**80+**	0
Chenopodium nitrariaceum	35	100	SG			35								**50-79**	0
Duma florulenta	3	10	SG			3								**30-49**	No
Dysphania cristata	0.1	1	FG					0.1						**20-29**	No
Eleocharis plana	8	200	GG				8							**10-19**	No
Eragrostis australasica	0.8	10	GG				0.8							**5-9**	No
Marsilea drummondii	0.4	10	EG						0.4					**<5**	No
														Hollows	0
														Length logs (m)	0
														BAM Attributes 1x1 plot (%)	
														Litter (%)	-

Q83E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	2993654
PCT 164 – Cotton Bush open shrubland of the semi-arid (warm) zone (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6144962
Date: 30/03/21			23	20	0	4	5	11	0	0	3	0		Orientation	50°
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
			58.5	51.5	0	33	12.8	5.7	0	0	7	0		BAM Attributes 20x50m plot	
Atriplex leptocarpa	0.2	5	SG			0.2								Stem classes	
Austrostipa scabra	3	90	GG				3							80+	0
Brachyscome lineariloba	0.4	40	FG					0.4						50-79	0
Calocephalus sonderi	0.6	20	FG					0.6						30-49	No
Einadia nutans subsp. nutans	0.1	3	FG					0.1						20-29	No
Enteropogon acicularis	4	100	GG				4							10-19	No
Eragrostis australasica	0.8	5	GG				0.8							5-9	No
Eragrostis parviflora	2	60	GG				2							<5	No
Euphorbia drummondii	0.1	5	FG					0.1						Hollows	0
Hordeum leporinum	1	80	EX								1			Length logs (m)	0
Lolium perenne	1	50	EX								1				
Maireana aphylla	32	100	SG			32								BAM Attributes 1x1 plot (%)	
Maireana pentagona	1	80	FG					1						Litter (%)	-
Medicago minima	5	300	EX								5				
Nitraria billardierei	0.4	1	SG			0.4									
Plantago cunninghamii	0.6	20	FG					0.6							
Plantago drummondii	1	60	FG					1							
Rhodanthe corymbiflora	0.8	50	FG					0.8							
Rhodanthe pygmaea	0.5	80	FG					0.5							
Sclerolaena divaricata	0.4	5	SG			0.4									
Sida trichopoda	0.1	5	FG					0.1							
Sporobolus caroli	3	100	GG				3								
Vittadinia cuneata	0.5	20	FG					0.5							

Q84E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	297209
PCT 160 - Nitre Goosefoot shrublannd wetland on clays of the inland floodplains (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6146203
Date: 30/03/21			30	25	0	12	4	8	0	1	5	0		Orientation	84°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			64	47.4	0	34.8	8	4.5	0	0.1	16.6	0		BAM Attributes 20x50m plot	
Atriplex leptocarpa	0.8	20	SG			0.8								Stem classes	
Atriplex semibaccata	0.5	10	SG			0.5								80+	0
Atriplex vesicaria	1	10	SG			1								50-79	0
Avena fatua	0.4	20	EX								0.4			30-49	No
Brachyscome sp. (no fertile material)	2	30	FG					2						20-29	No
Chenopodium nitrariaceum	10	5	SG			10								10-19	No
Convolvulus clementii	0.1	1	OG							0.1				5-9	No
Einadia nutans subsp. nutans	0.1	5	FG					0.1						<5	No
Enteropogon acicularis	6	100	GG				6							Hollows	0
Eragrostis australasica	1	5	GG				1							Length logs (m)	0
Euphorbia drummondii	0.1	5	FG					0.1							
Hordeum leporinum	0.8	60	EX								0.8			BAM Attributes 1x1 plot (%)	
Lolium perenne	12	500	EX								12			Litter (%)	-
Maireana aphylla	5	20	SG			5									
Medicago minima	3	100	EX								3				
Nitraria billardierei	3	3	SG			3									
Panicum decompositum	0.4	20	GG				0.4								
Plantago drummondii	0.4	30	FG					0.4							
Portulaca oleracea	0.1	1	FG					0.1							
Rhagodia spinescens	2	10	SG			2									
Rhodanthe corymbiflora	0.6	50	FG					0.6							
Rytidosperma setaceum	0.6	30	GG				0.6								
Sclerolaena diacantha	1	30	SG			1									
Sclerolaena divaricata	5	50	SG			5									
Sclerolaena muricata var. muricata	0.5	10	SG			0.5									
Sclerolaena stelligera	1	30	SG			1									
Sclerolaena tricuspis	5	80	SG			5									
Sida trichopoda	1	80	FG					1							
Sisymbrium orientale	0.4	5	EX								0.4				
Solanum esuriale	0.2	5	FG					0.2							

Q85E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	316332
PCT 15 - Black Box open woodland wetland with chenopod understorey mainly on the outerfloodplains in south-western NSW (Derived)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6145228
Date: 30/03/21			19	12	0	5	3	3	0	1	7	1		Orientation	263°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			52.2	**23.9**	0	17.2	5.1	1.5	0	0.1	**28.3**	8		**BAM Attributes 20x50m plot**	
Atriplex leptocarpa	12	100	SG			12								**Stem classes**	
Austrostipa scabra	0.6	40	GG				0.6							**80+**	0
Convolvulus clementii	0.1	2	OG							0.1				**50-79**	0
Cucumis myriocarpus	0.1	1	EX								0.1			**30-49**	No
Echium plantagineum	1	30	EX								1			**20-29**	No
Enteropogon acicularis	4	100	GG				4							**10-19**	No
Euphorbia drummondii	0.1	5	FG					0.1						**5-9**	No
Heliotropium amplexicaule	8	100	HT									8		**<5**	No
Hordeum leporinum	15	500	EX								15			**Hollows**	0
Lepidium africanum	0.2	5	EX								0.2			**Length logs (m)**	0
Lolium perenne	2	100	EX								2				
Maireana georgei	0.1	1	SG			0.1								**BAM Attributes 1x1 plot (%)**	
Maireana pentagona	0.8	30	FG					0.8						**Litter (%)**	51
Medicago minima	2	100	EX								2				
Rhagodia spinescens	2	10	SG			2									
Rytidosperma setaceum	0.5	20	GG				0.5								
Salsola australis	3	20	SG			3									
Sclerolaena divaricata	0.1	1	SG			0.1									
Solanum esuriale	0.6	50	FG					0.6							

Q86E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	313003
PCT 44 - Forb-rich Speargrass - Windmill Grass - White Top grasslands of the Riverina Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6145252
Date: 30/03/21			19	19	0	6	4	8	0	1	0	0		Orientation	81°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			60.2	**60.2**	0	12.2	39.7	8.2	0	0.1	**0**	0		**BAM Attributes 20x50m plot**	
Atriplex semibaccata	6	70	SG			6								**Stem classes**	
Austrostipa scabra	36	500	GG				36							**80+**	0
Brachyscome lineariloba	1	80	FG					1						**50-79**	0
Convolvulus clementii	0.1	5	OG							0.1				**30-49**	No
Enteropogon acicularis	3	60	GG				3							**20-29**	No
Euphorbia drummondii	0.1	5	FG					0.1						**10-19**	No
Maireana appressa	0.1	2	SG			0.1								**5-9**	No
Maireana brevifolia	0.1	1	SG			0.1								**<5**	No
Maireana pentagona	5	100	FG					5						**Hollows**	0
Plantago drummondii	0.2	20	FG					0.2						**Length logs (m)**	0
Rhodanthe corymbiflora	0.6	30	FG					0.6							
Rhodanthe pygmaea	0.8	100	FG					0.8						**BAM Attributes 1x1 plot (%)**	
Rytidosperma caespitosum	0.3	100	GG				0.3							**Litter (%)**	-
Salsola australis	3	20	SG			3									
Sclerolaena diacantha	1	40	SG			1									
Sclerolaena stelligera	2	50	SG			2									
Sida corrugata	0.3	20	FG					0.3							
Solanum esuriale	0.2	10	FG					0.2							
Sporobolus caroli	0.4	20	GG				0.4								

Q87E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	286832
PCT 15 - Black Box open woodland wetland with chenopod understorey mainly on the outerfloodplains in south-western NSW (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6139894
Date: 28/10/20			31	23	1	7	0	14	1	0	8	0		Orientation	216°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			85.6	**54.1**	18	30.3	0	5.7	0.1	0	**31.5**	0		**BAM Attributes 20x50m plot**	
Atriplex leptocarpa	4	80	SG			4								**Stem classes**	
Brachyscome lineariloba	0.1	10	FG					0.1						**80+**	0
Bulbine semibarbata	0.1	4	FG					0.1						**50-79**	4
Calandrinia eremaea	0.1	10	FG					0.1						**30-49**	Yes
Calocephalus sonderi	0.1	1	FG					0.1						**20-29**	Yes
Calotis hispidula	0.1	1	FG					0.1						**10-19**	Yes
Crassula colorata var. acuminata	0.1	50	FG					0.1						**5-9**	Yes
Dysphania cristata	0.3	40	FG					0.3						**<5**	No
Echium plantagineum	0.4	10	EX								0.4			**Hollows**	9
Einadia nutans subsp. nutans	1	40	FG					1						**Length logs (m)**	40
Enchylaena tomentosa	16	150	SG			16									
Eucalyptus largiflorens	18	4	TG		18									**BAM Attributes 1x1 plot (%)**	
Hordeum glaucum	2	50	EX								2			**Litter (%)**	16
Lamarckia aurea	0.3	20	EX								0.3				
Marsilea drummondii	0.1	5	EG						0.1						
Medicago minima	0.5	100	EX								0.5				
Oxalis perennans	0.2	10	FG					0.2							
Plantago drummondii	0.5	40	FG					0.5							
Rhagodia spinescens	5	12	SG			5									
Rhodanthe corymbiflora	0.6	50	FG					0.6							
Roepera similis	2	80	FG					2							
Salsola australis	0.1	1	SG			0.1									
Schismus barbatus	14	1000	EX								14				
Sclerolaena birchii	0.1	1	SG			0.1									
Sclerolaena muricata var. muricata	5	40	SG			5									
Sida intricata	0.1	2	SG			0.1									
Sisymbrium erysimoides	12	500	EX								12				
Tetragonia eremaea	0.3	20	FG					0.3							
Trifolium arvense	0.3	30	EX								0.3				
Vulpia myuros	2	60	EX								2				
Wahlenbergia fluminalis	0.2	20	FG					0.2							

Q88E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	288357
PCT 163 – Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones (Moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6141046
Date: 28/10/20			18	15	0	6	3	6	0	0	3	0		Orientation	68°
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
			117.5	71.5	0	25.8	3.8	41.9	0	0	46	0		BAM Attributes 20x50m plot	
Atriplex vesicaria subsp. vesicaria	0.4	3	SG			0.4								Stem classes	
Austrostipa nitida	0.5	10	GG				0.5							80+	0
Calocephalus sonderi	0.5	30	FG					0.5						50-79	0
Euphorbia drummondii	0.2	20	FG					0.2						30-49	0
Lolium perenne	5	60	EX								5			20-29	No
Maireana appressa	8	40	SG			8								10-19	No
Maireana pentagona	5	200	FG					5						5-9	No
Medicago minima	36	1000	EX								36			<5	No
Nitraria billardierei	14	20	SG			14								Hollows	0
Plantago drummondii	4	100	FG					4						Length logs (m)	0
Rhodanthe corymbiflora	32	2000	FG					32							
Rytidosperma sp. (small plant)	0.3	10	GG				0.3							BAM Attributes 1x1 plot (%)	
Salsola australis	0.3	6	SG			0.3								Litter (%)	10
Sclerolaena brachyptera	3	80	SG			3									
Sclerolaena tricuspis	0.1	1	SG			0.1									
Sporobolus caroli	3	50	GG				3								
Vittadinia sp. (no fertile material)	0.2	10	FG					0.2							
Vulpia myuros	5	100	EX								5				

Q89E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	511665
PCT 267 - White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6104938
Date: 21/10/20			35	18	3	1	4	8	1	1	17	1		Orientation	180°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			179.3	96.8	70	2	16.5	7.7	0.1	0.5	82.5	15		BAM Attributes 20x50m plot	
Acacia decora	2	2	SG			2								Stem classes	
Arctotheca calendula	0.4	30	EX								0.4			80+	0
Austrostipa blackii	8	60	GG				8							50-79	1
Austrostipa scabra subsp. falcata	5	60	GG				5							30-49	Yes
Avena barbata	6	50	EX								6			20-29	Yes
Brachychiton populneus subsp. populneus	3	4	TG		3									10-19	Yes
Bromus diandrus	15	200	HT									15		5-9	Yes
Callitris glaucophylla	25	30	TG		25									<5	Yes
Calotis lappulacea	0.3	10	FG					0.3						Hollows	1
Cheilanthes sieberi subsp. sieberi	0.1	1	EG						0.1					Length logs (m)	4
Cirsium vulgare	0.2	5	EX								0.2				
Crassula sieberiana	0.1	3	FG					0.1						BAM Attributes 1x1 plot (%)	
Echium plantagineum	1	20	EX								1			Litter (%)	18
Einadia nutans subsp. nutans	1	60	FG					1							
Eucalyptus albens	42	24	TG		42										
Glycine tabacina	0.5	20	OG							0.5					
Geranium solanderi	0.1	1	FG					0.1							
Hordeum vulgare	5	100	EX								5				
Hypochaeris radicata	0.3	20	EX								0.3				
Lactuca serriola f. serriola	0.1	3	EX								0.1				
Lolium perenne	50	1000	EX								50				
Lomandra filiformis subsp. coriacea	3	40	GG				3								
Mentha satureioides	0.1	1	FG					0.1							
Panicum sp. (no fertile material)	0.5	50	GG				0.5								
Moraea setifolia	0.5	500	EX								0.5				
Sida corrugata	2	40	FG					2							
Solanum nigrum	0.2	2	EX								0.2				
Sonchus oleraceus	0.5	30	EX								0.5				
Trifolium arvense	0.3	40	EX								0.3				
Trifolium campestre	0.4	40	EX								0.4				
Trifolium glomeratum	0.2	40	EX								0.2				
Trifolium angustifolium	0.4	30	EX								0.4				
Vulpia myuros	2	40	EX								2				
Wahlenbergia luteola	4	100	FG					4							
Wahlenbergia sp. (no fertile material)	0.1	10	FG					0.1							

Q90E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	534482
Miscellaneous ecosystem – native plantings			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6104386
Date: 20/10/20			25	12	5	0	3	4	0	0	13	0		Orientation	100°
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
			76.3	55.1	49.1	0	5.1	0.9	0	0	21.2	0		BAM Attributes 20x50m plot	
Aira cupaniana	0.3	30	EX								0.3			Stem classes	
Arctotheca calendula	0.9	50	EX								0.9			80+	0
Austrostipa setacea	3	40	GG				3							50-79	0
Brachychiton populneus subsp. populneus	0.1	20	TG		0.1									30-49	Yes
Cirsium vulgare	0.3	20	EX								0.3			20-29	Yes
Crassula colorata var. acuminata	0.1	1	FG					0.1						10-19	Yes
Crassula sieberiana	0.2	30	FG					0.2						5-9	Yes
Echium plantagineum	2	40	EX								2			<5	Yes
Erodium crinitum	0.5	20	FG					0.5						Hollows	0
Eucalyptus melliodora	18	8	TG		18									Length logs (m)	25
Eucalyptus sp. (planted possibly *Eucalyptus polyanthemos* no fertile material to confirm)	4	3	TG		4										
Eucalyptus sp. (planted possibly *Eucalyptus blakelyi* no fertile material to confirm)	20	15	TG		20									BAM Attributes 1x1 plot (%)	
Eucalyptus sideroxylon	7	2	TG		7									Litter (%)	32
Euchiton sphaericus	0.1	1	FG					0.1							
Isolepis levynsiana	0.2	50	EX								0.2				
Juncus sp. (no fertile material)	0.1	1	GG				0.1								
Lactuca serriola f. serriola	0.1	2	EX								0.1				
Lolium rigidum	6	33	EX								6				
Rytidosperma erianthum	2	50	GG				2								
Sonchus oleraceus	0.1	1	EX								0.1				
Trifolium arvense	0.3	20	EX								0.3				
Trifolium campestre	2	100	EX								2				
Trifolium glomeratum	5	300	EX								5				
Vulpia muralis	2	50	EX								2				
Vulpia myuros	2	50	EX								2				

Q91E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	761508
PCT 23 – Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones (derived)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6144774
Date: 08/04/21			28	26	0	12	3	10	0	1	2	0		Orientation	248°
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
			42.5	41.8	0	27.8	1.2	12.6	0	0.2	0.7	0		BAM Attributes 20x50m plot	
Austrostipa scabra	0.6	40	GG				0.6							Stem classes	
Brachyscome lineariloba	0.1	1	FG					0.1						80+	0
Convolvulus clementii	0.2	10	OG							0.2				50-79	0
Einadia nutans subsp. nutans	0.1	1	FG					0.1						30-49	No
Enchylaena tomentosa	0.1	1	SG			0.1								20-29	No
Enteropogon acicularis	0.5	20	GG				0.5							10-19	No
Eremophila longifolia	1	3	SG			1								5-9	No
Erodium crinitum	0.1	5	FG					0.1						<5	No
Euphorbia drummondii	0.1	5	FG					0.1						Hollows	0
Maireana aphylla	1	3	SG			1								Length logs (m)	0
Maireana georgei	1	5	SG			1									
Malacocera tricornis	0.4	5	SG			0.4								BAM Attributes 1x1 plot (%)	
Medicago minima	0.3	10	EX								0.3			Litter (%)	46
Panicum decompositum	0.1	2	GG				0.1								
Ptilotus exaltatus var. exaltatus	6	10	FG					6							
Rhagodia spinescens	4	6	SG			4									
Roepera glauca	3	40	FG					3							
Salsola australis	2	20	SG			2									
Sclerolaena brachyptera	1	40	SG			1									
Sclerolaena diacantha	15	100	SG			15									
Sclerolaena muricata var. muricata	0.5	10	SG			0.5									
Sclerolaena stelligera	0.8	20	SG			0.8									
Sclerolaena tricuspis	1	20	SG			1									
Sida trichopoda	0.1	5	FG					0.1							
Sisymbrium orientale	0.4	50	EX								0.4				
Solanum esuriale	0.8	30	FG					0.8							
Teucrium racemosum	2	50	FG					2							
Vittadinia cuneata	0.3	20	FG					0.3							

Q92E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	759926
PCT 23 – Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones (derived)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6144678
Date: 08/04/21			20	18	0	13	1	4	0	0	2	0		Orientation	260°
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
			37.7	37.2	0	31.5	0.1	5.6	0	0	0.5	0		BAM Attributes 20x50m plot	
Aira caryophyllea	0.1	5	EX								0.1			Stem classes	
Atriplex lindleyi	5	100	FG					5						80+	0
Austrostipa scabra	0.1	5	GG				0.1							50-79	0
Brachyscome lineariloba	0.1	5	FG					0.1						30-49	No
Enchylaena tomentosa	0.5	2	SG			0.5								20-29	No
Eremophila longifolia	0.6	2	SG			0.6								10-19	No
Linum marginale	0.2	20	FG					0.2						5-9	No
Maireana aphylla	1	3	SG			1								<5	No
Maireana brevifolia	0.6	2	SG			0.6								Hollows	0
Maireana pyramidata	0.8	1	SG			0.8								Length logs (m)	0
Nitraria billardierei	5	20	SG			5									
Osteocarpum acropterum	0.2	5	SG			0.2								BAM Attributes 1x1 plot (%)	
Rhagodia spinescens	6	30	SG			6								Litter (%)	28
Salsola australis	0.8	10	SG			0.8									
Sclerolaena brachyptera	1	30	SG			1									
Sclerolaena diacantha	8	100	SG			8									
Sclerolaena obliquicuspis	3	80	SG			3									
Sclerolaena tricuspis	4	50	SG			4									
Sisymbrium orientale	0.4	30	EX								0.4				
Solanum esuriale	0.3	20	FG					0.3							

Q93E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	759032
PCT 58 – Black Oak – Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion (Moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6144664
Date: 09/04/21			16	15	2	11	0	2	0	0	1	0		Orientation	76°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			74.4	**74.1**	29	44.5	0	0.6	0	0	**0.3**	0		**BAM Attributes 20x50m plot**	
Alectryon oleifolius subsp. canescens	8	4	TG		8									**Stem classes**	
Atriplex leptocarpa	0.4	20	SG			0.4								**80+**	0
Casuarina pauper	21	18	TG		21									**50-79**	0
Cressa australis	0.2	10	FG					0.2						**30-49**	No
Einadia nutans subsp. nutans	0.4	15	FG					0.4						**20-29**	Yes
Enchylaena tomentosa	5	40	SG			5								**10-19**	Yes
Maireana brevifolia	1	10	SG			1								**5-9**	Yes
Maireana pyramidata	3	10	SG			3								**<5**	Yes
Nitraria billardierei	7	20	SG			7								**Hollows**	0
Osteocarpum acropterum	0.5	10	SG			0.5								**Length logs (m)**	62
Rhagodia spinescens	14	50	SG			14									
Salsola australis	0.6	10	SG			0.6								**BAM Attributes 1x1 plot (%)**	
Sclerolaena brachyptera	8	80	SG			8								**Litter (%)**	40
Sclerolaena diacantha	4	70	SG			4									
Sclerolaena divaricata	1	30	SG			1									
Sisymbrium orientale	0.3	30	EX								0.3				

Q94E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	756689
PCT 23 – Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones (derived)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6144554
Date: 09/04/21			19	17	0	7	3	7	0	0	2	0		Orientation	76°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			51.3	**50.4**	0	30.5	15.9	4	0	0	**0.9**	0		**BAM Attributes 20x50m plot**	
Austrostipa scabra	15	500	GG				15							**Stem classes**	
Enchylaena tomentosa	8	50	SG			8								**80+**	0
Enteropogon acicularis	0.1	5	GG				0.1							**50-79**	0
Eremophila longifolia	0.4	1	SG			0.4								**30-49**	No
Erodium crinitum (mostly dead)	0.2	40	FG					0.2						**20-29**	No
Linum marginale	0.3	20	FG					0.3						**10-19**	No
Maireana aphylla	0.1	1	SG			0.1								**5-9**	No
Medicago minima (mostly dead)	0.1	10	EX								0.1			**<5**	No
Medicago polymorpha (mostly dead)	0.8	100	EX								0.8			**Hollows**	0
Plantago drummondii	0.4	10	FG					0.4						**Length logs (m)**	0
Ptilotus sessilifolius	4	60	SG			4									
Rhagodia spinescens	4	30	SG			4								**BAM Attributes 1x1 plot (%)**	
Rhodanthe pygmaea (mostly dead)	0.1	10	FG					0.1						**Litter (%)**	14.4
Rytidosperma caespitosum	0.8	50	GG				0.8								
Salsola australis	2	50	SG			2									
Sclerolaena diacantha	12	100	SG			12									
Solanum esuriale	0.4	30	FG					0.4							
Teucrium racemosum	0.6	50	FG					0.6							
Vittadinia cuneata (no fertile material)	2	40	FG					2							

Q95E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	359086
PCT 160 - Nitre Goosefoot shrublannd wetland on clays of the inland floodplains (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6142073
Date: 10/04/21			7	5	0	2	3	0	0	0	2	0		Orientation	260°
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
			109.6	109	0	29	80	0	0	0	0.6	0		BAM Attributes 20x50m plot	
Chenopodium nitrariaceum	25	80	SG			25								Stem classes	
Duma florulenta	4	50	SG			4								80+	0
Eragrostis australasica	20	60	GG				20							50-79	0
Lachnagrostis filiformis	5	100	GG				5							30-49	No
Lolium perenne	0.5	10	EX								0.5			20-29	No
Medicago minima	0.1	2	EX								0.1			10-19	No
Panicum decompositum	55	1000	GG				55							5-9	No
														<5	No
														Hollows	0
														Length logs (m)	0
														BAM Attributes 1x1 plot (%)	
														Litter (%)	-

Q96E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	359608
PCT 26 – Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion (poor)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6142074
Date: 10/04/21			26	24	1	10	6	7	0	0	2	1		Orientation	86°
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
			72	70.7	6	20.9	40	3.8	0	0	1.3	0.8		BAM Attributes 20x50m plot	
Acacia pendula	6	2	TG		6									Stem classes	
Atriplex semibaccata	2	40	SG			2								80+	0
Austrostipa nodosa	14	300	GG				14							50-79	0
Austrostipa scabra	2	60	GG				2							30-49	No
Chrysocephalum semipapposum	0.1	1	FG					0.1						20-29	Yes
Dissocarpus paradoxus	0.6	15	SG			0.6								10-19	No
Enteropogon acicularis	12	200	GG				12							5-9	No
Euphorbia drummondii	0.2	10	FG					0.2						<5	Yes
Lycium ferocissimum	0.8	1	HT									0.8		Hollows	0
Maireana aphylla	8	30	SG			8								Length logs (m)	2
Maireana georgei	0.6	5	SG			0.6									
Maireana pentagona	1	50	FG					1						BAM Attributes 1x1 plot (%)	
Medicago laciniata	0.5	20	EX								0.5			Litter (%)	42
Panicum decompositum	2	60	GG				2								
Plantago drummondii	0.4	5	FG					0.4							
Rhagodia spinescens	3	10	SG			3									
Rytidosperma setaceum	6	100	GG				6								
Salsola australis	0.8	50	SG			0.8									
Sclerolaena brachyptera	1	30	SG			1									
Sclerolaena diacantha	4	80	SG			4									
Sclerolaena divaricata	0.5	5	SG			0.5									
Sclerolaena muricata var. muricata	0.4	2	SG			0.4									
Sida corrugata	0.8	30	FG					0.8							
Sida trichopoda	0.5	10	FG					0.5							
Solanum esuriale	0.8	40	FG					0.8							
Sporobolus caroli	4	100	GG				4								

Q97E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	362601
PCT 26 – Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion (poor)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6142069
Date: 10/04/21			28	27	1	8	7	11	0	0	1	0		Orientation	70°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			79.5	**79**	4	36.7	34.4	3.9	0	0	**0.5**	0		**BAM Attributes 20x50m plot**	
Acacia pendula	4	1	TG		4									**Stem classes**	
Atriplex leptocarpa	0.5	10	SG			0.5								**80+**	0
Atriplex semibaccata	2	30	SG			2								**50-79**	0
Austrostipa aristiglumis	4	80	GG				4							**30-49**	No
Austrostipa nodosa	0.8	50	GG				0.8							**20-29**	Yes
Austrostipa scabra	0.4	20	GG				0.4							**10-19**	No
Brachyscome smithwhitei	0.1	1	FG					0.1						**5-9**	No
Calocephalus sonderi	0.5	20	FG					0.5						**<5**	No
Dissocarpus paradoxus	0.1	1	SG			0.1								**Hollows**	0
Einadia nutans subsp. nutans	0.4	10	FG					0.4						**Length logs (m)**	3
Enchylaena tomentosa	0.1	1	SG			0.1									
Enteropogon acicularis	16	200	GG				16							**BAM Attributes 1x1 plot (%)**	
Euphorbia drummondii	0.4	20	FG					0.4						**Litter (%)**	35
Maireana aphylla	26	60	SG			26									
Maireana pentagona	0.5	30	FG					0.5							
Medicago truncatula	0.5	30	EX								0.5				
Oxalis perennans	0.1	5	FG					0.1							
Panicum decompositum	6	80	GG				6								
Plantago drummondii	0.4	20	FG					0.4							
Rhagodia spinescens	5	4	SG			5									
Rhodanthe corymbiflora	0.4	20	FG					0.4							
Rytidosperma setaceum	0.2	5	GG				0.2								
Salsola australis	1	10	SG			1									
Sclerolaena divaricata	2	30	SG			2									
Sida corrugata	0.2	10	FG					0.2							
Sida trichopoda	0.5	20	FG					0.5							
Solanum esuriale	0.4	30	FG					0.4							
Sporobolus caroli	7	90	GG				7								

Q98E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	363715
PCT 26 – Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6142105
Date: 10/04/21			30	29	2	11	5	11	0	0	1	0		Orientation	80°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			75.6	**75.4**	18.1	32.1	20	5.2	0	0	**0.2**	0		**BAM Attributes 20x50m plot**	
Acacia oswaldii	0.1	1	TG		0.1									**Stem classes**	
Acacia pendula	18	4	TG		18									**80+**	0
Asteraceae sp. (no fertile material)	0.1	5	FG					0.1						**50-79**	0
Atriplex pseudocampanulata	2	40	SG			2								**30-49**	4
Atriplex semibaccata	3	80	SG			3								**20-29**	Yes
Austrostipa scabra	5	100	GG				5							**10-19**	Yes
Chenopodium nitrariaceum	12	20	SG			12								**5-9**	No
Einadia nutans subsp. nutans	0.6	10	FG					0.6						**<5**	Yes
Enchylaena tomentosa	3	70	SG			3								**Hollows**	0
Enteropogon acicularis	4	80	GG				4							**Length logs (m)**	11
Euphorbia drummondii	0.2	10	FG					0.2							
Goodenia pinnatifida	0.1	5	FG					0.1						**BAM Attributes 1x1 plot (%)**	
Maireana aphylla	5	40	SG			5								**Litter (%)**	26
Maireana georgei	1	20	SG			1									
Maireana pentagona	2	80	FG					2							
Medicago sp.	0.2	20	EX								0.2				
Panicum decompositum	3	80	GG				3								
Plantago drummondii	0.8	30	FG					0.8							
Rhodanthe corymbiflora	0.4	20	FG					0.4							
Rytidosperma setaceum	4	100	GG				4								
Salsola australis	1	30	SG			1									
Sclerolaena diacantha	4	50	SG			4									
Sclerolaena divaricata	0.1	1	SG			0.1									
Sclerolaena muricata var. muricata	0.8	10	SG			0.8									
Sclerolaena stelligera	0.2	5	SG			0.2									
Sida corrugata	0.1	5	FG					0.1							
Solanum esuriale	0.4	30	FG					0.4							
Sporobolus caroli	4	90	GG				4								
Teucrium racemosum	0.1	1	FG					0.1							
Vittadinia cuneata	0.4	20	FG					0.4							

Q99E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	365767
PCT 11 - River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (Moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6142055
Date: 10/04/21			33	30	1	10	7	11	1	0	3	0		Orientation	295°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			90.4	**87.8**	8	53.7	22	4	0.1	0	**2.6**	0		**BAM Attributes 20x50m plot**	
Alternanthera nana	0.2	5	FG					0.2						**Stem classes**	
Aster sp.	0.5	5	FG					0.5						**80+**	2
Atriplex leptocarpa	3	60	SG			3								**50-79**	2
Atriplex semibaccata	4	80	SG			4								**30-49**	Yes
Austrostipa nodosa	0.6	20	GG				0.6							**20-29**	No
Calocephalus sonderi	0.4	10	FG					0.4						**10-19**	No
Chenopodium nitrariaceum	15	10	SG			15								**5-9**	No
Dissocarpus paradoxus	3	60	SG			3								**<5**	No
Duma florulenta	20	30	SG			20								**Hollows**	4
Einadia nutans subsp. nutans	1	20	FG					1						**Length logs (m)**	26
Enchylaena tomentosa	5	100	SG			5									
Enteropogon acicularis	3	80	GG				3							**BAM Attributes 1x1 plot (%)**	
Eucalyptus camaldulensis	8	1	TG		8									**Litter (%)**	30
Euphorbia drummondii	0.2	10	FG					0.2							
Goodenia pusilliflora	0.1	5	FG					0.1							
Hordeum leporinum	0.5	20	EX								0.5				
Juncus sp.	0.1	3	GG				0.1								
Lepidium africanum	0.1	5	EX								0.1				
Lolium perenne	2	80	EX								2				
Maireana georgei	0.4	5	SG			0.4									
Marsilea drummondii	0.1	5	EG						0.1						
Oxalis perennans	0.1	1	FG					0.1							
Panicum decompositum	12	200	GG				12								
Paspalidium jubiflorum	0.8	30	GG				0.8								
Rhodanthe corymbiflora	0.1	1	FG					0.1							
Rytidosperma caespitosum	0.5	20	GG				0.5								
Sclerolaena divaricata	0.8	30	SG			0.8									
Sclerolaena muricata var. muricata	2	40	SG			2									
Sclerolaena stelligera	0.5	20	SG			0.5									
Sida trichopoda	0.4	20	FG					0.4							
Solanum esuriale	0.6	30	FG					0.6							
Sporobolus caroli	5	100	GG				5								
Teucrium racemosum	0.4	10	FG					0.4							

Q100E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	365974
PCT 26 – Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion (derived)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6142091
Date: 10/04/21			22	20	0	7	5	8	0	0	2	0		Orientation	78°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			82.4	**82.1**	0	26	53.6	2.5	0	0	**0.3**	0		**BAM Attributes 20x50m plot**	
Atriplex leptocarpa	15	100	SG			15								**Stem classes**	
Atriplex semibaccata	3	40	SG			3								**80+**	0
Austrostipa nodosa	25	500	GG				25							**50-79**	0
Austrostipa scabra	0.6	20	GG				0.6							**30-49**	No
Calostemma purpureum	0.1	1	FG					0.1						**20-29**	No
Dissocarpus paradoxus	2	30	SG			2								**10-19**	No
Enteropogon acicularis	18	300	GG				18							**5-9**	No
Erodium crinitum	0.1	5	FG					0.1						**<5**	No
Euphorbia drummondii	0.4	20	FG					0.4						**Hollows**	0
Goodenia pinnatifida	0.1	5	FG					0.1						**Length logs (m)**	0
Medicago minima	0.1	10	EX								0.1				
Medicago truncatula	0.2	20	EX								0.2			**BAM Attributes 1x1 plot (%)**	
Panicum decompositum	1	40	GG				1							**Litter (%)**	18
Plantago drummondii	0.4	10	FG					0.4							
Rytidosperma caespitosum	9	100	GG				9								
Salsola australis	0.8	20	SG			0.8									
Sclerolaena diacantha	3	40	SG			3									
Sclerolaena divaricata	0.2	5	SG			0.2									
Sclerolaena stelligera	2	40	SG			2									
Sida corrugata	0.4	20	FG					0.4							
Sida trichopoda	0.5	20	FG					0.5							
Vittadinia cuneata	0.5	20	FG					0.5							

Q101E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	367807
PCT 28 - White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6142094
Date: 10/04/21			15	8	1	2	2	3	0	0	7	1		Orientation	74°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			85.7	**17.8**	8	0.3	0.6	8.9	0	0	**67.9**	0.5		**BAM Attributes 20x50m plot**	
Aira cupaniana	15	500	EX								15			**Stem classes**	
Austrostipa scabra	0.5	30	GG				0.5							**80+**	1
Callitris glaucophylla	8	3	TG		8									**50-79**	3
Crassula sieberiana	0.8	100	FG					0.8						**30-49**	No
Cucumis myriocarpus	3	40	EX								3			**20-29**	No
Dysphania cristata	8	100	FG					8						**10-19**	No
Echium plantagineum	4	80	EX								4			**5-9**	No
Enteropogon acicularis	0.1	10	GG				0.1							**<5**	No
Heliotropium amplexicaule	0.5	10	HT									0.5		**Hollows**	0
Hordeum leporinum	25	500	EX								25			**Length logs (m)**	26
Ibicella lutea	0.4	3	EX								0.4				
Plantago cunninghamii	0.1	5	FG					0.1						**BAM Attributes 1x1 plot (%)**	
Poaceae sp.	20	500	EX								20			**Litter (%)**	57
Rhagodia spinescens	0.1	1	SG			0.1									
Salsola australis	0.2	5	SG			0.2									

Q102E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	369896
PCT 26 – Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion (derived)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6142053
Date: 10/04/21			17	15	0	1	7	7	0	0	2	0		Orientation	88°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			68.7	**66.7**	0	0.4	53.6	12.7	0	0	**2**	0		**BAM Attributes 20x50m plot**	
Austrostipa nodosa	35	500	GG				35							**Stem classes**	
Austrostipa scabra	5	80	GG				5							**80+**	0
Calotis hispidula	0.4	20	FG					0.4						**50-79**	0
Crassula sieberiana	0.4	30	FG					0.4						**30-49**	No
Cucumis myriocarpus	1	20	EX								1			**20-29**	No
Enneapogon nigricans	1	60	GG				1							**10-19**	No
Enteropogon acicularis	8	100	GG				8							**5-9**	No
Eragrostis parviflora	0.4	10	GG				0.4							**<5**	No
Eragrostis sp.	0.2	5	GG				0.2							**Hollows**	0
Erodium crinitum	3	100	FG					3						**Length logs (m)**	0
Euphorbia drummondii	0.8	50	FG					0.8							
Medicago minima	1	90	EX								1			**BAM Attributes 1x1 plot (%)**	
Salsola australis	0.4	5	SG			0.4								**Litter (%)**	37
Sida corrugata	4	100	FG					4							
Sporobolus caroli	4	100	GG				4								
Vittadinia cuneata	4	80	FG					4							
Wahlenbergia luteola	0.1	1	FG					0.1							

Q103E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	370831
PCT 26 – Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion (derived)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6142044
Date: 10/04/21			19	16	0	6	3	7	0	0	3	0		Orientation	67°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			64.2	**59**	0	8.7	47	3.3	0	0	**5.2**	0		**BAM Attributes 20x50m plot**	
Alternanthera nana	0.5	20	FG					0.5						**Stem classes**	
Atriplex leptocarpa	0.6	10	SG			0.6								**80+**	0
Atriplex semibaccata	1	10	SG			1								**50-79**	0
Austrostipa nodosa	25	200	GG				25							**30-49**	No
Calotis hispidula	0.5	20	FG					0.5						**20-29**	No
Crassula sieberiana	0.2	20	FG					0.2						**10-19**	No
Echium plantagineum	0.1	5	EX								0.1			**5-9**	No
Enteropogon acicularis	18	100	GG				18							**<5**	No
Euphorbia drummondii	0.4	20	FG					0.4						**Hollows**	0
Hordeum leporinum	5	100	EX								5			**Length logs (m)**	0
Linum marginale	0.1	2	FG					0.1							
Rhagodia spinescens	0.1	1	SG			0.1								**BAM Attributes 1x1 plot (%)**	
Salsola australis	1	5	SG			1								**Litter (%)**	58
Sclerolaena muricata var. muricata	3	10	SG			3									
Sclerolaena muricata var. semiglabra	3	40	SG			3									
Sida corrugata	0.8	20	FG					0.8							
Solanum esuriale	0.8	20	FG					0.8							
Sporobolus caroli	4	90	GG				4								
Tribulus terrestris	0.1	1	EX								0.1				

Q104E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	403473
PCT 11 - River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6109183
Date: 11/04/21			27	20	2	4	7	6	1	0	7	0		Orientation	356°
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
			124.2	97.6	49	13.8	13.2	21.1	0.5	0	26.6	0		BAM Attributes 20x50m plot	
Acacia stenophylla	17	25	TG		17									Stem classes	
Austrostipa scabra	1	40	GG				1							80+	3
Avena barbata	0.5	30	EX								0.5			50-79	2
Chenopodium nitrariaceum	0.8	1	SG			0.8								30-49	Yes
Cirsium vulgare	0.1	1	EX								0.1			20-29	Yes
Cyperus sp.	0.2	10	GG				0.2							10-19	Yes
Duma florulenta	12	5	SG			12								5-9	Yes
Echium plantagineum	22	400	EX								22			<5	No
Einadia nutans	18	70	FG					18						Hollows	6
Enteropogon acicularis	2	80	GG				2							Length logs (m)	66
Eriochloa sp.	2	80	GG				2								
Eucalyptus camaldulensis	32	6	TG		32									BAM Attributes 1x1 plot (%)	
Euphorbia drummondii	0.2	10	FG					0.2						Litter (%)	80
Lepidium africanum	0.8	20	EX								0.8				
Marsilea drummondii	0.5	30	EG						0.5						
Marrubium vulgare	0.1	2	EX								0.1				
Medicago minima	3	90	EX								3				
Oxalis perennans	0.1	5	FG					0.1							
Panicum decompositum	2	40	GG				2								
Paspalidium jubiflorum	4	80	GG				4								
Rumex brownii	1	30	FG					1							
Rytidosperma caespitosum	2	50	GG				2								
Sclerolaena divaricata	0.6	10	SG			0.6									
Sclerolaena muricata var. muricata	0.4	2	SG			0.4									
Sida sp.	0.8	40	FG					0.8							
Solanum nigrum	0.1	1	EX								0.1				
Vittadinia cuneata	1	50	FG					1							

Q105E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	403715
Cat 1			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6109103
Date: 11/04/21			0	0	0	0	0	0	0	0	0	0		Orientation	165°
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
			0	0	0	0	0	0	0	0	0	0		BAM Attributes 20x50m plot	
														Stem classes	
														80+	1
														50-79	No
														30-49	No
														20-29	No
														10-19	No
														5-9	No
														<5	No
														Hollows	0
														Length logs (m)	12
														BAM Attributes 1x1 plot (%)	
														Litter (%)	9

Listed as Cat 1. Not entered.

Q106E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	403345
PCT 5 - River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6109671
Date: 11/04/21			42	28	2	4	8	13	1	0	14	1		Orientation	125 °
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			106.3	**58.2**	32.1	2.8	11.5	7.8	4	0	**48.1**	0.1		**BAM Attributes 20x50m plot**	
Acacia salicina	0.1	1	TG		0.1									**Stem classes**	
Alternanthera sp. A	0.1	10	FG					0.1						**80+**	6
Atriplex semibaccata	0.6	10	SG			0.6								**50-79**	0
Austrostipa scabra	0.8	20	GG				0.8							**30-49**	No
Boerhavia coccinea	0.8	30	FG					0.8						**20-29**	No
Calotis hispidula	0.2	10	FG					0.2						**10-19**	No
Chenopodium album	0.6	10	EX								0.6			**5-9**	No
Chloris truncata	0.4	5	GG				0.4							**<5**	Yes
Conyza bonariensis	0.1	5	EX								0.1			**Hollows**	6
Cullen tenax	0.4	10	FG					0.4						**Length logs (m)**	18
Cyperus sp.	0.8	30	GG				0.8								
Dichondra repens	0.5	30	FG					0.5						**BAM Attributes 1x1 plot (%)**	
Dysphania cristata	3	90	FG					3						**Litter (%)**	27
Echium plantagineum	3	60	EX								3				
Einadia nutans	1	40	FG					1							
Enchylaena tomentosa	0.1	1	SG			0.1									
Enteropogon acicularis	2	60	GG				2								
Eragrostis cilianensis	0.2	5	EX								0.2				
Eriochloa sp.	3	100	GG				3								
Eucalyptus camaldulensis	32	3	TG		32										
Euphorbia drummondii	0.2	10	FG					0.2							
Hordeum leporinum	30	500	EX								30				
Juncus australis	0.5	10	GG				0.5								
Lepidium africanum	0.3	10	EX								0.3				
Lolium perenne	4	80	EX								4				
Malva parviflora	6	80	EX								6				
Marsilea drummondii	4	200	EG						4						
Marrubium vulgare	0.1	2	EX								0.1				
Oxalis corniculata	0.4	20	EX								0.4				
Oxalis perennans	0.1	10	FG					0.1							
Paspalidium jubiflorum	1	40	GG				1								
Rumex brownii	0.5	10	FG					0.5							
Rytidosperma caespitosum	3	100	GG				3								
Salsola australis	0.1	1	SG			0.1									
Sclerolaena muricata var. muricata	2	10	SG			2									
Sida sp.	0.7	20	FG					0.7							
Sisymbrium officinale	3	60	EX								3				
Solanum esuriale	0.1	5	FG					0.1							
Solanum nigrum	0.1	1	EX								0.1				
Tribulus terrestris	0.2	10	EX								0.2				
Vittadinia cuneata	0.2	10	FG					0.2							
Xanthium spinosum	0.1	1	HT									0.1			

Q107E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	392497
PCT 216 - Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6119961
Date: 11/04/21			21	12	0	2	4	5	1	0	9	2		Orientation	206°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			115.6	**60.7**	0	41	16.3	3	0.4	0	**54.9**	15.5		**BAM Attributes 20x50m plot**	
Alternanthera nana	0.5	40	FG					0.5						**Stem classes**	
Chenopodium nitrariaceum	1	2	SG			1								**80+**	0
Dysphania cristata	1	50	FG					1						**50-79**	0
Enteropogon acicularis	0.4	10	GG				0.4							**30-49**	No
Euphorbia drummondii	0.6	50	FG					0.6						**20-29**	No
Heliotropium amplexicaule	0.5	10	HT									0.5		**10-19**	No
Hordeum leporinum	25	500	EX								25			**5-9**	No
Juncus australis	0.4	40	GG				0.4							**<5**	No
Lolium perenne	6	80	EX								6			**Hollows**	0
Marsilea drummondii	0.4	30	EG						0.4					**Length logs (m)**	0
Medicago minima	4	200	EX								4				
Oxalis corniculata	0.2	10	EX								0.2			**BAM Attributes 1x1 plot (%)**	
Panicum decompositum	15	100	GG				15							**Litter (%)**	-
Polygonum aviculare	0.4	20	EX								0.4				
Portulaca oleracea	0.8	30	FG					0.8							
Rumex brownii	0.1	1	FG					0.1							
Rytidosperma caespitosum	0.5	20	GG				0.5								
Sclerolaena muricata var. muricata	40	100	SG			40									
Sisymbrium officinale	3	90	EX								3				
Sonchus asper	0.8	30	EX								0.8				
Xanthium spinosum	15	50	HT									15			

Q108E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	392814
PCT 216 - Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6121668
Date: 11/04/21			19	13	1	4	2	5	0	1	6	2		Orientation	123°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			116.7	**87.9**	0.1	46	33	8.7	0	0.1	**28.8**	1.2		**BAM Attributes 20x50m plot**	
Acacia pendula	0.1	1	TG		0.1									**Stem classes**	
Chenopodium nitrariaceum	2	3	SG			2								**80+**	0
Convolvulus clementii	0.1	2	OG							0.1				**50-79**	0
Enchylaena tomentosa	3	40	SG			3								**30-49**	No
Enteropogon acicularis	8	100	GG				8							**20-29**	No
Erodium crinitum	1	30	FG					1						**10-19**	No
Euphorbia drummondii	3	100	FG					3						**5-9**	No
Heliotropium amplexicaule	0.4	10	HT									0.4		**<5**	No
Hordeum leporinum	12	300	EX								12			**Hollows**	0
Lolium perenne	3	80	EX								3			**Length logs (m)**	0
Maireana decalvans	1	20	SG			1									
Malva parviflora	0.6	20	EX								0.6			**BAM Attributes 1x1 plot (%)**	
Medicago minima	12	300	EX								12			**Litter (%)**	-
Panicum decompositum	25	200	GG				25								
Sclerolaena muricata var. muricata	40	300	SG			40									
Sida trichopoda	4	100	FG					4							
Solanum esuriale	0.6	30	FG					0.6							
Vittadinia cuneata	0.1	2	FG					0.1							
Xanthium spinosum	0.8	20	HT									0.8			

Q109E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	393543
PCT 26 – Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion (derived)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6121287
Date: 12/04/21			21	17	1	5	3	8	0	0	4	1		Orientation	190°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			90.6	**57.6**	0.1	7.9	45.4	4.2	0	0	**33**	1		**BAM Attributes 20x50m plot**	
Acacia pendula	0.1	2	TG		0.1									**Stem classes**	
Atriplex semibaccata	2	40	SG			2								**80+**	0
Chloris truncata	0.4	10	GG				0.4							**50-79**	0
Dissocarpus paradoxus	0.6	20	SG			0.6								**30-49**	No
Enchylaena tomentosa	0.5	5	SG			0.5								**20-29**	No
Enteropogon acicularis	25	300	GG				25							**10-19**	No
Erodium crinitum	0.4	10	FG					0.4						**5-9**	No
Euphorbia drummondii	0.5	30	FG					0.5						**<5**	Yes
Goodenia pinnatifida	0.4	10	FG					0.4						**Hollows**	0
Hordeum leporinum	14	200	EX								14			**Length logs (m)**	0
Lolium perenne	8	100	EX								8				
Maireana brevifolia	0.8	5	SG			0.8								**BAM Attributes 1x1 plot (%)**	
Medicago minima	10	200	EX								10			**Litter (%)**	13
Panicum decompositum	20	100	GG				20								
Plantago cunninghamii	0.1	2	FG					0.1							
Romulea rosea	1	90	HT									1			
Sclerolaena muricata var. muricata	4	60	SG			4									
Sida corrugata	0.8	20	FG					0.8							
Sida trichopoda	1	20	FG					1							
Teucrium racemosum	0.4	10	FG					0.4							
Vittadinia cuneata	0.6	20	FG					0.6							

Q110E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	482968
PCT 75 – Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6103828
Date: 14/04/21			25	20	2	0	7	10	1	0	5	0		Orientation	60°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		Plot size	20 X 20 X 50
			125.1	123.2	32	0	74.5	16.6	0.1	0	1.9	0		BAM Attributes 20x50m plot	
Aristida behriana	1	40	GG				1							Stem classes	
Austrostipa bigeniculata	22	200	GG				22							80+	0
Austrostipa scabra	35	300	GG				35							50-79	2
Callitris glaucophylla	24	10	TG		24									30-49	1
Calotis hispidula	0.5	10	FG					0.5						20-29	Yes
Cheilanthes sieberi subsp. sieberi	0.1	5	EG						0.1					10-19	No
Dysphania cristata	0.1	5	FG					0.1						5-9	No
Echium plantagineum	0.8	30	EX								0.8			<5	Yes
Einadia nutans subsp. nutans	5	100	FG					5						Hollows	0
Enteropogon acicularis	3	60	GG				3							Length logs (m)	6
Erodium crinitum	1	80	FG					1							
Eucalyptus melliodora	8	1	TG		8									BAM Attributes 1x1 plot (%)	
Geranium solanderi	0.2	10	FG					0.2						Litter (%)	24
Lomandra multiflora	0.5	10	GG				0.5								
Maireana enchylaenoides	0.4	10	FG					0.4							
Oxalis perennans	2	80	FG					2							
Panicum effusum	5	80	GG				5								
Phalaris canariensis	0.1	5	EX								0.1				
Rytidosperma caespitosum	8	100	GG				8								
Senecio quadridentatus	0.1	1	FG					0.1							
Sida corrugata	7	100	FG					7							
Sisymbrium officinale	0.8	60	EX								0.8				
Solanum nigrum	0.1	5	EX								0.1				
Sonchus oleraceus	0.1	3	EX								0.1				
Vittadinia cuneata	0.3	10	FG					0.3							

Q111E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	484072
PCT 75 – Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6104147
Date: 14/04/21			33	22	2	0	8	10	1	1	11	1		Orientation	90°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			154.7	**131.6**	23	0	100	8.4	0.1	0.1	**23.1**	0.1		**BAM Attributes 20x50m plot**	
Aira sp.	0.1	15	EX								0.1			**Stem classes**	
Aristida behriana	6	80	GG				6							**80+**	0
Austrostipa bigeniculata	30	200	GG				30							**50-79**	2
Austrostipa scabra	12	100	GG				12							**30-49**	2
Callitris glaucophylla	18	2	TG		18									**20-29**	Yes
Calotis hispidula	0.4	10	FG					0.4						**10-19**	Yes
Carthamus lanatus	0.1	1	HT									0.1		**5-9**	No
Cheilanthes sieberi subsp. sieberi	0.1	5	EG						0.1					**<5**	Yes
Conyza bonariensis	5	80	EX								5			**Hollows**	0
Cucumis myriocarpus	0.1	1	EX								0.1			**Length logs (m)**	8
Dysphania cristata	0.6	30	FG					0.6							
Echium plantagineum	15	100	EX								15			**BAM Attributes 1x1 plot (%)**	
Einadia nutans subsp. nutans	0.1	1	FG					0.1						**Litter (%)**	10
Enteropogon acicularis	6	90	GG				6								
Eragrostis cilianensis	0.5	20	EX								0.5				
Erodium crinitum	3	100	FG					3							
Eucalyptus melliodora	5	1	TG		5										
Euphorbia drummondii	0.4	20	FG					0.4							
Glycine tabacina	0.1	2	OG							0.1					
Lomandra multiflora	2	30	GG				2								
Maireana enchylaenoides	0.2	10	FG					0.2							
Medicago minima	0.8	30	EX								0.8				
Oxalis perennans	0.8	30	FG					0.8							
Panicum effusum	18	200	GG				18								
Phalaris minor	0.4	10	EX								0.4				
Rumex brownii	0.1	1	FG					0.1							
Rytidosperma setaceum	16	200	GG				16								
Rytidosperma caespitosum	10	100	GG				10								
Sida corrugata	2	80	FG					2							
Sisymbrium officinale	0.6	40	EX								0.6				
Solanum nigrum	0.4	20	EX								0.4				
Sonchus oleraceus	0.1	5	EX								0.1				
Wahlenbergia luteola	0.8	50	FG					0.8							

Q112E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	494367
PCT 5 - River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6102704
Date: 15/04/21			28	23	1	0	13	8	1	0	5	0		Orientation	90°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			124.5	**114.5**	18	0	74.2	10.3	12	0	**10**	0		**BAM Attributes 20x50m plot**	
Alternanthera denticulata	0.8	20	FG					0.8						**Stem classes**	
Alternanthera sp. A	0.1	2	FG					0.1						**80+**	0
Austrostipa aristiglumis	30	100	GG				30							**50-79**	0
Conyza bonariensis	0.1	2	EX								0.1			**30-49**	1
Cyperus sp.	0.2	10	GG				0.2							**20-29**	Yes
Echium plantagineum	8	100	EX								8			**10-19**	Yes
Eleocharis plana	0.4	10	GG				0.4							**5-9**	Yes
Eleocharis pusilla	0.8	20	GG				0.8							**<5**	Yes
Enneapogon nigricans	0.4	10	GG				0.4							**Hollows**	0
Enteropogon acicularis	8	100	GG				8							**Length logs (m)**	0
Eragrostis parviflora	3	60	GG				3								
Eriochloa pseudoacrotricha	1	60	GG				1							**BAM Attributes 1x1 plot (%)**	
Eucalyptus camaldulensis	18	10	TG		18									**Litter (%)**	9
Euphorbia drummondii	0.1	5	FG					0.1							
Hordeum leporinum	1	50	EX								1				
Juncus flavidus	2	80	GG				2								
Lepidium africanum	0.5	20	EX								0.5				
Lobelia concolor	4	80	FG					4							
Marsilea drummondii	12	100	EG						12						
Oxalis perennans	4	200	FG					4							
Panicum decompositum	0.4	5	GG				0.4								
Paspalidium jubiflorum	16	100	GG				16								
Poaceae sp.	0.4	5	EX								0.4				
Rumex brownii	1	50	FG					1							
Rytidosperma duttonianum	10	100	GG				10								
Schoenus apogon	2	100	GG				2								
Senecio sp.	0.1	1	FG					0.1							
Wahlenbergia gracilis	0.2	10	FG					0.2							

Q113E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	528259
PCT 110 - Western Grey Box - Cypress Pine shrubby woodland on stony footslopes in the NSW South Western Slopes Bioregion and Riverina Bioregion (Moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6102532
Date: 15/04/21			37	27	2	2	9	13	1	0	10	2		Orientation	60°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			116.4	111.9	35	25	42.2	9.6	0.1	0	4.5	0.8		BAM Attributes 20x50m plot	
Acacia genistifolia	15	25	SG			15								Stem classes	
Amphibromus nervosus	0.6	20	GG				0.6							80+	1
Arctotheca calendula	0.4	20	EX								0.4			50-79	1
Aristida ramosa	5	100	GG				5							30-49	0
Arthropodium sp.	0.2	20	FG					0.2						20-29	No
Austrostipa densiflora	15	100	GG				15							10-19	Yes
Austrostipa scabra	0.6	30	GG				0.6							5-9	Yes
Burchardia umbellata	0.1	10	FG					0.1						<5	Yes
Callitris glaucophylla	3	2	TG		3									Hollows	2
Calotis hispidula	0.2	20	FG					0.2						Length logs (m)	79
Carex appressa	10	40	GG				10								
Cheilanthes sieberi subsp. sieberi	0.1	40	EG						0.1					BAM Attributes 1x1 plot (%)	
Cirsium vulgare	0.4	20	EX								0.4			Litter (%)	29
Dysphania cristata	4	100	FG					4							
Echium plantagineum	1	60	EX								1				
Eragrostis sp. (small)	0.4	20	GG				0.4								
Erodium crinitum	0.4	20	FG					0.4							
Eucalyptus microcarpa	32	6	TG		32										
Euphorbia drummondii	0.1	10	FG					0.1							
Geranium homeanum	0.2	20	FG					0.2							
Gonocarpus elatus	3	40	FG					3							
Hydrocotyle laxiflora	0.1	10	FG					0.1							
Hypericum gramineum	0.2	10	FG					0.2							
Hypericum perforatum	0.2	10	HT									0.2			
Hypochaeris radicata	0.8	50	EX								0.8				
Juncus australis	0.5	30	GG				0.5								
Melichrus urceolatus	10	50	SG			10									
Oxalis perennans	0.5	30	FG					0.5							
Paspalidium constrictum	0.1	20	GG				0.1								
Romulea rosea	0.6	50	HT									0.6			
Rumex acetosella	0.4	30	EX								0.4				
Rumex brownii	0.5	10	FG					0.5							
Rytidosperma caespitosum	10	100	GG				10								
Setaria parviflora	0.1	5	EX								0.1				
Trifolium pratense	0.5	40	EX								0.5				
Wahlenbergia gracilis	0.1	10	FG					0.1							
Xanthium occidentale	0.1	1	EX								0.1				

Q114E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	528515
PCT 319 - Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6102520
Date: 15/04/21			30	24	1	2	8	10	2	1	6	1		Orientation	75°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			140.7	**134**	32	6	50.5	28.1	17	0.4	**6.7**	2		**BAM Attributes 20x50m plot**	
Aristida ramosa	12	100	GG				12							**Stem classes**	
Arthropodium minus	1	60	FG					1						**80+**	0
Austrostipa densiflora	14	100	GG				14							**50-79**	0
Cheilanthes distans	3	30	EG						3					**30-49**	2
Cheilanthes sieberi	14	100	EG						14					**20-29**	Yes
Cirsium vulgare	0.4	10	EX								0.4			**10-19**	Yes
Cyperus gracilis	0.5	30	GG				0.5							**5-9**	No
Enteropogon acicularis	1	40	GG				1							**<5**	No
Eucalyptus blakeyi x dealbata	32	15	TG		32									**Hollows**	1
Geranium homeanum	3	100	FG					3						**Length logs (m)**	52
Gonocarpus teucrioides	18	100	FG					18							
Hibbertia obtusifolia	3	20	SG			3								**BAM Attributes 1x1 plot (%)**	
Hydrocotyle laxiflora	4	80	FG					4						**Litter (%)**	21
Hypericum gramineum	0.5	20	FG					0.5							
*Hypochaeris radicata**	0.8	40	EX								0.8				
Jasminum lineare	0.4	10	OG							0.4					
Laxmannia gracilis	0.1	5	FG					0.1							
Melichrus urceolatus	3	10	SG			3									
Microlaena stipoides	4	80	GG				4								
Orobanche minor	0.1	5	EX								0.1				
Oxalis perennans	0.8	40	FG					0.8							
Panicum decompositum	2	60	GG				2								
Poranthera microphylla	0.1	5	FG					0.1							
Romulea rosea	2	90	HT									2			
Rytidosperma erianthum	12	100	GG				12								
Rytidosperma caespitosum	5	100	GG				5								
Stypandra glauca	0.4	10	FG					0.4							
Trifolium arvense	3	80	EX								3				
Trifolium pratense	0.4	20	EX								0.4				
Wahlenbergia communis	0.2	10	FG					0.2							

Q115E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	703247
PCT 170 – Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones (moderate to good - bull)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6175415
Date: 07/06/2021			22	22	4	13	2	3	0	0	0	0		Orientation	20°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			59.6	**59.6**	21	35.4	0.3	2.9	0	0	**0**	0		**BAM Attributes 20x50m plot**	
Acacia colletioides	5	6	SG			5								**Stem classes**	
Alectryon oleifolius subsp. canescens	1	3	TG		1									**80+**	0
Atriplex stipitata subsp. miscella	0.8	10	SG			0.8								**50-79**	0
Austrostipa elegantissima	0.1	5	GG				0.1							**30-49**	2
Austrostipa nitida	0.2	20	GG				0.2							**20-29**	Yes
Chenopodium desertorum subsp. desertorum	0.6	20	SG			0.6								**10-19**	Yes
Dodonaea viscosa subsp. angustissima	0.2	1	SG			0.2								**5-9**	Yes
Enchylaena tomentosa	4	30	SG			4								**<5**	Yes
Eucalyptus dumosa	6	2	TG		6									**Hollows**	1
Eucalyptus gracilis	4	1	TG		4									**Length logs (m)**	91
Eucalyptus oleosa	10	3	TG		10										
Maireana pentatropis	3	40	SG			3								**BAM Attributes 1x1 plot (%)**	
Maireana triptera	14	80	SG			14								**Litter (%)**	54
Olearia muelleri	0.4	3	SG			0.4									
Olearia pimeleoides	0.1	1	SG			0.1									
Ptilotus exaltatus	0.1	3	FG					0.1							
Rhagodia spinescens	0.1	1	SG			0.1									
Roepera ammophila	0.8	30	FG					0.8							
Roepera apiculata	2	40	FG					2							
Sclerolaena diacantha	3	60	SG			3									
Senna artemisioides subsp. x coriacea	0.2	1	SG			0.2									
Senna artemisioides subsp. x petiolaris	4	5	SG			4									

Q116E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	701895
PCT 170 – Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones (moderate to good - bull)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6175719
Date: 07/06/2021			20	19	2	14	2	1	0	0	1	0		Orientation	95°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			54.8	**54.7**	11	41.5	0.2	2	0	0	**0.1**	0		**BAM Attributes 20x50m plot**	
Acacia colletioides	8	4	SG			8								**Stem classes**	
Atriplex stipitata subsp. stipitata	1	20	SG			1								**80+**	0
Atriplex stipitata subsp. miscella	0.4	5	SG			0.4								**50-79**	0
Austrostipa nitida	0.1	5	GG				0.1							**30-49**	2
Austrostipa platychaeta	0.1	2	GG				0.1							**20-29**	Yes
Chenopodium curvispicatum	0.6	5	SG			0.6								**10-19**	Yes
Enchylaena tomentosa	0.6	5	SG			0.6								**5-9**	Yes
Eucalyptus dumosa	3	1	TG		3									**<5**	Yes
Eucalyptus socialis	8	3	TG		8									**Hollows**	3
Maireana radiata	7	60	SG			7								**Length logs (m)**	43
Maireana pentatropis	2	50	SG			2									
Maireana sedifolia	1	1	SG			1								**BAM Attributes 1x1 plot (%)**	
Olearia pimeleoides	0.1	1	SG			0.1								**Litter (%)**	41
Rhagodia spinescens	0.8	5	SG			0.8									
Roepera apiculata	2	40	FG					2							
Sclerolaena diacantha	3	50	SG			3									
Senna artemisioides subsp. x coriacea	6	30	SG			6									
Senna artemisioides subsp. x petiolaris	10	40	SG			10									
Sisymbrium erysimoides	0.1	1	EX								0.1				
Westringia rigida	1	4	SG			1									

Q117E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	689529
PCT 171 – Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion (moderate to good – whipstick)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6177902
Date: 07/06/2021			14	13	3	8	2	0	0	0	1	0		Orientation	342°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			67.8	**67.7**	25	7.3	35.4	0	0	0	**0.1**	0		**BAM Attributes 20x50m plot**	
Austrostipa nitida	0.4	20	GG				0.4							**Stem classes**	
Brassica tournefortii	0.1	1	EX								0.1			**80+**	0
Chenopodium desertorum subsp. rectum	0.1	1	SG			0.1								**50-79**	0
Eucalyptus dumosa	18	5	TG		18									**30-49**	0
Eucalyptus leptophylla	4	3	TG		4									**20-29**	No
Eucalyptus socialis	3	1	TG		3									**10-19**	Yes
Grevillea huegelii	0.8	4	SG			0.8								**5-9**	Yes
Maireana radiata	0.6	10	SG			0.6								**<5**	Yes
Maireana pentatropis	2	15	SG			2								**Hollows**	1
Myoporum platycarpum subsp. platycarpum	1	1	SG			1								**Length logs (m)**	31
Sclerolaena diacantha	2	60	SG			2									
Sclerolaena parviflora	0.4	10	SG			0.4								**BAM Attributes 1x1 plot (%)**	
Triodia scariosa subsp. scariosa	35	100	GG				35							**Litter (%)**	39
Westringia rigida	0.4	3	SG			0.4									

Q118E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	684308
PCT 271 - Spotted Fuchsia shrubland wetland in drainage depressions on inland plains (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6179070
Date: 07/06/2021			25	20	0	6	3	10	1	0	5	0		Orientation	260°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			53.2	**51.8**	0	45.2	4.4	2.1	0.1	0	**1.4**	0		**BAM Attributes 20x50m plot**	
Alternanthera angustifolia	0.1	5	FG					0.1						**Stem classes**	
Austrostipa nitida	3	100	GG				3							**80+**	0
Bulbine semibarbata	0.2	10	FG					0.2						**50-79**	0
Centaurea melitensis	0.1	1	EX								0.1			**30-49**	0
Centipeda thespidioides	0.2	10	FG					0.2						**20-29**	No
Eragrostis setifolia	0.8	20	GG				0.8							**10-19**	No
Eremophila maculata	15	50	SG			15								**5-9**	No
Maireana triptera	15	70	SG			15								**<5**	No
Maireana turbinata	0.8	5	SG			0.8								**Hollows**	0
Marsilea drummondii	0.1	3	EG						0.1					**Length logs (m)**	0
Medicago minima	0.6	40	EX								0.6				
Myriocephalus rhizocephalus	0.4	20	FG					0.4						**BAM Attributes 1x1 plot (%)**	
Nicotiana goodspeedii	0.4	20	FG					0.4						**Litter (%)**	16
Nitraria billardierei	10	40	SG			10									
Plantago turrifera	0.1	5	FG					0.1							
Roepera glauca	0.4	10	FG					0.4							
Rytidosperma caespitosum	0.6	30	GG				0.6								
Salvia verbenaca	0.4	20	EX								0.4				
Schismus barbatus	0.2	20	EX								0.2				
Sclerolaena diacantha	0.4	10	SG			0.4									
Sclerolaena obliquicuspis	4	60	SG			4									
Sisymbrium erysimoides	0.1	5	EX								0.1				
Teucrium racemosum	0.1	3	FG					0.1							
Vittadinia cervicularis var. cervicularis	0.1	1	FG					0.1							
Wahlenbergia sp. (no fertile material)	0.1	1	FG					0.1							

Q119E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	669597
PCT 199 Hooked Needlewood - Needlewood - Mulga - Turpentine Bush open shrubland of the semi-arid and arid plains (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6180014
Date: 08/07/2021			18	15	1	9	1	2	0	2	3	0		Orientation	254°
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
			72.1	62.9	5	36.3	0.1	21	0	0.5	9.2	0		BAM Attributes 20x50m plot	
Alectryon oleifolius subsp. canescens	5	1	TG		5									Stem classes	
Atriplex stipitata subsp. miscella	0.8	10	SG			0.8								80+	0
Austrostipa nitida	0.1	5	GG				0.1							50-79	1
Calotis hispidula	3	80	FG					3						30-49	2
Centaurea melitensis	0.6	15	EX								0.6			20-29	Yes
Dissocarpus paradoxus	2	40	SG			2								10-19	No
Enchylaena tomentosa	5	40	SG			5								5-9	Yes
Hakea tephrosperma	4	4	SG			4								<5	Yes
Hordeum leporinum	0.6	20	EX								0.6			Hollows	0
Lysiana exocarpi subsp. exocarpi	0.4	1	OG							0.4				Length logs (m)	58
Maireana triptera	0.4	5	SG			0.4									
Marsdenia australis	0.1	1	OG							0.1				BAM Attributes 1x1 plot (%)	
Myoporum platycarpum subsp. platycarpum	1	2	SG			1								Litter (%)	10
Roepera apiculata	18	100	FG					18							
Salsola australis	0.1	1	SG			0.1									
Sclerolaena diacantha	15	80	SG			15									
Sclerolaena obliquicuspis	8	100	SG			8									
Sisymbrium erysimoides	8	100	EX								8				

Q120E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	664531
PCT 170 – Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones (moderate to good - bull)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6179720
Date: 08/07/2021			24	22	3	15	2	2	0	0	2	1		Orientation	260°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			79.5	**79**	27	42.5	0.5	9	0	0	**0.5**	0.4		**BAM Attributes 20x50m plot**	
Alectryon oleifolius subsp. canescens	5	8	TG		5									**Stem classes**	
Austrostipa elegantissima	0.1	1	GG				0.1							**80+**	0
Austrostipa nitida	0.4	20	GG				0.4							**50-79**	0
Carrichtera annua	0.4	20	HT									0.4		**30-49**	2
Chenopodium curvispicatum	0.8	10	SG			0.8								**20-29**	Yes
Dianella revoluta (sp. aff. Mallee)	1	1	FG					1						**10-19**	Yes
Eucalyptus dumosa	6	2	TG		6									**5-9**	Yes
Eucalyptus socialis	16	8	TG		16									**<5**	Yes
Exocarpos aphyllus	1	2	SG			1								**Hollows**	6
Maireana erioclada	4	50	SG			4								**Length logs (m)**	40
Maireana pentatropis	0.4	5	SG			0.4									
Maireana radiata	0.6	10	SG			0.6								**BAM Attributes 1x1 plot (%)**	
Maireana sclerolaenoides	0.2	5	SG			0.2								**Litter (%)**	47
Maireana trichoptera	1	30	SG			1									
Olearia muelleri	15	80	SG			15									
Pittosporum angustifolium	0.8	4	SG			0.8									
Rhagodia spinescens	0.5	1	SG			0.5									
Roepera apiculata	8	100	FG					8							
Santalum acuminatum	1	1	SG			1									
Sclerolaena diacantha	12	80	SG			12									
Sclerolaena obliquicuspis	4	60	SG			4									
Senna artemisioides subsp. x coriacea	0.8	5	SG			0.8									
Senna artemisioides subsp. x petiolaris	0.4	2	SG			0.4									
Sisymbrium erysimoides	0.1	5	EX								0.1				

Q121E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	662310
PCT 171 – Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion (moderate to good – whipstick)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6180025
Date: 08/06/2021			26	26	3	16	5	2	0	0	0	0		Orientation	84°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			99.3	**99.3**	72	25.3	1.3	0.7	0	0	**0**	0		**BAM Attributes 20x50m plot**	
Acacia colletioides	10	8	SG			10								**Stem classes**	
Austrostipa acrociliata	0.1	2	GG				0.1							**80+**	0
Austrostipa nitida	0.6	10	GG				0.6							**50-79**	0
Callitris verrucosa	40	50	TG		40									**30-49**	0
Chenopodium curvispicatum	0.5	10	SG			0.5								**20-29**	No
Chenopodium desertorum subsp. desertorum	0.2	5	SG			0.2								**10-19**	Yes
Chenopodium desertorum subsp. rectum	0.4	10	SG			0.4								**5-9**	Yes
Dianella revoluta (sp. aff. Mallee)	0.6	4	FG					0.6						**<5**	Yes
Dodonaea viscosa subsp. angustissima	5	20	SG			5								**Hollows**	0
Enchylaena tomentosa	1	5	SG			1								**Length logs (m)**	85
Eremophila glabra	3	10	SG			3									
Eucalyptus costata	14	4	TG		14									**BAM Attributes 1x1 plot (%)**	
Eucalyptus socialis	18	5	TG		18									**Litter (%)**	32
Eutaxia microphylla var. microphylla	1	10	SG			1									
Halgania cyanea	0.8	20	SG			0.8									
Lomandra collina	0.4	5	GG				0.4								
Lomandra effusa	0.1	1	GG				0.1								
Maireana pentatropis	1	30	SG			1									
Pittosporum angustifolium	0.1	1	SG			0.1									
Sclerolaena diacantha	0.8	20	SG			0.8									
Sclerolaena parviflora	0.4	10	SG			0.4									
Senna artemisioides subsp. filifolia	0.6	1	SG			0.6									
Senna artemisioides subsp. x coriacea	0.4	5	SG			0.4									
Spyridium eriocephalum var. eriocephalum	0.1	1	SG			0.1									
Thysanotus baueri	0.1	1	FG					0.1							
Triodia scariosa subsp. scariosa	0.1	2	GG				0.1								

Q122E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	742111
PCT 23 – Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6146113
Date: 04/08/2021			30	25	1	11	5	8	0	0	5	2		Orientation	346°
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
			153.1	97	20	55.2	14.2	7.6	0	0	56.1	35.1		BAM Attributes 20x50m plot	
Acacia melvillei	20	8	TG		20									Stem classes	
Atriplex lindleyi	0.8	20	FG					0.8						80+	0
Atriplex semibaccata	0.8	30	SG			0.8								50-79	0
Austrostipa elegantissima	0.2	10	GG				0.2							30-49	0
Austrostipa nitida	8	100	GG				8							20-29	Yes
Bulbine bulbosa	1	50	FG					1						10-19	Yes
Calandrinia eremaea	0.5	40	FG					0.5						5-9	Yes
Carrichtera annua	35	1000	HT									35		<5	Yes
Crassula sieberiana	0.4	50	FG					0.4						Hollows	0
Dissocarpus paradoxus	2	50	SG			2								Length logs (m)	10
Einadia nutans	0.4	10	FG					0.4							
Enchylaena tomentosa	15	80	SG			15								BAM Attributes 1x1 plot (%)	
Enteropogon acicularis	5	100	GG				5							Litter (%)	25
Erodium crinitum	0.1	5	FG					0.1							
Lomandra leucocephala	0.2	3	GG				0.2								
Lycium ferocissimum	0.1	1	HT									0.1			
Maireana brevifolia	2	10	SG			2									
Medicago minima	2	100	EX								2				
Nitraria billardierei	10	15	SG			10									
Osteocarpum acropterum	0.8	10	SG			0.8									
Pittosporum angustifolium	3	20	SG			3									
Rhagodia spinescens	4	10	SG			4									
Romulea minutiflora	4	300	EX								4				
Rytidosperma caespitosum	0.8	20	GG				0.8								
Salsola australis	2	50	SG			2									
Sclerolaena brachyptera	0.6	20	SG			0.6									
Sclerolaena diacantha	15	100	SG			15									
Sisymbrium erysimoides	15	500	EX								15				
Tetragonia eremea	4	100	FG					4							
Wurmbea diocia subsp. diocia	0.4	40	FG					0.4							

Q123E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	744362
PCT 58 – Black Oak – Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6146274
Date: 04/08/2021			29	25	3	12	6	4	0	0	4	1		Orientation	88°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			118.7	86.7	12	61.7	11.2	1.8	0	0	32	15		BAM Attributes 20x50m plot	
Acacia melvillei	3	2	TG		3									Stem classes	
Alectryon oleifolius subsp. canescens	5	1	TG		5									80+	0
Atriplex eardleyae	0.4	10	SG			0.4								50-79	0
Atriplex lindleyi	0.5	10	FG					0.5						30-49	2
Austrostipa elegantissima	0.2	10	GG				0.2							20-29	Yes
Austrostipa nitida	3	100	GG				3							10-19	No
Austrostipa sp. (no fertile material)	2	80	GG				2							5-9	No
Carrichtera annua	15	1000	HT									15		<5	No
Casuarina pauper	4	1	TG		4									Hollows	1
Crassula sieberiana	0.1	20	FG					0.1						Length logs (m)	8
Dissocarpus paradoxus	0.6	15	SG			0.6									
Einadia nutans	0.4	10	FG					0.4						BAM Attributes 1x1 plot (%)	
Enchylaena tomentosa	9	80	SG			9								Litter (%)	19
Enteropogon acicularis	5	100	GG				5								
Maireana aphylla	0.4	2	SG			0.4									
Maireana brevifolia	0.8	5	SG			0.8									
*Medicago minima**	4	200	EX								4				
Nitraria billardierei	22	100	SG			22									
Panicum decompositum	0.8	30	GG				0.8								
Rhagodia spinescens	3	15	SG			3									
Rhagodia ulicina	0.4	3	SG			0.4									
Romulea minutiflora	3	200	EX								3				
Rytidosperma caespitosum	0.2	10	GG				0.2								
Salsola australis	0.5	20	SG			0.5									
Sclerolaena brachyptera	4	100	SG			4									
Sclerolaena diacantha	20	200	SG			20									
Sclerolaena obliquicuspis	0.6	20	SG			0.6									
Sisymbrium erysimoides	10	500	EX								10				
Tetragonia eremea	0.8	40	FG					0.8							

Q124E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	750129
PCT 58 – Black Oak – Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6144570
Date: 04/08/2021			26	19	2	9	2	6	0	0	7	1		Orientation	54°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			105.4	**70.6**	19	47.7	0.6	3.3	0	0	**34.8**	8		**BAM Attributes 20x50m plot**	
Aira sp.	2	100	EX								2			**Stem classes**	
Alectryon oleifolius subsp. canescens	1	1	TG		1									**80+**	0
Atriplex eardleyae	0.4	5	SG			0.4								**50-79**	1
Austrostipa elegantissima	0.1	2	GG				0.1							**30-49**	3
Calandrinia eremaea	0.5	30	FG					0.5						**20-29**	Yes
Carrichtera annua	8	500	HT									8		**10-19**	Yes
Casuarina pauper	18	5	TG		18									**5-9**	Yes
Crassula sieberiana	0.1	10	FG					0.1						**<5**	Yes
Einadia nutans	0.4	5	FG					0.4						**Hollows**	11
Enchylaena tomentosa	30	100	SG			30								**Length logs (m)**	12
Enteropogon acicularis	0.5	20	GG				0.5								
Erodium cicutarium	0.8	80	EX								0.8			**BAM Attributes 1x1 plot (%)**	
Hordeum sp.	3	200	EX								3			**Litter (%)**	20
Maireana brevifolia	8	60	SG			8									
Medicago minima	1	60	EX								1				
Osteocarpum acropterum	0.8	20	SG			0.8									
Pittosporum angustifolium	0.4	1	SG			0.4									
Psilocaulon granulicaule	5	100	EX								5				
Rhagodia spinescens	3	20	SG			3									
Roepera aurantiaca	0.2	10	FG					0.2							
Salsola australis	0.1	1	SG			0.1									
Sclerolaena brachyptera	1	30	SG			1									
Sclerolaena diacantha	4	80	SG			4									
Senecio glossanthus	0.1	2	FG					0.1							
Sisymbrium erysimoides	15	1000	EX								15				
Tetragonia eremea	2	100	FG					2							

Q125E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	626809
PCT 58 – Black Oak – Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6212256
Date: 05/08/2021			25	23	2	16	3	2	0	0	2	1		Orientation	70°
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
			65	61.6	18	38.5	2	3.1	0	0	3.4	0.4		BAM Attributes 20x50m plot	
Acacia nyssophylla	2	2	SG			2								Stem classes	
Acacia oswaldii	1	3	TG		1									80+	1
Atriplex stipitata subsp. stipitata	1	20	SG			1								50-79	2
Austrostipa acrociliata	0.8	30	GG				0.8							30-49	3
Austrostipa elegantissima	0.4	10	GG				0.4							20-29	Yes
Austrostipa nitida	0.8	30	GG				0.8							10-19	Yes
Carrichtera annua	0.4	30	HT									0.4		5-9	Yes
Casuarina pauper	17	10	TG		17									<5	Yes
Enchylaena tomentosa	1	10	SG			1								Hollows	1
Eremophila glabra	0.2	1	SG			0.2								Length logs (m)	45
Exocarpos aphyllus	3	5	SG			3									
Maireana georgei	0.1	1	SG			0.1								BAM Attributes 1x1 plot (%)	
Maireana radiata	0.1	2	SG			0.1								Litter (%)	42
Maireana sclerolaenoides	0.4	10	SG			0.4									
Maireana triptera	0.5	20	SG			0.5									
Myoporum platycarpum subsp. platycarpum	4	6	SG			4									
Olearia muelleri	2	10	SG			2									
Olearia pimeleoides	0.2	1	SG			0.2									
Pimelea microcephala subsp. microcephala	3	15	SG			3									
Roepera apiculata	3	70	FG					3							
Sclerolaena diacantha	4	80	SG			4									
Senna artemisioides subsp. x coriacea	12	60	SG			12									
Senna artemisioides subsp. x petiolaris	5	40	SG			5									
Sisymbrium erysimoides	3	200	EX								3				
Vittadinia cervicularis var. cervicularis	0.1	1	FG					0.1							

Q126E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	627880
PCT 170 – Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones (moderate to good - whipstick)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6208157
Date: 05/08/2021			24	22	2	15	2	3	0	0	2	1		Orientation	76°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			53.9	**53.2**	22	24.3	0.8	6.1	0	0	**0.7**	0.2		**BAM Attributes 20x50m plot**	
Acacia colletioides	5	30	SG			5								**Stem classes**	
Atriplex stipitata subsp. miscella	0.2	5	SG			0.2								**80+**	0
Atriplex stipitata subsp. stipitata	0.6	10	SG			0.6								**50-79**	0
Austrostipa acrociliata	0.4	10	GG				0.4							**30-49**	0
Austrostipa nitida	0.4	20	GG				0.4							**20-29**	No
Carrichtera annua	0.2	10	HT									0.2		**10-19**	Yes
Chenopodium desertorum subsp. desertorum	0.1	1	SG			0.1								**5-9**	Yes
Dodonaea viscosa subsp. angustissima	0.2	1	SG			0.2								**<5**	Yes
Enchylaena tomentosa	0.5	5	SG			0.5								**Hollows**	0
Eremophila glabra	3	10	SG			3								**Length logs (m)**	14
Eucalyptus gracilis	12	3	TG		12										
Eucalyptus oleosa	10	2	TG		10									**BAM Attributes 1x1 plot (%)**	
Lepidium sp.	4	50	FG					4						**Litter (%)**	62
Maireana georgei	0.4	10	SG			0.4									
Maireana pentatropis	1	20	SG			1									
Maireana radiata	0.4	5	SG			0.4									
Ptilotus spathulatus	0.1	3	FG					0.1							
Roepera apiculata	2	60	FG					2							
Salsola australis	0.1	1	SG			0.1									
Sclerolaena diacantha	1	40	SG			1									
Sclerolaena obliquicuspis	1	40	SG			1									
Senna artemisioides subsp. x coriacea	0.8	5	SG			0.8									
Sisymbrium erysimoides	0.5	20	EX								0.5				
Westringia rigida	10	80	SG			10									

Q127E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	631459
PCT 143 – Narrow-leaved Hopbush – Scrub Turpentine – Senna shrubland on semi-arid and arid sandplains and dunes (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6206095
Date: 05/08/2021			23	20	0	13	2	5	0	0	3	1		Orientation	102°
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
			78.5	73.4	0	63.6	8.4	1.4	0	0	5.1	3		BAM Attributes 20x50m plot	
Atriplex stipitata subsp. stipitata	0.5	10	SG			0.5								Stem classes	
Austrostipa elegantissima	0.4	10	GG				0.4							80+	0
Austrostipa nitida	8	100	GG				8							50-79	0
Brachyscome lineariloba	0.4	20	FG					0.4						30-49	0
Carrichtera annua	3	200	HT									3		20-29	No
Chenopodium curvispicatum	0.1	2	SG			0.1								10-19	No
Chenopodium desertorum subsp. desertorum	0.8	20	SG			0.8								5-9	No
Dissocarpus paradoxus	1	60	SG			1								<5	No
Dodonaea viscosa subsp. angustissima	45	200	SG			45								Hollows	0
Einadia nutans	0.1	2	FG					0.1						Length logs (m)	0
Enchylaena tomentosa	0.5	10	SG			0.5									
Maireana georgei	0.4	5	SG			0.4								BAM Attributes 1x1 plot (%)	
Maireana pentatropis	1	30	SG			1								Litter (%)	13
Maireana sclerolaenoides	4	200	SG			4									
Maireana triptera	8	100	SG			8									
Medicago minima	2	100	EX								2				
Olearia pimeleoides	0.5	2	SG			0.5									
Ptilotus spathulatus	0.2	10	FG					0.2							
Roepera aurantiaca	0.6	20	FG					0.6							
Sclerolaena diacantha	1	30	SG			1									
Sclerolaena obliquicuspis	0.8	30	SG			0.8									
Sida trichopoda	0.1	5	FG					0.1							
Sisymbrium erysimoides	0.1	5	EX								0.1				

Q128E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	631942
PCT 170 – Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones (derived)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6205410
Date: 05/08/2021			15	13	0	9	1	3	0	0	2	1		Orientation	55°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			101.4	**71.4**	0	34.4	35	2	0	0	**30**	25		**BAM Attributes 20x50m plot**	
Atriplex stipitata subsp. stipitata	0.5	5	SG			0.5								**Stem classes**	
Austrostipa acrociliata	35	500	GG				35							**80+**	0
Bulbine semibarbata	0.6	20	FG					0.6						**50-79**	0
Carrichtera annua	25	1000	HT									25		**30-49**	0
Dissocarpus paradoxus	0.8	10	SG			0.8								**20-29**	No
Erodium crinitum	0.4	30	FG					0.4						**10-19**	No
Maireana georgei	1	10	SG			1								**5-9**	No
Maireana pentatropis	3	80	SG			3								**<5**	No
Maireana sclerolaenoides	6	200	SG			6								**Hollows**	0
Maireana triptera	10	100	SG			10								**Length logs (m)**	0
Medicago minima	5	100	EX								5				
Olearia pimeleoides	1	5	SG			1								**BAM Attributes 1x1 plot (%)**	
Roepera apiculata	1	20	FG					1						**Litter (%)**	3.4
Salsola australis	0.1	1	SG			0.1									
Sclerolaena obliquicuspis	12	200	SG			12									

Q129E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	633456
PCT 172 – Deep sand mallee of irregular dunefields of the semi-arid (warm) zone (moderate to good – whipstick)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6203418
Date: 05/08/2021			20	20	4	7	5	4	0	0	0	0		Orientation	80°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			77.5	**77.5**	26	4.4	46.6	0.5	0	0	**0**	0		**BAM Attributes 20x50m plot**	
Acacia rigens	2	2	SG			2								**Stem classes**	
Austrostipa nitida	0.1	5	GG				0.1							**80+**	0
Calandrinia eremaea	0.2	30	FG					0.2						**50-79**	0
Chenopodium desertorum subsp. rectum	0.1	1	SG			0.1								**30-49**	0
Dianella sp. Euston	1	20	GG				1							**20-29**	No
Eucalyptus dumosa	6	2	TG		6									**10-19**	Yes
Eucalyptus leptophylla	7	4	TG		7									**5-9**	Yes
Eucalyptus oleosa	3	1	TG		3									**<5**	Yes
Eucalyptus socialis	10	4	TG		10									**Hollows**	0
Grevillea huegelii	0.5	2	SG			0.5								**Length logs (m)**	12
Halgania cyanea	0.5	5	SG			0.5									
Lomandra effusa	0.1	1	GG				0.1							**BAM Attributes 1x1 plot (%)**	
Maireana radiata	0.1	5	SG			0.1								**Litter (%)**	51
Myoporum platycarpum subsp. platycarpum	0.8	3	SG			0.8									
Podolepis capillaris	0.1	5	FG					0.1							
Ptilotus exaltatus	0.1	1	FG					0.1							
Schoenus subaphyllus	0.4	10	GG				0.4								
Sclerolaena stelligera	0.4	20	SG			0.4									
Thysanotus baueri	0.1	5	FG					0.1							
Triodia scariosa subsp. scariosa	45	100	GG				45								

Q130E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	638559
PCT 143 – Narrow-leaved Hopbush – Scrub Turpentine – Senna shrubland on semi-arid and arid sandplains and dunes (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6196599
Date: 05/08/2021			23	18	0	10	1	7	0	0	5	1		Orientation	65°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			66.1	61.8	0	56	0.6	5.2	0	0	4.3	0.2		BAM Attributes 20x50m plot	
Asteraceae sp. 1 (leaf only)	0.2	30	FG					0.2						Stem classes	
Atriplex stipitata subsp. miscella	0.1	1	SG			0.1								**80+**	0
Austrostipa nitida	0.6	20	GG				0.6							**50-79**	0
Brachyscome lineariloba	0.1	5	FG					0.1						**30-49**	0
Carrichtera annua	0.2	20	HT									0.2		**20-29**	No
Dodonaea viscosa subsp. angustissima	45	100	SG			45								**10-19**	No
Einadia nutans	0.4	10	FG					0.4						**5-9**	No
Enchylaena tomentosa	0.1	1	SG			0.1								**<5**	No
Eremophila glabra	0.4	1	SG			0.4								Hollows	0
Erodium crinitum	0.2	10	FG					0.2						Length logs (m)	0
Maireana georgei	1	20	SG			1									
Maireana pentatropis	3	50	SG			3								BAM Attributes 1x1 plot (%)	
Maireana triptera	2	50	SG			2								**Litter (%)**	13
Marrubium vulgare	0.5	30	EX								0.5				
Medicago minima	0.8	60	EX								0.8				
Ptilotus seminudus	0.2	5	FG					0.2							
Roepera apiculata	4	60	FG					4							
Roepera aurantiaca	0.1	10	FG					0.1							
Salsola australis	0.4	5	SG			0.4									
Schismus barbatus	0.8	50	EX								0.8				
Sclerolaena diacantha	1	40	SG			1									
Sclerolaena obliquicuspis	3	80	SG			3									
Sisymbrium erysimoides	2	100	EX								2				

Q131E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	640710
PCT 171 – Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion (moderate to good – whipstick)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6193755
Date: 05/08/2021			19	19	2	9	3	5	0	0	0	0		Orientation	32°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			79.8	**79.8**	25	8.7	45.3	0.8	0	0	**0**	0		**BAM Attributes 20x50m plot**	
Acacia colletioides	0.2	1	SG			0.2								**Stem classes**	
Austrostipa acrociliata	0.3	10	GG				0.3							**80+**	0
Calandrinia eremaea	0.4	100	FG					0.4						**50-79**	0
Dodonaea viscosa subsp. angustissima	0.5	1	SG			0.5								**30-49**	0
Eremophila glabra	0.5	2	SG			0.5								**20-29**	No
Eucalyptus gracilis	9	6	TG		9									**10-19**	Yes
Eucalyptus socialis	16	5	TG		16									**5-9**	Yes
Lomandra effusa	5	20	GG				5							**<5**	Yes
Maireana pentatropis	0.8	10	SG			0.8								**Hollows**	0
Maireana radiata	0.4	20	SG			0.4								**Length logs (m)**	14
Myoporum platycarpum subsp. platycarpum	0.3	1	SG			0.3									
Podolepis capillaris	0.1	5	FG					0.1						**BAM Attributes 1x1 plot (%)**	
Sclerolaena stelligera	2	50	SG			2								**Litter (%)**	54
Solanum coactiliferum	0.1	2	FG					0.1							
Templetonia egena	2	10	SG			2									
Thysanotus baueri	0.1	5	FG					0.1							
Triodia scariosa subsp. scariosa	40	100	GG				40								
Vittadinia cervicularis var. cervicularis	0.1	1	FG					0.1							
Westringia rigida	2	10	SG			2									

Q132E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	644376
PCT 170 – Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones (derived)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6188841
Date: 05/08/2021			21	14	0	8	1	5	0	0	7	1		Orientation	64°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			120.7	**76**	0	67.8	3	5.2	0	0	**44.7**	8		**BAM Attributes 20x50m plot**	
Asphodelus fistulosus	1	40	EX								1			**Stem classes**	
Atriplex stipitata subsp. miscella	0.4	10	SG			0.4								**80+**	0
Atriplex stipitata subsp. stipitata	0.2	5	SG			0.2								**50-79**	0
Austrostipa nitida	3	100	GG				3							**30-49**	0
Carrichtera annua	8	100	HT									8		**20-29**	No
Daucus glochidiatus	1	100	FG					1						**10-19**	No
Erodium crinitum	0.1	10	FG					0.1						**5-9**	No
Hordeum sp.	20	500	EX								20			**<5**	No
Maireana georgei	1	20	SG			1								**Hollows**	0
Maireana pentatropis	3	50	SG			3								**Length logs (m)**	0
Maireana radiata	8	70	SG			8									
Maireana triptera	35	200	SG			35								**BAM Attributes 1x1 plot (%)**	
Marrubium vulgare	0.6	30	EX								0.6			**Litter (%)**	2.4
Medicago minima	10	200	EX								10				
Olearia pimeleoides	0.2	1	SG			0.2									
Ptilotus seminudus	0.1	5	FG					0.1							
Roepera apiculata	2	50	FG					2							
Schismus barbatus	5	100	EX								5				
Sclerolaena obliquicuspis	20	200	SG			20									
Sisymbrium erysimoides	0.1	5	EX								0.1				
Tetragonia eremea	2	90	FG					2							

Q133E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	648706
PCT 172 – Deep sand mallee of irregular dunefields of the semi-arid (warm) zone (moderate to good – whipstick)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6183167
Date: 08/08/2021			22	22	4	8	6	3	0	1	0	0		Orientation	47°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			76.3	**76.3**	28	10.9	36.3	1	0	0.1	**0**	0		**BAM Attributes 20x50m plot**	
Austrostipa acrociliata	0.1	5	GG				0.1							**Stem classes**	
Austrostipa nitida	0.4	30	GG				0.4							**80+**	0
Baeckea crassifolia	0.2	1	SG			0.2								**50-79**	0
Billardiera versicolor	0.1	2	OG							0.1				**30-49**	0
Calandrinia eremaea	0.6	50	FG					0.6						**20-29**	No
Callitris verrucosa	8	6	TG		8									**10-19**	Yes
Dodonaea viscosa subsp. angustissima	4	10	SG			4								**5-9**	Yes
Eucalyptus costata	6	2	TG		6									**<5**	Yes
Eucalyptus gracilis	8	4	TG		8									**Hollows**	0
Eucalyptus socialis	6	3	TG		6									**Length logs (m)**	0
Grevillea huegelii	1	3	SG			1									
Halgania cyanea	0.1	1	SG			0.1								**BAM Attributes 1x1 plot (%)**	
Lomandra collina	0.1	5	GG				0.1							**Litter (%)**	45
Lomandra effusa	0.4	10	GG				0.4								
Maireana pentatropis	0.5	3	SG			0.5									
Maireana radiata	0.1	5	SG			0.1									
Myoporum platycarpum subsp. platycarpum	3	10	SG			3									
Pterostylis nana	0.1	20	FG					0.1							
Schoenus subaphyllus	0.3	30	GG				0.3								
Sclerolaena stelligera	2	60	SG			2									
Thysanotus baueri	0.3	30	FG					0.3							
Triodia scariosa subsp. scariosa	35	100	GG				35								

Q134E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	664531
PCT 143 – Narrow-leaved Hopbush – Scrub Turpentine – Senna shrubland on semi-arid and arid sandplains and dunes (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6179720
Date: 08/08/2021			31	25	0	13	1	11	0	0	6	1		Orientation	260°
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
			96.6	77	0	62.7	2	12.3	0	0	19.6	7		BAM Attributes 20x50m plot	
Acacia colletioides	8	10	SG			8								Stem classes	
Atriplex stipitata subsp. stipitata	3	40	SG			3								80+	0
Austrostipa nitida	2	90	GG				2							50-79	0
Brachyscome lineariloba	1	80	FG					1						30-49	2
Bulbine semibarbata	0.2	10	FG					0.2						20-29	Yes
Calandrinia eremaea	0.6	100	FG					0.6						10-19	Yes
Carrichtera annua	7	500	HT									7		5-9	Yes
Chenopodium desertorum subsp. desertorum	0.8	10	SG			0.8								<5	Yes
Chthonocephalus pseudevax	3	200	FG					3						Hollows	6
Crassula sieberiana	0.1	30	FG					0.1						Length logs (m)	40
Daucus glochidiatus	0.8	50	FG					0.8							
Dodonaea viscosa subsp. angustissima	25	40	SG			25								BAM Attributes 1x1 plot (%)	
Enchylaena tomentosa	1	10	SG			1								Litter (%)	47
Erodium crinitum	0.4	30	FG					0.4							
Hypochaeris radicata	0.4	20	EX								0.4				
Lemoori burkittii	4	200	FG					4							
Maireana pentatropis	5	80	SG			5									
Maireana radiata	0.4	5	SG			0.4									
Maireana triptera	4	80	SG			4									
Marrubium vulgare	0.6	20	EX								0.6				
*Medicago minima**	10	500	EX								10				
Myoporum platycarpum subsp. platycarpum	1	1	SG			1									
Raphanus raphanistrum	0.8	80	EX								0.8				
Rhagodia spinescens	3	20	SG			3									
Rhodanthe pygmaea	0.1	2	FG					0.1							
Roepera apiculata	2	20	FG					2							
Sclerolaena obliquicuspis	10	100	SG			10									
Senna artemisioides subsp. x coriacea	0.5	2	SG			0.5									
Senna artemisioides subsp. x petiolaris	1	3	SG			1									
Sisymbrium erysimoides	0.8	40	EX								0.8				
Vittadinia cervicularis var. cervicularis	0.1	5	FG					0.1							

Q135E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	657023
PCT 58 – Black Oak – Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6180816
Date: 08/08/2021			36	26	1	13	3	9	0	0	10	1		Orientation	15°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			91.9	**48.2**	8	33.7	4.2	2.3	0	0	**43.7**	4		**BAM Attributes 20x50m plot**	
Acacia colletioides	1	1	SG			1								**Stem classes**	
Aira sp.	4	200	EX								4			**80+**	0
Asphodelus fistulosus	0.1	5	EX								0.1			**50-79**	1
Atriplex stipitata subsp. miscella	0.1	1	SG			0.1								**30-49**	1
Atriplex stipitata subsp. stipitata	1	10	SG			1								**20-29**	Yes
Austrostipa nitida	3	80	GG				3							**10-19**	No
Austrostipa platychaeta	0.8	50	GG				0.8							**5-9**	No
Brachyscome lineariloba	0.4	80	FG					0.4						**<5**	No
Callitris gracilis subsp. murrayensis	8	1	TG		8									**Hollows**	0
Carrichtera annua	4	100	HT									4		**Length logs (m)**	42
Chenopodium desertorum subsp. desertorum	0.8	20	SG			0.8									
Chthonocephalus pseudevax	0.4	50	FG					0.4						**BAM Attributes 1x1 plot (%)**	
Crassula sieberiana	0.1	20	FG					0.1						**Litter (%)**	13
Dactylis glomerata	2	60	EX								2				
Dodonaea viscosa subsp. angustissima	2	5	SG			2									
Enchylaena tomentosa	3	30	SG			3									
Erodium crinitum	0.5	50	FG					0.5							
Hordeum sp.	4	100	EX								4				
Lemoori burkittii	0.4	80	Fg					0.4							
Maireana brevifolia	0.2	3	SG			0.2									
Maireana pentatropis	1	40	SG			1									
Maireana triptera	0.6	10	SG			0.6									
Marrubium vulgare	0.6	40	EX								0.6				
Medicago minima	10	200	EX								10				
Myoporum platycarpum subsp. platycarpum	1	1	SG			1									
Ptilotus seminudus	0.1	5	FG					0.1							
Raphanus raphanistrum	3	200	EX								3				
Rhagodia spinescens	6	30	SG			6									
Roepera apiculata	0.1	1	FG					0.1							
Rytidosperma caespitosum	0.4	10	GG				0.4								
Salsola australis	2	20	SG			2									
Schismus barbatus	6	200	EX								6				
Sclerolaena obliquicuspis	15	100	SG			15									
Sida trichopoda	0.1	5	FG					0.1							
Sisymbrium erysimoides	10	500	EX								10				
Wurmbea diocia subsp. diocia	0.2	30	FG					0.2							

Q136E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	657772
PCT 199 – Hooked Needlewood - Needlewood - Mulga - Turpentine Bush open shrubland of the sem-arid and arid plains (Moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6180704
Date: 08/08/2021			27	19	0	9	2	8	0	0	8	1		Orientation	324°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			106.3	**60.4**	0	44.4	2.2	13.8	0	0	**45.9**	10		**BAM Attributes 20x50m plot**	
Austrostipa nitida	2	80	GG				2							**Stem classes**	
Brachyscome lineariloba	0.6	80	FG					0.6						**80+**	0
Calandrinia eremaea	0.4	50	FG					0.4						**50-79**	0
Carrichtera annua	10	500	HT									10		**30-49**	0
Chthonocephalus pseudevax	0.4	50	FG					0.4						**20-29**	No
Crassula sieberiana	10	1000	FG					10						**10-19**	No
Dodonaea viscosa subsp. angustissima	4	10	SG			4								**5-9**	Yes
Echium plantagineum	0.4	10	EX								0.4			**<5**	Yes
Enchylaena tomentosa	5	20	SG			5								**Hollows**	0
Erodium crinitum	0.8	40	FG					0.8						**Length logs (m)**	63
Goodenia pusilliflora	0.3	20	FG					0.3							
Hakea tephrosperma	15	60	SG			15								**BAM Attributes 1x1 plot (%)**	
Hordeum sp.	5	100	EX								5			**Litter (%)**	5.4
Maireana brevifolia	1	5	SG			1									
Maireana triptera	5	80	SG			5									
Marrubium vulgare	0.5	40	EX								0.5				
Medicago minima	8	500	EX								8				
Raphanus raphanistrum	4	100	EX								4				
Rytidosperma caespitosum	0.2	10	GG				0.2								
Salsola australis	0.4	2	SG			0.4									
Schismus barbatus	10	500	EX								10				
Sclerolaena diacantha	5	90	SG			5									
Sclerolaena obliquicuspis	8	100	SG			8									
Senna artemisioides subsp. x petiolaris	1	1	SG			1									
Sisymbrium erysimoides	8	200	EX								8				
Tetragonia eremea	0.8	50	FG					0.8							
Wurmbea diocia subsp. diocia	0.5	50	FG					0.5							

Q137E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	663172
PCT 58 – Black Oak – Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6179919
Date: 08/08/2021			34	33	4	17	3	8	0	1	1	0		Orientation	350°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			77.9	**77.1**	24.1	48.6	0.7	3.6	0	0.1	**0.8**	0		**BAM Attributes 20x50m plot**	
Acacia colletioides	1	1	SG			1								**Stem classes**	
Acacia oswaldii	0.1	1	TG		0.1									**80+**	0
Alectryon oleifolius subsp. canescens	1	3	TG		1									**50-79**	1
Atriplex stipitata subsp. stipitata	1	10	SG			1								**30-49**	3
Austrostipa acrociliata	0.1	5	GG				0.1							**20-29**	Yes
Austrostipa nitida	0.5	40	GG				0.5							**10-19**	Yes
Brachyscome lineariloba	0.8	60	FG					0.8						**5-9**	Yes
Calandrinia eremaea	1	100	FG					1						**<5**	Yes
Callitris glaucophylla	7	4	TG		7									**Hollows**	0
Casuarina pauper	16	10	TG		16									**Length logs (m)**	57
Chenopodium desertorum subsp. desertorum	0.1	3	SG			0.1									
Chenopodium desertorum subsp. rectum	0.8	10	SG			0.8								**BAM Attributes 1x1 plot (%)**	
Crassula sieberiana	0.4	50	FG					0.4						**Litter (%)**	48
Dodonaea viscosa subsp. angustissima	10	30	SG			10									
Einadia nutans	0.1	3	FG					0.1							
Enchylaena tomentosa	0.4	3	SG			0.4									
Eremophila glabra	0.1	1	SG			0.1									
Hakea tephrosperma	2	10	SG			2									
Isoetopsis graminifolia	0.5	80	FG					0.5							
Lomandra leucocephala	0.1	80	GG				0.1								
Lysiana exocarpi subsp. exocarpi	0.1	1	OG							0.1					
Maireana pentatropis	1	30	SG			1									
Maireana triptera	0.2	5	SG			0.2									
Olearia muelleri	4	30	SG			4									
Olearia pimeleoides	0.2	2	SG			0.2									
Ptilotus spathulatus	0.1	5	FG					0.1							
Rhagodia spinescens	0.3	5	SG			0.3									
Roepera apiculata	0.6	20	FG					0.6							
Sclerolaena diacantha	6	90	SG			6									
Sclerolaena stelligera	0.5	8	SG			0.5									
Senna artemisioides subsp. x coriacea	1	5	SG			1									
Senna artemisioides subsp. x petiolaris	20	40	SG			20									
Sisymbrium erysimoides	0.8	40	EX								0.8				
Vittadinia cervicularis var. cervicularis	0.1	5	FG					0.1							

Q138E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	665104
PCT 58 – Black Oak – Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6179711
Date: 08/08/2021			31	29	2	17	1	9	0	0	2	1		Orientation	115°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			68.9	**65.4**	11	46.4	0.3	7.7	0	0	**3.5**	0.5		**BAM Attributes 20x50m plot**	
Atriplex stipitata subsp. stipitata	0.8	10	SG			0.8								**Stem classes**	
Austrostipa nitida	0.3	50	GG				0.3							**80+**	0
Brachyscome lineariloba	1	80	FG					1						**50-79**	0
Brachyscome sp.	0.6	30	FG					0.6						**30-49**	0
Calandrinia eremaea	0.4	90	FG					0.4						**20-29**	No
Callitris gracilis subsp. murrayensis	2	1	TG		2									**10-19**	Yes
Carrichtera annua	0.5	30	HT									0.5		**5-9**	Yes
Casuarina pauper	9	3	TG		9									**<5**	Yes
Chenopodium desertorum subsp. rectum	4	60	SG			4								**Hollows**	0
Chthonocephalus pseudevax	0.2	30	FG					0.2						**Length logs (m)**	85
Crassula sieberiana	4	500	FG					4							
Dissocarpus paradoxus	0.6	10	SG			0.6								**BAM Attributes 1x1 plot (%)**	
Dodonaea viscosa subsp. angustissima	2	10	SG			2								**Litter (%)**	32
Einadia nutans	0.5	10	FG					0.5							
Enchylaena tomentosa	2	10	SG			2									
Exocarpos aphyllus	1	1	SG			1									
Hakea leucoptera subsp. leucoptera	0.1	1	SG			0.1									
Hakea tephrosperma	0.5	1	SG			0.5									
Maireana radiata	0.4	10	SG			0.4									
Maireana sclerolaenoides	0.1	1	SG			0.1									
Maireana triptera	4	80	SG			4									
Myoporum platycarpum subsp. platycarpum	3	2	SG			3									
Olearia pimeleoides	0.8	10	SG			0.8									
Oxalis perennans	0.1	2	FG					0.1							
Roepera apiculata	0.8	40	FG					0.8							
Roepera eremaea	0.1	5	FG					0.1							
Salsola australis	0.1	3	SG			0.1									
Sclerolaena diacantha	15	100	SG			15									
Sclerolaena obliquicuspis	2	50	SG			2									
Senna artemisioides subsp. x petiolaris	10	40	SG			10									
Sisymbrium erysimoides	3	100	EX								3				

Q139E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	665616
PCT 171 – Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion (moderate to good – bull)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6179726
Date: 08/08/2021			25	23	2	11	3	7	0	0	2	1		Orientation	41°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			84.1	**83.5**	27	23.1	25.4	8	0	0	**0.6**	0.2		**BAM Attributes 20x50m plot**	
Acacia colletioides	0.5	1	SG			0.5								**Stem classes**	
Austrostipa nitida	0.3	20	GG				0.3							**80+**	0
Brachyscome lineariloba	0.5	70	FG					0.5						**50-79**	0
Brachyscome sp.	6	100	FG					6						**30-49**	2
Calandrinia eremaea	0.4	80	FG					0.4						**20-29**	Yes
Carrichtera annua	0.2	10	HT									0.2		**10-19**	Yes
Chenopodium desertorum subsp. rectum	2	60	SG			2								**5-9**	Yes
Crassula sieberiana	0.6	100	FG					0.6						**<5**	Yes
Dodonaea viscosa subsp. angustissima	0.4	2	SG			0.4								**Hollows**	11
Einadia nutans subsp. nutans	0.2	5	FG					0.2						**Length logs (m)**	87
Eucalyptus costata	12	5	TG		12										
Eucalyptus socialis	15	6	TG		15									**BAM Attributes 1x1 plot (%)**	
Exocarpos aphyllus	1	1	SG			1								**Litter (%)**	51
Maireana pentatropis	2	30	SG			2									
Olearia muelleri	0.1	1	SG			0.1									
Olearia pimeleoides	10	70	SG			10									
Ptilotus spathulatus	0.2	10	FG					0.2							
Rytidosperma caespitosum	0.1	5	GG				0.1								
Sclerolaena diacantha	3	40	SG			3									
Sclerolaena stelligera	0.1	3	SG			0.1									
Senna artemisioides subsp. filifolia	1	3	SG			1									
Senna artemisioides subsp. x petiolaris	3	10	SG			3									
Sisymbrium erysimoides	0.4	10	EX								0.4				
Thysanotus baueri	0.1	1	FG					0.1							
Triodia scariosa subsp. scariosa	25	80	GG				25								

Q140E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	666263
PCT 58 – Black Oak – Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6179803
Date: 08/08/2021			27	25	4	15	1	5	0	0	2	0		Orientation	0°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			70.9	**66.8**	36.5	27.9	0.1	2.3	0	0	**4.1**	0		**BAM Attributes 20x50m plot**	
Acacia colletioides	4	2	SG			4								**Stem classes**	
Acacia oswaldii	0.5	1	TG		0.5									**80+**	0
Alectryon oleifolius subsp. canescens	15	10	TG		15									**50-79**	1
Allocasuarina luehmannii	12	3	TG		12									**30-49**	2
Atriplex stipitata subsp. miscella	0.4	3	SG			0.4								**20-29**	Yes
Austrostipa elegantissima	0.1	1	GG				0.1							**10-19**	Yes
Calandrinia eremaea	0.8	80	FG					0.8						**5-9**	Yes
Casuarina pauper	9	4	TG		9									**<5**	Yes
Chenopodium desertorum subsp. rectum	1	5	SG			1								**Hollows**	0
Crassula sieberiana	0.4	100	FG					0.4						**Length logs (m)**	61
Einadia nutans subsp. nutans	0.6	10	FG					0.6							
Enchylaena tomentosa	4	30	SG			4								**BAM Attributes 1x1 plot (%)**	
Eremophila glabra	1	1	SG			1								**Litter (%)**	47
Maireana sclerolaenoides	0.2	5	SG			0.2									
Maireana triptera	2	40	SG			2									
Olearia muelleri	0.1	1	SG			0.1									
Olearia pimeleoides	5	40	SG			5									
Pterostylis sp. (leaf only)	0.1	2	FG					0.1							
Rhagodia spinescens	0.8	5	SG			0.8									
Roepera apiculata	0.4	10	FG					0.4							
Sclerolaena diacantha	3	40	SG			3									
Sclerolaena obliquicuspis	2	30	SG			2									
Senna artemisioides subsp. filifolia	1	5	SG			1									
Senna artemisioides subsp. x coriacea	0.4	3	SG			0.4									
Senna artemisioides subsp. x petiolaris	3	20	SG			3									
Sisymbrium erysimoides	4	100	EX								4				
Sonchus oleraceus	0.1	5	EX								0.1				

Q141E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	671681
PCT 58 – Black Oak – Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6180209
Date: 08/08/2021			17	15	3	9	1	2	0	0	2	1		Orientation	242
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			92.6	**71.6**	1.9	53.5	0.8	15.4	0	0	**21**	1		**BAM Attributes 20x50m plot**	
Acacia colletioides	1	1	SG			1								**Stem classes**	
Alectryon oleifolius subsp. canescens	1	1	TG		1									**80+**	0
Atriplex stipitata subsp. stipitata	22	10	SG			22								**50-79**	1
Austrostipa platychaeta	0.8	10	GG				0.8							**30-49**	2
Callitris gracilis subsp. murrayensis	0.1	5	TG		0.1									**20-29**	Yes
Carrichtera annua	1	1	HT									1		**10-19**	Yes
Casuarina pauper	0.8	30	TG		0.8									**5-9**	Yes
Dissocarpus paradoxus	0.5	10	SG			0.5								**<5**	Yes
Enchylaena tomentosa	5	50	SG			5								**Hollows**	0
Exocarpos aphyllus	3	3	SG			3								**Length logs (m)**	94
Maireana triptera	4	80	SG			4									
Ptilotus spathulatus	0.4	10	FG					0.4						**BAM Attributes 1x1 plot (%)**	
Rhagodia spinescens	1	3	SG			1								**Litter (%)**	50
Roepera apiculata	15	300	FG					15							
Sclerolaena diacantha	15	100	SG			15									
Sclerolaena obliquicuspis	2	40	SG			2									
Sisymbrium erysimoides	20	1000	EX								20				

Q142E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	677192
PCT 23 – Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6180434
Date: 08/08/2021			24	18	1	11	1	5	0	0	6	0		Orientation	98°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			132.1	**65.1**	32	26.3	1	5.8	0	0	**67**	0		**BAM Attributes 20x50m plot**	
Acacia melvillei	32	20	TG		32									**Stem classes**	
Atriplex eardleyae	0.1	5	SG			0.1								**80+**	0
Austrostipa nitida	1	50	GG				1							**50-79**	0
Brachyscome lineariloba	0.2	20	FG					0.2						**30-49**	0
Crassula sieberiana	0.5	100	FG					0.5						**20-29**	No
Dissocarpus paradoxus	3	60	SG			3								**10-19**	No
Hordeum leporinum	25	100	EX								25			**5-9**	Yes
Lepidium papillosum	0.1	2	FG					0.1						**<5**	Yes
Maireana pyramidata	0.4	1	SG			0.4								**Hollows**	0
Maireana triptera	1	10	SG			1								**Length logs (m)**	37
Medicago minima	5	100	EX								5				
Mesembryanthemum nodiflorum	3	200	EX								3			**BAM Attributes 1x1 plot (%)**	
Nitraria billardierei	0.5	2	SG			0.5								**Litter (%)**	1.8
Psilocaulon granulicaule	15	200	EX								15				
Rhagodia spinescens	0.5	5	SG			0.5									
Roepera apiculata	3	80	FG					3							
Salsola australis	0.1	1	SG			0.1									
Schismus barbatus	4	100	EX								4				
Sclerolaena brachyptera	0.2	5	SG			0.2									
Sclerolaena patenticuspis	20	300	SG			20									
Senna artemisioides subsp. x coriacea	0.1	1	SG			0.1									
Sisymbrium erysimoides	15	500	EX								15				
Templetonia egena	0.4	1	SG			0.4									
Tetragonia eremea	2	80	FG					2							

Q143E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	681551
PCT 143 – Narrow-leaved Hopbush – Scrub Turpentine – Senna shrubland on semi-arid and arid sandplains and dunes (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6179424
Date: 09/08/2021			16	12	0	7	2	3	0	0	4	0		Orientation	30°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			73.3	**37.5**	0	31.9	3.3	2.3	0	0	**35.8**	0		**BAM Attributes 20x50m plot**	
Asphodelus fistulosus	10	200	EX								10			**Stem classes**	
Austrostipa nitida	3	90	GG				3							**80+**	0
Daucus glochidiatus	0.5	30	FG					0.5						**50-79**	0
Dissocarpus paradoxus	1	20	SG			1								**30-49**	0
Hordeum leporinum	0.8	50	EX								0.8			**20-29**	No
Lepidium papillosum	0.8	50	FG					0.8						**10-19**	No
Medicago minima	20	1000	EX								20			**5-9**	No
Nitraria billardierei	1	3	SG			1								**<5**	Yes
Rhagodia ulicina	0.4	1	SG			0.4								**Hollows**	0
Roepera apiculata	1	30	FG					1						**Length logs (m)**	
Rytidosperma setaceum	0.3	10	GG				0.3								
Schismus barbatus	5	200	EX								5			**BAM Attributes 1x1 plot (%)**	
Sclerolaena patenticuspis	4	80	SG			4								**Litter (%)**	3.2
Senna artemisioides subsp. x coriacea	0.1	1	SG			0.1									
Senna artemisioides subsp. x petiolaris	25	50	SG			25									
Templetonia sulcata	0.4	1	SG			0.4									

Q144E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	683599
PCT 171 – Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion (derived)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6178979
Date: 09/08/2021			29	21	0	10	3	8	0	0	8	1		Orientation	2°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			65.3	34.4	0	11	12.4	11	0	0	30.9	0.5		BAM Attributes 20x50m plot	
Acacia colletioides	5	10	SG			5								Stem classes	
Asphodelus fistulosus	10	200	EX								10			80+	0
Austrostipa acrociliata	0.4	20	GG				0.4							50-79	0
Austrostipa nitida	2	80	GG				2							30-49	0
Brachyscome lineariloba	0.2	40	FG					0.2						20-29	No
Carrichtera annua	0.5	40	HT									0.5		10-19	No
Centaurea melitensis	0.1	1	EX								0.1			5-9	No
Daucus glochidiatus	0.4	50	FG					0.4						<5	Yes
Einadia nutans subsp. nutans	0.2	10	FG					0.2						Hollows	0
Hordeum leporinum	1	100	EX								1			Length logs (m)	15
Isoetopsis graminifolia	4	200	FG					4							
Lepidium papillosum	0.1	10	FG					0.1						BAM Attributes 1x1 plot (%)	
Maireana pentatropis	0.1	1	SG			0.1								Litter (%)	1.4
Maireana sclerolaenoides	1	80	SG			1									
Marrubium vulgare	0.5	40	EX								0.5				
Medicago minima	15	500	EX								15				
Olearia pimeleoides	1	10	SG			1									
Oxalis perennans	0.1	1	FG					0.1							
Rhagodia ulicina	0.4	2	SG			0.4									
Roepera apiculata	5	100	FG					5							
Schismus barbatus	3	100	EX								3				
Sclerolaena obliquicuspis	0.6	30	SG			0.6									
Sclerolaena patenticuspis	2	50	SG			2									
Senna artemisioides subsp. x coriacea	0.4	2	SG			0.4									
Senna artemisioides subsp. x petiolaris	0.4	2	SG			0.4									
Sisymbrium erysimoides	0.8	40	EX								0.8				
Tetragonia eremea	1	50	FG					1							
Triodia scariosa subsp. scariosa	10	10	GG				10								
Westringia rigida	0.1	1	SG			0.1									

Q145E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	687292
PCT 170 – Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones (moderate to good - whipstick)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6178360
Date: 09/08/2021			19	19	3	9	3	4	0	0	0	0		Orientation	46°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			65.9	65.9	28	34.2	0.5	3.2	0	0	0	0		BAM Attributes 20x50m plot	
Austrostipa acrociliata	0.2	20	GG				0.2							Stem classes	
Austrostipa nitida	0.2	10	GG				0.2							**80+**	0
Crassula sieberiana	0.1	10	FG					0.1						**50-79**	0
Enchylaena tomentosa	0.1	1	SG			0.1								**30-49**	0
Eucalyptus gracilis	6	2	TG		6									**20-29**	Yes
Eucalyptus oleosa	8	2	TG		8									**10-19**	Yes
Eucalyptus socialis	14	5	TG		14									**5-9**	Yes
Grevillea huegelii	0.4	2	SG			0.4								**<5**	Yes
Maireana georgei	0.2	5	SG			0.2								Hollows	0
Maireana pentatropis	16	100	SG			16								Length logs (m)	47
Maireana radiata	4	50	SG			4									
Olearia muelleri	10	60	SG			10								BAM Attributes 1x1 plot (%)	
Ptilotus spathulatus	0.1	2	FG					0.1						**Litter (%)**	46
Rhagodia ulicina	0.1	1	SG			0.1									
Roepera ammophila	1	20	FG					1							
Roepera apiculata	2	50	FG					2							
Rytidosperma caespitosum	0.1	5	GG				0.1								
Sclerolaena diacantha	3	80	SG			3									
Senna artemisioides subsp. filifolia	0.4	3	SG			0.4									

Q146E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	705174
PCT 163 – Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6173649
Date: 09/08/2021			28	21	0	6	2	13	0	0	7	0		Orientation	60°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			80.2	**49.5**	0	35.6	1.2	12.7	0	0	**30.7**	0		**BAM Attributes 20x50m plot**	
Aira cupaniana	2	100	EX								2			**Stem classes**	
Austrostipa nitida	0.8	40	GG				0.8							**80+**	0
Austrostipa scabra	0.4	10	GG				0.4							**50-79**	0
Brachyscome lineariloba	0.8	80	FG					0.8						**30-49**	0
Calandrinia eremaea	0.3	20	FG					0.3						**20-29**	No
Cotula australis	0.1	10	FG					0.1						**10-19**	No
Crassula sieberiana	0.3	80	FG					0.3						**5-9**	No
Enchylaena tomentosa	4	30	SG			4								**<5**	No
Erodium crinitum	3	100	FG					3						**Hollows**	0
Hordeum leporinum	5	100	EX								5			**Length logs (m)**	0
Hypoxis glabella var. glabella	0.4	20	FG					0.4							
Isoetopsis graminifolia	2	100	FG					2						**BAM Attributes 1x1 plot (%)**	
Lemoori burkittii	2	500	FG					2						**Litter (%)**	0
Lolium perenne	0.5	30	EX								0.5				
Maireana pentatropis	1	20	SG			1									
Maireana sclerolaenoides	0.6	30	SG			0.6									
Maireana triptera	2	60	SG			2									
Marrubium vulgare	0.6	40	EX								0.6				
Medicago minima	12	200	EX								12				
Nitraria billardierei	20	30	SG			20									
Oxalis perennans	0.1	5	FG					0.1							
Plantago turrifera	2	100	FG					2							
Ptilotus seminudus	0.2	10	FG					0.2							
Schismus barbatus	0.6	30	EX								0.6				
Sclerolaena obliquicuspis	8	100	SG			8									
Senecio glossanthus	0.5	20	FG					0.5							
Sisymbrium erysimoides	10	200	EX								10				
Tetragonia eremea	1	100	FG					1							

Q147E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	706275
PCT 170 – Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones (moderate to good - bull)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6172683
Date: 09/08/2021			19	17	3	8	3	3	0	0	2	0		Orientation	22°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			71.1	**64**	25	31.2	0.7	7.1	0	0	**7.1**	0		**BAM Attributes 20x50m plot**	
Austrostipa acrociliata	0.1	5	GG				0.1							**Stem classes**	
Austrostipa elegantissima	0.1	2	GG				0.1							**80+**	0
Austrostipa nitida	0.5	20	GG				0.5							**50-79**	1
Eucalyptus gracilis	16	4	TG		16									**30-49**	3
Eucalyptus oleosa	5	1	TG		5									**20-29**	Yes
Eucalyptus socialis	4	1	TG		4									**10-19**	Yes
Lolium perenne	0.1	1	EX								0.1			**5-9**	Yes
Maireana pentatropis	8	90	SG			8								**<5**	Yes
Maireana radiata	0.5	20	SG			0.5								**Hollows**	0
Maireana sclerolaenoides	0.5	10	SG			0.5								**Length logs (m)**	52
Maireana triptera	0.4	5	SG			0.4									
Nitraria billardierei	3	8	SG			3								**BAM Attributes 1x1 plot (%)**	
Ptilotus spathulatus	0.1	2	FG					0.1						**Litter (%)**	57
Rhagodia ulicina	15	50	SG			15									
Roepera apiculata	4	80	FG					4							
Roepera eremaea	3	50	FG					3							
Sclerolaena diacantha	0.8	10	SG			0.8									
Sclerolaena obliquicuspis	3	40	SG			3									
Sisymbrium erysimoides	7	100	EX								7				

Q148E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	711269
PCT 163 – Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6168297
Date: 10/08/2021			23	14	0	6	1	7	0	0	9	0		Orientation	10°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			125.7	46.1	0	27.3	1	17.8	0	0	79.6	0		BAM Attributes 20x50m plot	
Aira cupaniana	5	100	EX								5			Stem classes	
Atriplex pseudocampanulata	0.2	5	SG			0.2								80+	0
Austrostipa nitida	1	80	GG				1							50-79	0
Brachyscome lineariloba	3	200	FG					3						30-49	0
Chondrilla juncea	0.2	5	EX								0.2			20-29	No
Chthonocephalus pseudevax	2	100	FG					2						10-19	No
Crassula sieberiana	0.4	50	FG					0.4						5-9	No
Hordeum leporinum	25	1000	EX								25			<5	No
Lolium perenne	2	50	EX								2			Hollows	0
Medicago laciniata	2	40	EX								2			Length logs (m)	0
Medicago minima	35	1000	EX								35				
Nitraria billardierei	15	40	SG			15								BAM Attributes 1x1 plot (%)	
Plantago turrifera	0.8	80	FG					0.8						Litter (%)	0
Rhagodia spinescens	0.1	1	SG			0.1									
Rhodanthe pygmaea	10	200	FG					10							
Schismus barbatus	5	200	EX								5				
Sclerolaena brachyptera	5	100	SG			5									
Sclerolaena obliquicuspis	2	60	SG			2									
Sclerolaena tricuspis	5	80	SG			5									
Senecio glossanthus	0.6	50	FG					0.6							
Sisymbrium erysimoides	5	200	EX								5				
Sonchus oleraceus	0.4	10	EX								0.4				
Tetragonia eremea	1	50	FG					1							

Q149E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	711511
PCT 24 – Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6168081
Date: 10/08/2021			23	17	0	4	3	10	0	0	6	0		Orientation	49°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			112.6	**62.6**	0	12	28.6	22	0	0	**50**	0		**BAM Attributes 20x50m plot**	
Aira cupaniana	5	200	EX								5			**Stem classes**	
Austrostipa nitida	3	100	GG				3							**80+**	0
Brachyscome lineariloba	5	500	FG					5						**50-79**	0
Calandrinia eremaea	0.2	40	FG					0.2						**30-49**	0
Chondrilla juncea	1	50	EX								1			**20-29**	No
Chthonocephalus pseudevax	1	80	FG					1						**10-19**	No
Crassula sieberiana	1	100	FG					1						**5-9**	No
Enteropogon acicularis	0.6	20	GG				0.6							**<5**	No
Eragrostis australasica	25	80	GG				25							**Hollows**	0
Erodium crinitum	0.4	50	FG					0.4						**Length logs (m)**	0
Hordeum leporinum	25	1000	EX								25				
Hypoxis glabella var. glabella	0.2	30	FG					0.2						**BAM Attributes 1x1 plot (%)**	
Leiocarpa tomentosa	0.4	5	FG					0.4						**Litter (%)**	0
Medicago minima	15	500	EX								15				
Plantago turrifera	10	1000	FG					10							
Rhagodia spinescens	2	2	SG			2									
Rhodanthe pygmaea	3	200	FG					3							
Schismus barbatus	2	80	EX								2				
Sclerolaena brachyptera	1	50	SG			1									
Sclerolaena obliquicuspis	5	100	SG			5									
Sclerolaena tricuspis	4	80	SG			4									
Sisymbrium erysimoides	2	50	EX								2				
Tetragonia eremea	0.8	70	FG					0.8							

Q150E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	711915
PCT 163 – Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6167762
Date: 10/08/2021			23	18	0	6	4	8	0	0	6	0		Orientation	50°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			119.7	100.7	0	34.2	11.1	55.4	0	0	26	0		BAM Attributes 20x50m plot	
Aira cupaniana	3	200	EX								3			Stem classes	
Atriplex acutibractea subsp. acutibractea	0.1	2	SG			0.1								**80+**	0
Austrostipa nitida	0.5	30	GG				0.5							**50-79**	0
Austrostipa nodosa	3	80	GG				3							**30-49**	0
Brachyscome lineariloba	20	500	FG					20						**20-29**	No
Calandrinia eremaea	0.4	50	FG					0.4						**10-19**	No
Chondrilla juncea	2	60	EX								2			**5-9**	No
Chthonocephalus pseudevax	2	200	FG					2						**<5**	No
Crassula sieberiana	0.5	80	FG					0.5						Hollows	0
Enteropogon acicularis	0.6	20	GG				0.6							Length logs (m)	0
Goodenia pusilliflora	0.5	30	FG					0.5							
Hordeum leporinum	10	200	EX								10			BAM Attributes 1x1 plot (%)	
Medicago minima	6	200	EX								6			**Litter (%)**	0
Nitraria billardierei	10	10	SG			10									
Osteocarpum acropterum	0.1	5	SG			0.1									
Plantago turrifera	3	100	FG					3							
Rhodanthe pygmaea	25	1000	FG					25							
Schismus barbatus	1	50	EX								1				
Sclerolaena brachyptera	6	80	SG			6									
Sclerolaena obliquicuspis	10	100	SG			10									
Sclerolaena tricuspis	8	100	SG			8									
Sisymbrium erysimoides	4	100	EX								4				
Tetragonia eremea	4	200	FG					4							

Q151E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	712529
PCT 163 – Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6167161
Date: 10/08/2021			26	17	0	6	2	9	0	0	9	1		Orientation	58°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			82	41.7	0	27.7	1.4	12.6	0	0	40.3	0.1		BAM Attributes 20x50m plot	
Atriplex acutibractea subsp. acutibractea	0.1	3	SG			0.1								Stem classes	
Austrostipa nitida	1	70	GG				1							80+	0
Brachyscome lineariloba	3	100	FG					3						50-79	0
Bulbine semibarbata	0.1	4	FG					0.1						30-49	0
Carrichtera annua	0.1	10	HT									0.1		20-29	No
Cressa australis	0.1	5	FG					0.1						10-19	No
Daucus glochidiatus	0.2	30	FG					0.2						5-9	No
Hordeum leporinum	25	1000	EX								25			<5	No
Hypochaeris radicata	0.5	40	EX								0.5			Hollows	0
Hypoxis glabella var. glabella	0.4	30	GG				0.4							Length logs (m)	0
Isoetopsis graminifolia	2	100	FG					2							
Lepidium papillosum	0.4	30	FG					0.4						BAM Attributes 1x1 plot (%)	
Maireana pyramidata	2	10	SG			2								Litter (%)	0
Medicago laciniata	0.4	0.5	EX								0.4				
Medicago minima	8	500	EX								8				
Mesembryanthemum nodiflorum	0.1	5	EX								0.1				
Nitraria billardierei	18	20	SG			18									
Plantago turrifera	3	100	FG					3							
Schismus barbatus	5	300	EX								5				
Sclerolaena brachyptera	4	80	SG			4									
Sclerolaena obliquicuspis	3	80	SG			3									
Sclerolaena tricuspis	0.6	10	SG			0.6									
Senecio glossanthus	0.8	50	FG					0.8							
Sisymbrium erysimoides	1	60	EX								1				
Sonchus oleraceus	0.2	5	EX								0.2				
Tetragonia eremea	3	100	FG					3							

Q152E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	712838
PCT 163 – Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6166902
Date: 10/08/2021			23	17	0	3	0	14	0	0	6	1		Orientation	8°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			84.2	57.3	0	42	0	15.3	0	0	24.9	0.8		BAM Attributes 20x50m plot	
	2	100												Stem classes	
Angianthus tomentosus	0.4	40	FG					0.4						80+	0
Brachyscome lineariloba	5	500	FG					5						50-79	0
Calandrinia eremaea	0.1	3	FG					0.1						30-49	0
Carrichtera annua	0.8	30	HT									0.8		20-29	No
Chondrilla juncea	0.6	60	EX								0.6			10-19	No
Chthonocephalus pseudevax	0.4	50	FG					0.4						5-9	No
Crassula sieberiana	0.2	50	FG					0.2						<5	No
Cressa australis	0.3	20	FG					0.3						Hollows	0
Hordeum leporinum	15	500	EX								15			Length logs (m)	0
Hypoxis glabella var. glabella	0.4	60	FG					0.4							
Leiocarpa tomentosa	0.1	2	FG					0.1						BAM Attributes 1x1 plot (%)	
Lepidium papillosum	0.7	80	FG					0.7						Litter (%)	0
Lolium perenne	4	100	EX								4				
Nitraria billardierei	15	10	SG			15									
Plantago turrifera	0.4	40	FG					0.4							
Rhodanthe pygmaea	3	100	FG					3							
Schismus barbatus	0.5	50	EX								0.5				
Sclerolaena obliquicuspis	5	80	SG			5									
Sclerolaena patenticuspis	22	200	SG			22									
Senecio glossanthus	0.5	20	FG					0.5							
Sisymbrium erysimoides	4	100	EX								4				
Tetragonia eremea	3	200	FG					3							
Wurmbea diocia subsp. diocia	0.8	60	FG					0.8							

Q153E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	713468
PCT 15 – Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (poor)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6166445
Date: 10/08/2021			28	16	1	10	0	5	0	0	12	2		Orientation	53°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			90.5	**37.3**	22	12.2	0	3.1	0	0	**53.2**	20		BAM Attributes 20x50m plot	
Aira cupaniana	2	100	EX								2			Stem classes	
Atriplex acutibractea subsp. acutibractea	0.1	5	SG			0.1								**80+**	1
Atriplex pseudocampanulata	0.2	10	SG			0.2								**50-79**	4
Brachyscome lineariloba	0.6	80	FG					0.6						**30-49**	3
Carrichtera annua	5	300	HT									5		**20-29**	No
Chenopodium album	0.4	10	EX								0.4			**10-19**	No
Crassula sieberiana	0.1	40	FG					0.1						**5-9**	No
Cucumis myriocarpus	0.5	10	EX								0.5			**<5**	No
Enchylaena tomentosa	0.1	2	SG			0.1								Hollows	9
Eucalyptus largiflorens	22	6	TG		22									Length logs (m)	47
Hordeum leporinum	10	500	EX								10				
Lolium perenne	6	80	EX								6			BAM Attributes 1x1 plot (%)	
Malva parviflora	0.4	10	EX								0.4			**Litter (%)**	19
Medicago minima	3	100	EX								3				
Mesembryanthemum nodiflorum	0.4	20	EX								0.4				
Nitraria billardierei	0.8	1	SG			0.8									
Osteocarpum acropterum	0.5	5	SG			0.5									
Psilocaulon granulicaule	15	100	HT									15			
Rhagodia spinescens	0.5	3	SG			0.5									
Rhodanthe corymbiflora	0.1	1	FG					0.1							
Rhodanthe pygmaea	0.3	30	FG					0.3							
Sclerolaena brachyptera	0.2	5	SG			0.2									
Sclerolaena divaricata	0.8	10	SG			0.8									
Sclerolaena obliquicuspis	1	50	SG			1									
Sclerolaena tricuspis	8	40	SG			8									
Sisymbrium erysimoides	10	500	EX								10				
Tetragonia eremea	2	100	FG					2							
Vulpia myuros	0.5	40	EX								0.5				

Q154E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	713498
PCT 15 – Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (derived)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6166357
Date: 10/08/2021			21	11	0	4	0	7	0	0	10	1		Orientation	135°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		Plot size	20 X 20 X 50
			98.3	25.4	0	14.3	0	11.1	0	0	72.9	5		BAM Attributes 20x50m plot	
Aira cupaniana	4	200	EX								4			Stem classes	
Brachyscome lineariloba	8	300	FG					8						80+	0
Calandrinia eremaea	0.1	5	FG					0.1						50-79	0
Carrichtera annua	5	300	HT									5		30-49	0
Chenopodium nitrariaceum	0.5	1	SG			0.5								20-29	No
Chondrilla juncea	0.5	30	EX								0.5			10-19	No
Crassula sieberiana	0.1	10	FG					0.1						5-9	No
Hordeum leporinum	25	1000	EX								25			<5	No
Lolium perenne	10	200	EX								10			Hollows	0
Medicago laciniata	0.8	50	EX								0.8			Length logs (m)	3
Medicago minima	15	500	EX								15				
Mesembryanthemum nodiflorum	0.6	40	EX								0.6			BAM Attributes 1x1 plot (%)	
Plantago drummondii	0.4	10	FG					0.4						Litter (%)	0.7
Rhodanthe corymbiflora	0.2	10	FG					0.2							
Sclerolaena brachyptera	0.8	20	SG			0.8									
Sclerolaena muricata var. muricata	10	80	SG			10									
Sclerolaena tricuspis	3	40	SG			3									
Senecio glossanthus	0.3	10	FG					0.3							
Sisymbrium erysimoides	10	500	EX								10				
Tetragonia eremea	2	100	FG					2							
Vulpia myuros	2	80	EX								2				

Q155E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	713588
PCT 15 – Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (derived)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6166220
Date: 10/08/2021			18	10	0	4	0	6	0	0	8	1		Orientation	32°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			111.7	**19.7**	0	17.9	0	1.8	0	0	**92**	10		**BAM Attributes 20x50m plot**	
Aira cupaniana	5	200	EX								5			**Stem classes**	
Brachyscome lineariloba	0.4	60	FG					0.4						**80+**	0
Calandrinia eremaea	0.1	20	FG					0.1						**50-79**	0
Carrichtera annua	10	500	HT									10		**30-49**	0
Chenopodium nitrariaceum	0.5	1	SG			0.5								**20-29**	No
Chondrilla juncea	2	80	EX								2			**10-19**	No
Crassula sieberiana	0.2	40	FG					0.2						**5-9**	No
Goodenia pusilliflora	0.1	5	FG					0.1						**<5**	No
Hordeum leporinum	40	1000	EX								40			**Hollows**	0
Lepidium papillosum	0.2	10	FG					0.2						**Length logs (m)**	0
Lolium perenne	5	100	EX								5				
Medicago laciniata	10	500	EX								10			**BAM Attributes 1x1 plot (%)**	
Medicago minima	5	100	EX								5			**Litter (%)**	0.4
Sclerolaena muricata var. muricata	15	30	SG			15									
Sclerolaena patenticuspis	0.4	10	SG			0.4									
Sclerolaena tricuspis	2	10	SG			2									
Sisymbrium erysimoides	15	500	EX								15				
Tetragonia eremea	0.8	80	FG					0.8							

Q156E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	714030
PCT 170 – Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones (moderate to good - bull)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6165943
Date: 11/08/2021			14	9	1	4	0	4	0	0	5	2		Orientation	12°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			97.6	**31.6**	26	2.5	0	3.1	0	0	**66**	65		**BAM Attributes 20x50m plot**	
Carrichtera annua	45	1000	HT									45		**Stem classes**	
Crassula sieberiana	0.2	40	FG					0.2						**80+**	0
Enchylaena tomentosa	0.3	10	SG			0.3								**50-79**	0
Eucalyptus gracilis	26	6	TG		26									**30-49**	0
Lolium perenne	0.1	10	EX								0.1			**20-29**	Yes
Medicago laciniata	0.1	5	EX								0.1			**10-19**	Yes
Osteocarpum acropterum	0.1	5	SG			0.1								**5-9**	Yes
Psilocaulon granulicaule	20	500	HT									20		**<5**	Yes
Roepera apiculata	0.7	25	FG					0.7						**Hollows**	14
Roepera eremaea	0.2	15	FG					0.2						**Length logs (m)**	21
Sclerolaena obliquicuspis	2	30	SG			2									
Sclerolaena patenticuspis	0.1	5	SG			0.1								**BAM Attributes 1x1 plot (%)**	
Sisymbrium erysimoides	0.8	30	EX								0.8			**Litter (%)**	24
Tetragonia eremea	2	50	FG					2							

Q157E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	714356
PCT 170 – Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones (moderate to good - bull)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6165700
Date: 11/08/2021			13	8	2	3	0	3	0	0	5	2		Orientation	256°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			94.1	**46.1**	40	5.1	0	1	0	0	**48**	19		**BAM Attributes 20x50m plot**	
Carrichtera annua	15	500	HT									15		**Stem classes**	
Chenopodium desertorum subsp. desertorum	0.1	1	SG			0.1								**80+**	0
Enchylaena tomentosa	2	50	SG			2								**50-79**	1
Eucalyptus gracilis	15	5	TG		15									**30-49**	4
Eucalyptus socialis	25	8	TG		25									**20-29**	Yes
Medicago minima	1	100	EX								1			**10-19**	Yes
Psilocaulon granulicaule	4	100	HT									4		**5-9**	Yes
Roepera ammophila	0.2	20	FG					0.2						**<5**	No
Roepera apiculata	0.1	10	FG					0.1						**Hollows**	21
Schismus barbatus	8	100	EX								8			**Length logs (m)**	62
Sclerolaena obliquicuspis	3	50	SG			3									
Sisymbrium erysimoides	20	1000	EX								20			**BAM Attributes 1x1 plot (%)**	
Tetragonia eremea	0.7	25	FG					0.7						**Litter (%)**	22

Q158E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	714764
PCT 58 – Black Oak – Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6165378
Date: 11/08/2021			14	8	1	4	0	3	0	0	6	2		Orientation	202°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			126.1	**41.1**	30	5.9	0	5.2	0	0	**85**	44		**BAM Attributes 20x50m plot**	
Carrichtera annua	40	1000	HT									40		**Stem classes**	
Casuarina pauper	30	6	TG		30									**80+**	0
Chenopodium desertorum subsp. desertorum	0.1	1	SG			0.1								**50-79**	0
Enchylaena tomentosa	1	10	SG			1								**30-49**	3
Hordeum leporinum	25	500	EX								25			**20-29**	Yes
Lolium perenne	1	60	EX								1			**10-19**	Yes
Medicago minima	5	100	EX								5			**5-9**	No
Nitraria billardierei	0.8	2	SG			0.8								**<5**	No
Psilocaulon granulicaule	4	80	HT									4		**Hollows**	1
Roepera apiculata	3	70	FG					3						**Length logs (m)**	14
Roepera eremaea	0.2	10	FG					0.2							
Sclerolaena obliquicuspis	4	60	SG			4								**BAM Attributes 1x1 plot (%)**	
Sisymbrium erysimoides	10	200	EX								10			**Litter (%)**	11
Tetragonia eremea	2	100	FG					2							

Q159E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	716119
PCT 58 – Black Oak – Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6164021
Date: 11/08/2021			25	20	2	6	2	10	0	0	5	0		Orientation	14°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			53.3	**40.4**	22	5.2	0.5	12.7	0	0	**12.9**	0		**BAM Attributes 20x50m plot**	
Alectryon oleifolius subsp. canescens	4	2	TG		4									**Stem classes**	
Austrostipa elegantissima	0.4	20	GG				0.4							**80+**	0
Austrostipa nitida	0.1	5	GG				0.1							**50-79**	0
Brachyscome lineariloba	0.6	30	FG					0.6						**30-49**	2
Calandrinia eremaea	1	100	FG					1						**20-29**	Yes
Casuarina pauper	18	12	TG		18									**10-19**	Yes
Chondrilla juncea	0.3	20	EX								0.3			**5-9**	No
Crassula sieberiana	0.3	40	FG					0.3						**<5**	No
Einadia nutans subsp. nutans	0.1	1	FG					0.1						**Hollows**	2
Enchylaena tomentosa	0.5	10	SG			0.5								**Length logs (m)**	83
Goodenia pusilliflora	0.1	2	FG					0.1							
Hakea leucoptera subsp. leucoptera	0.1	1	SG			0.1								**BAM Attributes 1x1 plot (%)**	
Lolium perenne	0.4	10	EX								0.4			**Litter (%)**	56
Maireana pyramidata	0.1	1	SG			0.1									
Medicago minima	2	100	EX								2				
Rhodanthe corymbiflora	0.1	1	FG					0.1							
Roepera apiculata	8	100	FG					8							
Roepera aurantiaca	0.4	20	FG					0.4							
Sclerolaena obliquicuspis	4	80	SG			4									
Sclerolaena patenticuspis	0.4	10	SG			0.4									
Senna artemisioides subsp. x coriacea	0.1	1	SG			0.1									
Sida trichopoda	0.1	5	FG					0.1							
Sisymbrium erysimoides	10	200	EX								10				
Sonchus oleraceus	0.2	10	EX								0.2				
Tetragonia eremea	2	100	FG					2							

Q160E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	716119
PCT 58 – Black Oak – Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6164021
Date: 11/08/2021			23	19	2	6	2	9	0	0	4	0		Orientation	14°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			66.3	**34.3**	15	13.5	0.6	5.2	0	0	**32**	0		**BAM Attributes 20x50m plot**	
Alectryon oleifolius subsp. canescens	3	1	TG		3									**Stem classes**	
Austrostipa nitida	0.5	30	GG				0.5							**80+**	0
Brachyscome lineariloba	0.5	80	FG					0.5						**50-79**	1
Calandrinia eremaea	0.4	100	FG					0.4						**30-49**	1
Casuarina pauper	12	2	TG		12									**20-29**	Yes
Crassula sieberiana	0.2	40	FG					0.2						**10-19**	Yes
Enchylaena tomentosa	1	15	SG			1								**5-9**	No
Hordeum leporinum	1	100	EX								1			**<5**	No
Hypoxis glabella var. glabella	0.1	5	FG					0.1						**Hollows**	0
Isoetopsis graminifolia	0.1	5	FG					0.1						**Length logs (m)**	71
Lepidium papillosum	0.4	70	FG					0.4							
Lolium perenne	1	40	EX								1			**BAM Attributes 1x1 plot (%)**	
Maireana pyramidata	0.5	1	SG			0.5								**Litter (%)**	43
Medicago minima	10	100	EX								10				
Nitraria billardierei	0.4	1	SG			0.4									
Rhagodia spinescens	10	10	SG			10									
Roepera aurantiaca	0.4	20	FG					0.4							
Rytidosperma caespitosum	0.1	10	GG				0.1								
Sclerolaena obliquicuspis	0.8	10	SG			0.8									
Sclerolaena patenticuspis	0.8	10	SG			0.8									
Sida trichopoda	0.1	5	FG					0.1							
Sisymbrium erysimoides	20	500	EX								20				
Tetragonia eremea	3	100	FG					3							

Q161E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	718502
PCT 163 – Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6161939
Date: 11/08/2021			23	14	0	3	2	9	0	0	9	2		Orientation	92°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			101.9	24.9	0	16	5.1	3.8	0	0	77	0.6		BAM Attributes 20x50m plot	
Aira cupaniana	2	100	EX								2			Stem classes	
Austrostipa nitida	5	100	GG				5							80+	0
Brachyscome lineariloba	0.2	30	FG					0.2						50-79	0
Carthamus lanatus	0.1	1	HT									0.1		30-49	0
Chondrilla juncea	0.6	50	EX								0.6			20-29	No
Crassula sieberiana	0.1	20	FG					0.1						10-19	No
Cucumis myriocarpus	0.5	10	HT									0.5		5-9	No
Goodenia pusilliflora	0.1	5	FG					0.1						<5	No
Hordeum leporinum	6	100	EX								6			Hollows	0
Hypoxis glabella var. glabella	0.1	5	FG					0.1						Length logs (m)	0
Isoetopsis graminifolia	0.1	10	FG					0.1							
Lepidium papillosum	0.6	30	FG					0.6						BAM Attributes 1x1 plot (%)	
Lolium perenne	10	100	EX								10			Litter (%)	0
Medicago minima	55	1000	EX								55				
Nitraria billardierei	15	8	SG			15									
Plantago turrifera	0.4	802	FG					0.4							
Rytidosperma caespitosum	0.1	10	GG				0.1								
Schismus barbatus	0.8	60	EX								0.8				
Sclerolaena diacantha	0.8	10	SG			0.8									
Sclerolaena obliquicuspis	0.2	10	SG			0.2									
Sisymbrium erysimoides	2	100	EX								2				
Tetragonia eremea	2	100	FG					2							
Vittadinia cervicularis var. cervicularis	0.2	20	FG					0.2							

Q162E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	739863
PCT 15 – Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6146109
Date: 11/08/2021			23	15	1	6	1	7	0	0	8	1		Orientation	20°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
	10	200	**92**	**82.4**	35	39.8	0.8	6.8	0	0	**9.6**	0.5		**BAM Attributes 20x50m plot**	
Aira cupaniana	0.1	1	EX								0.1			**Stem classes**	
Atriplex pseudocampanulata	0.2	10	SG			0.2								**80+**	0
Austrostipa nodosa	0.8	100	GG				0.8							**50-79**	1
Brachyscome lineariloba	0.2	20	FG					0.2						**30-49**	2
Chondrilla juncea	0.5	100	EX								0.5			**20-29**	Yes
Crassula sieberiana	0.4	20	FG					0.4						**10-19**	Yes
Einadia nutans subsp. nutans	2	30	FG					2						**5-9**	Yes
Enchylaena tomentosa	18	5	SG			18								**<5**	No
Eucalyptus largiflorens	35	500	TG		35									**Hollows**	7
Hordeum leporinum	5	100	EX								5			**Length logs (m)**	81
Lolium perenne	2	40	EX								2				
Maireana decalvans	5	100	SG			5								**BAM Attributes 1x1 plot (%)**	
Medicago minima	0.1	5	EX								0.1			**Litter (%)**	19
Plantago turrifera	3	80	FG					3							
Psilocaulon granulicaule	0.5	2	HT									0.5			
Rhagodia spinescens	0.8	30	SG			0.8									
Roepera apiculata	0.2	10	FG					0.2							
Roepera aurantiaca	1	100	FG					1							
Schismus barbatus	0.4	20	EX								0.4				
Sclerolaena diacantha	0.8	30	SG			0.8									
Sclerolaena obliquicuspis	15	500	SG			15									
Sisymbrium erysimoides	1	10	EX								1				
Tetragonia eremea			FG					0							

Q163E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	739767
PCT 15 – Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6146039
Date: 10/08/2021			19	13	1	6	0	6	0	0	6	1		Orientation	230°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			78.4	**32.7**	25	3.4	0	4.3	0	0	**45.7**	0.3		**BAM Attributes 20x50m plot**	
Atriplex pseudocampanulata	0.1	10	SG			0.1								**Stem classes**	
Brachyscome lineariloba	0.3	50	FG					0.3						**80+**	1
Chenopodium desertorum subsp. desertorum	0.8	3	SG			0.8								**50-79**	1
Chondrilla juncea	5	300	EX								5			**30-49**	2
Crassula sieberiana	0.2	20	FG					0.2						**20-29**	Yes
Einadia nutans subsp. nutans	0.2	20	FG					0.2						**10-19**	Yes
Enchylaena tomentosa	0.2	10	SG			0.2								**5-9**	No
Eucalyptus largiflorens	25	7	TG		25									**<5**	No
Goodenia pusilliflora	0.1	10	FG					0.1						**Hollows**	5
Hordeum leporinum	0.4	50	EX								0.4			**Length logs (m)**	85
Lolium perenne	15	500	EX								15				
Maireana decalvans	1	10	SG			1								**BAM Attributes 1x1 plot (%)**	
Medicago minima	5	300	EX								5			**Litter (%)**	26
Psilocaulon granulicaule	0.3	20	HT									0.3			
Rhodanthe corymbiflora	0.5	50	FG					0.5							
Roepera aurantiaca	3	1000	FG					3							
Sclerolaena divaricata	0.8	25	SG			0.8									
Sisymbrium erysimoides	20	500	EX								20				
Templetonia egena	0.5	20	SG			0.5									

Q164E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	734922
PCT 58 – Black Oak – Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6145797
Date: 12/08/2021			18	14	1	10	3	0	0	0	4	1		Orientation	266°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			127.4	**56.2**	18	36.8	1.4	0	0	0	**71.2**	55		**BAM Attributes 20x50m plot**	
Atriplex pseudocampanulata	0.8	10	SG			0.8								**Stem classes**	
Austrostipa elegantissima	1	40	GG				1							**80+**	0
Austrostipa nitida	0.2	10	GG				0.2							**50-79**	2
Carrichtera annua	55	1000	HT									55		**30-49**	3
Casuarina pauper	18	10	TG		18									**20-29**	Yes
Enchylaena tomentosa	0.6	5	SG			0.6								**10-19**	Yes
Enteropogon acicularis	0.2	10	GG				0.2							**5-9**	Yes
Exocarpos aphyllus	2	3	SG			2								**<5**	Yes
Lolium perenne	0.4	20	EX								0.4			**Hollows**	0
Lycium australe	0.4	2	SG			0.4								**Length logs (m)**	54
Maireana pyramidata	0.5	3	SG			0.5									
Medicago minima	0.8	50	EX								0.8			**BAM Attributes 1x1 plot (%)**	
Nitraria billardierei	3	10	SG			3								**Litter (%)**	40
Pittosporum angustifolium	1	8	SG			1									
Rhagodia spinescens	20	25	SG			20									
Sclerolaena diacantha	0.5	20	SG			0.5									
Sclerolaena obliquicuspis	8	100	SG			8									
Sisymbrium erysimoides	15	500	EX								15				

Q165E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	734999
PCT 58 – Black Oak – Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6145852
Date: 12/08/2021			23	16	2	8	3	3	0	0	7	2		Orientation	266°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			101.4	**43.7**	20.8	19.2	1.1	2.6	0	0	**57.7**	55.2		**BAM Attributes 20x50m plot**	
Alectryon oleifolius subsp. canescens	0.8	1	TG		0.8									**Stem classes**	
Atriplex acutibractea subsp. acutibractea	0.1	10	SG			0.1								**80+**	0
Austrostipa elegantissima	0.8	50	GG				0.8							**50-79**	0
Carrichtera annua	55	1000	HT									55		**30-49**	1
Casuarina pauper	20	10	TG		20									**20-29**	Yes
Chenopodium nitrariaceum	0.8	5	SG			0.8								**10-19**	Yes
Enchylaena tomentosa	1	50	SG			1								**5-9**	Yes
Enteropogon acicularis	0.2	20	GG				0.2							**<5**	Yes
Eremophila sturtii	0.5	1	SG			0.5								**Hollows**	1
Exocarpos aphyllus	0.3	1	SG			0.3								**Length logs (m)**	15
Hordeum leporinum	0.5	50	EX								0.5				
Lolium perenne	0.1	10	EX								0.1			**BAM Attributes 1x1 plot (%)**	
Maireana brevifolia	0.5	1	SG			0.5								**Litter (%)**	29
Medicago laciniata	0.1	10	EX								0.1				
Medicago minima	0.8	50	EX								0.8				
Minuria cunninghamii	0.1	10	FG					0.1							
Psilocaulon granulicaule	0.2	20	HT									0.2			
Rhagodia spinescens	15	20	SG			15									
Roepera aurantiaca	2	100	FG					2							
Rytidosperma caespitosum	0.1	10	GG				0.1								
Sclerolaena obliquicuspis	1	200	SG			1									
Sisymbrium erysimoides	1	200	EX								1				
Tetragonia eremea	0.5	50	FG					0.5							

Q166E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	730788
PCT 22 – Semi-arid shrubby Buloke – Slender Cypress Pine woodland, far south-western NSW (Moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6149534
Date: 12/08/2021			41	33	1	14	6	12	0	0	8	1		Orientation	170°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			76.2	**54.6**	12	28.8	7.1	6.7	0	0	**21.6**	5		**BAM Attributes 20x50m plot**	
Anthosachne scabra	2	70	GG				2							**Stem classes**	
Atriplex pseudocampanulata	0.8	50	SG			0.8								**80+**	0
Atriplex semibaccata	1	40	SG			1								**50-79**	0
Austrostipa elegantissima	0.5	10	GG				0.5							**30-49**	0
Austrostipa nodosa	1	40	GG				1							**20-29**	No
Brachyscome lineariloba	2	100	FG					2						**10-19**	No
Carrichtera annua	5	100	HT									5		**5-9**	Yes
Crassula sieberiana	0.3	80	FG					0.3						**<5**	Yes
Dissocarpus paradoxus	0.1	3	SG			0.1								**Hollows**	0
Dodonaea viscosa subsp. angustissima	1	2	SG			1								**Length logs (m)**	9
Einadia nutans subsp. nutans	0.1	1	FG					0.1							
Enchylaena tomentosa	0.7	10	SG			0.7								**BAM Attributes 1x1 plot (%)**	
Enteropogon acicularis	3	80	GG				3							**Litter (%)**	5
Goodenia pusilliflora	0.2	10	FG					0.2							
Hakea leucoptera subsp. leucoptera	12	6	TG		12										
Hordeum leporinum	6	200	EX								6				
Hypochaeris radicata	0.2	20	EX								0.2				
Hypoxis glabella var. glabella	0.1	10	FG					0.1							
Isoetopsis graminifolia	0.2	30	FG					0.2							
Lepidium africanum	0.2	20	EX								0.2				
Lolium perenne	5	100	EX								5				
Lomandra leucocephala subsp. leucocephala	0.1	1	GG				0.1								
Maireana brevifolia	0.2	10	SG			0.2									
Maireana sclerolaenoides	0.2	20	SG			0.2									
Medicago minima	2	100	EX								2				
Minuria cunninghamii	0.1	2	FG					0.1							
Nitraria billardierei	0.8	3	SG			0.8									
Pittosporum angustifolium	1	2	SG			1									
Plantago turrifera	2	80	FG					2							
Rhagodia spinescens	20	25	SG			20									
Rhodanthe pygmaea	0.4	40	FG					0.4							
Rytidosperma caespitosum	0.5	30	GG				0.5								
Salsola australis	0.4	5	SG			0.4									
Sclerolaena brachyptera	1	40	SG			1									
Sclerolaena diacantha	0.6	3	SG			0.6									
Sclerolaena tricuspis	1	30	SG			1									
Senecio glossanthus	1	70	FG					1							
Sida corrugata	0.1	5	FG					0.1							
Sisymbrium erysimoides	3	100	EX								3				
Sonchus oleraceus	0.2	20	EX								0.2				
Wurmbea diocia subsp. diocia	0.2	40	FG					0.2							

Q167E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	731470
PCT 44 - Forb-rich Speargrass - Windmill Grass - White Top grasslands of the Riverina Bioregion (Moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6148653
Date: 12/08/2021			28	22	0	3	6	13	0	0	6	2		Orientation	124°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			82.6	**66.1**	0	3.5	45.8	16.8	0	0	**16.5**	10.1		**BAM Attributes 20x50m plot**	
Angianthus tomentosus	0.1	1	FG					0.1						**Stem classes**	
Aristida behriana	3	100	GG				3							**80+**	0
Austrostipa nitida	2	80	GG				2							**50-79**	0
Austrostipa nodosa	20	200	GG				20							**30-49**	0
Carrichtera annua	10	200	HT									10		**20-29**	No
Carthamus lanatus	0.1	2	HT									0.1		**10-19**	No
Chthonocephalus pseudevax	0.2	30	FG					0.2						**5-9**	No
Convolvulous sp. (no fertile material)	0.1	1	FG					0.1						**<5**	No
Enchylaena tomentosa	3	30	SG			3								**Hollows**	0
Enteropogon acicularis	15	100	GG				15							**Length logs (m)**	0
Goodenia pinnatifida	0.1	5	FG					0.1							
Goodenia pusilliflora	15	500	FG					15						**BAM Attributes 1x1 plot (%)**	
Hypochaeris radicata	0.6	70	EX								0.6			**Litter (%)**	0
Hypoxis glabella var. glabella	0.1	20	FG					0.1							
Isoetopsis graminifolia	0.3	50	FG					0.3							
Lomandra leucocephala subsp. leucocephala	0.8	3	GG				0.8								
Medicago minima	3	100	EX								3				
Plantago turrifera	0.1	10	FG					0.1							
Raphanus raphanistrum	2	100	EX								2				
Rhodanthe corymbiflora	0.1	5	FG					0.1							
Rhodanthe pygmaea	0.3	60	FG					0.3							
Rytidosperma caespitosum	5	80	GG				5								
Sclerolaena diacantha	0.4	10	SG			0.4									
Sclerolaena patenticuspis	0.1	3	SG			0.1									
Sisymbrium erysimoides	0.8	50	EX								0.8				
Solanum esuriale	0.1	5	FG					0.1							
Vittadinia cervicularis var. cervicularis	0.1	5	FG					0.1							
Wurmbea diocia subsp. diocia	0.2	50	FG					0.2							

Q168E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	370739
PCT 26 – Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6141059
Date: 13/08/2021			34	28	1	7	6	14	0	0	6	1		Orientation	322°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			106.1	**94.4**	22	51.6	12.1	8.7	0	0	**11.7**	1		**BAM Attributes 20x50m plot**	
Acacia pendula	22	12	TG		22									**Stem classes**	
Aira cupaniana	4	100	EX								4			**80+**	0
Atriplex semibaccata	2	80	SG			2								**50-79**	0
Austrostipa nodosa	1	60	GG				1							**30-49**	3
Bulbine semibarbata	0.1	5	FG					0.1						**20-29**	Yes
Calandrinia eremaea	0.1	5	FG					0.1						**10-19**	Yes
Cotula australis	0.8	60	FG					0.8						**5-9**	Yes
Crassula sieberiana	0.4	70	FG					0.4						**<5**	Yes
Einadia nutans subsp. nutans	2	70	FG					2						**Hollows**	0
Enchylaena tomentosa	3	40	SG			3								**Length logs (m)**	58
Enneapogon nigricans	0.2	10	GG				0.2								
Enteropogon acicularis	8	100	GG				8							**BAM Attributes 1x1 plot (%)**	
Goodenia pinnatifida	0.4	30	FG					0.4						**Litter (%)**	32
Hordeum leporinum	5	200	EX								5				
Iseilema membranaceum	0.1	10	GG				0.1								
Lolium perenne	1	60	EX								1				
Lycium ferocissimum	1	1	HT									1			
Maireana enchylaenoides	0.1	3	FG					0.1							
Maireana pentagona	2	80	FG					2							
Medicago minima	0.3	20	EX								0.3				
Oxalis perennans	1	50	FG					1							
Plantago cunninghamii	0.1	10	FG					0.1							
Rhagodia spinescens	35	50	SG			35									
Rhodanthe corymbiflora	1	100	FG					1							
Rytidosperma caespitosum	0.8	40	GG				0.8								
Salsola australis	0.5	5	SG			0.5									
Sclerolaena diacantha	1	50	SG			1									
Sclerolaena muricata var. semiglabra	10	1000	SG			10									
Sida corrugata	0.2	20	FG					0.2							
Sida intricata	0.1	10	SG			0.1									
Sisymbrium erysimoides	0.4	40	EX								0.4				
Sporobolus caroli	2	80	GG				2								
Vittadinia cuneata var. cuneata	0.4	20	FG					0.4							
Wurmbea diocia subsp. diocia	0.1	5	FG					0.1							

Q169E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	370870
PCT 13 – Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6145797
Date: 13/08/2021			27	25	2	9	4	10	0	0	2	0		Orientation	184°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			108.6	**108.2**	30.1	60.4	9.8	7.9	0	0	**0.4**	0		BAM Attributes 20x50m plot	
Acacia pendula	0.1	1	TG		0.1									Stem classes	
Atriplex semibaccata	5	70	SG			5								**80+**	1
Austrostipa nodosa	1	40	GG				1							**50-79**	1
Calotis scabiosifolia var. scabiosifolia	0.6	40	FG					0.6						**30-49**	3
Chenopodium nitrariaceum	4	10	SG			4								**20-29**	Yes
Cotula australis	0.4	30	FG					0.4						**10-19**	Yes
Crassula sieberiana	0.1	20	FG					0.1						**5-9**	Yes
Duma florulenta	35	100	SG			35								**<5**	Yes
Einadia nutans subsp. nutans	3	80	FG					3						Hollows	2
Enchylaena tomentosa	4	60	SG			4								Length logs (m)	55
Enteropogon acicularis	3	60	GG				3								
Eucalyptus largiflorens	30	7	TG		30									BAM Attributes 1x1 plot (%)	
Hypoxis glabella var. glabella	0.1	10	FG					0.1						**Litter (%)**	44
Maireana aphylla	0.5	5	SG			0.5									
Maireana pentagona	2	80	FG					2							
Medicago minima	0.2	20	EX								0.2				
Oxalis perennans	0.8	40	FG					0.8							
Plantago cunninghamii	0.2	20	FG					0.2							
Rhagodia spinescens	8	40	SG			8									
Rhodanthe corymbiflora	0.6	30	FG					0.6							
Rytidosperma caespitosum	5	100	GG				5								
Rytidosperma setaceum	0.8	50	GG				0.8								
Salsola australis	0.5	5	SG			0.5									
Sclerolaena muricata var. semiglabra	3	60	SG			3									
Sida intricata	0.4	20	SG			0.4									
Sisymbrium officinale	0.2	20	EX								0.2				
Vittadinia cuneata var. cuneata	0.1	10	FG					0.1							

Q170E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	371291
PCT 28 - White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone (poor)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6139581
Date: 13/08/2021			22	13	2	3	2	6	0	0	9	1		Orientation	100°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			113.2	43.2	22	1.1	3.5	16.6	0	0	70	0.1		BAM Attributes 20x50m plot	
Allocasuarina luehmannii	10	2	TG		10									Stem classes	
Atriplex semibaccata	0.1	2	SG			0.1								**80+**	1
Austrostipa nodosa	3	100	GG				3							**50-79**	2
Avena barbata	20	500	EX								20			**30-49**	2
Callitris glaucophylla	12	2	TG		12									**20-29**	Yes
Calotis hispidula	0.8	60	FG					0.8						**10-19**	No
Chondrilla juncea	0.4	20	EX								0.4			**5-9**	No
Crassula sieberiana	5	500	FG					5						**<5**	No
Enteropogon acicularis	0.5	40	GG				0.5							Hollows	0
Erodium crinitum	0.4	20	FG					0.4						Length logs (m)	52
Goodenia pinnatifida	0.1	5	FG					0.1							
Hordeum leporinum	15	500	EX								15			BAM Attributes 1x1 plot (%)	
Hypochaeris radicata	0.1	5	EX								0.1			**Litter (%)**	4
Leontodon rhagadioloides	0.4	20	EX								0.4				
Lolium perenne	25	500	EX								25				
Medicago minima	8	100	EX								8				
Rhagodia spinescens	0.6	3	SG			0.6									
Rumex hypogaeus	0.1	1	HT									0.1			
Schismus barbatus	1	40	EX								1				
Sclerolaena muricata var. semiglabra	0.4	3	SG			0.4									
Sida corrugata	0.3	20	FG					0.3							
Urtica incisa	10	100	FG					10							

Q171E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	370999
PCT 26 – Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6140406
Date: 13/08/2021			29	26	1	7	5	12	0	1	3	0		Orientation	340°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			71.4	70.7	32	21.5	7	9.4	0	0.8	0.7	0		BAM Attributes 20x50m plot	
Acacia pendula	32	20	TG		32									Stem classes	
Alternanthera nana	0.1	3	FG					0.1						80+	0
Amyema quandang var. quandang	0.8	2	OG							0.8				50-79	0
Atriplex semibaccata	6	100	SG			6								30-49	0
Austrostipa scabra	0.5	10	GG				0.5							20-29	No
Bulbine semibarbata	0.1	5	FG					0.1						10-19	Yes
Calotis scabiosifolia var. scabiosifolia	0.5	30	FG					0.5						5-9	Yes
Chenopodium nitrariaceum	0.1	1	SG			0.1								<5	Yes
Chondrilla juncea	0.2	10	EX								0.2			Hollows	0
Cotula australis	0.4	20	FG					0.4						Length logs (m)	35
Crassula sieberiana	0.3	50	FG					0.3							
Einadia nutans subsp. nutans	5	90	FG					5						BAM Attributes 1x1 plot (%)	
Enchylaena tomentosa	0.7	10	SG			0.7								Litter (%)	33
Enteropogon acicularis	1	60	GG				1								
Hypoxis glabella var. glabella	0.3	40	FG					0.3							
Iseilema membranaceum	0.1	10	GG				0.1								
Maireana enchylaenoides	0.5	10	FG					0.5							
Maireana excavata	0.6	20	SG			0.6									
Medicago minima	0.4	30	EX								0.4				
Oxalis perennans	0.2	20	FG					0.2							
Rhagodia spinescens	10	40	SG			10									
Rhodanthe corymbiflora	1	100	FG					1							
Rytidosperma caespitosum	5	100	GG				5								
Salsola australis	0.1	1	SG			0.1									
Sclerolaena muricata var. semiglabra	4	50	SG			4									
Sida corrugata	0.2	20	FG					0.2							
Sisymbrium erysimoides	0.1	10	EX								0.1				
Sporobolus caroli	0.4	10	GG				0.4								
Vittadinia cuneata var. cuneata	0.8	30	FG					0.8							

Q172E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	370918
PCT 13 – Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6140699
Date: 13/08/2021			21	19	1	9	3	6	0	0	2	0		Orientation	32°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		Plot size	20 X 20 X 50
			114.7	112.2	38	41.9	26	6.3	0	0	2.5	0		BAM Attributes 20x50m plot	
Atriplex semibaccata	0.8	40	SG			0.8								Stem classes	
Chenopodium nitrariaceum	20	80	SG			20								80+	2
Cotula australis	0.6	30	FG					0.6						50-79	1
Crassula sieberiana	0.4	40	FG					0.4						30-49	Yes
Duma florulenta	15	70	SG			15								20-29	Yes
Einadia nutans subsp. nutans	2	40	FG					2						10-19	Yes
Enchylaena tomentosa	0.8	15	SG			0.8								5-9	No
Enteropogon acicularis	6	100	GG				6							<5	Yes
Eucalyptus largiflorens	38	8	TG		38									Hollows	3
Lolium perenne	2	80	EX								2			Length logs (m)	14
Maireana decalvans	0.5	5	SG			0.5									
Maireana enchylaenoides	2	30	FG					2						BAM Attributes 1x1 plot (%)	
Oxalis perennans	0.8	50	FG					0.8						Litter (%)	56
Rhagodia spinescens	4	30	SG			4									
Rhodanthe corymbiflora	0.5	50	FG					0.5							
Rytidosperma caespitosum	5	80	GG				5								
Rytidosperma setaceum	15	200	GG				15								
Salsola australis	0.1	2	SG			0.1									
Sclerolaena muricata var. semiglabra	0.5	5	SG			0.5									
Sida intricata	0.2	10	SG			0.2									
Sisymbrium erysimoides	0.5	40	EX								0.5				

Q173E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	371624
PCT 13 – Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6139261
Date: 14/08/2021			21	16	1	6	5	4	0	0	5	0		Orientation	75°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			87.4	**77.7**	24	20.7	7.4	25.6	0	0	**9.7**	0		**BAM Attributes 20x50m plot**	
Atriplex semibaccata	10	100	SG			10								**Stem classes**	
Chondrilla juncea	0.6	50	EX								0.6			**80+**	2
Crassula sieberiana	0.1	20	FG					0.1						**50-79**	3
Duma florulenta	4	10	SG			4								**30-49**	4
Einadia nutans subsp. nutans	25	200	FG					25						**20-29**	Yes
Enteropogon acicularis	1	40	GG				1							**10-19**	Yes
Erodium crinitum	0.1	5	FG					0.1						**5-9**	Yes
Eucalyptus largiflorens	24	6	TG		24									**<5**	Yes
Hordeum leporinum	2	100	EX								2			**Hollows**	6
Iseilema membranaceum	0.1	5	GG				0.1							**Length logs (m)**	63
Leontodon rhagadioloides	0.1	5	EX								0.1				
Lolium perenne	2	80	EX								2			**BAM Attributes 1x1 plot (%)**	
Maireana decalvans	0.5	3	SG			0.5								**Litter (%)**	54
Paspalidium constrictum	0.3	20	GG				0.3								
Rhagodia spinescens	0.8	3	SG			0.8									
Rhodanthe corymbiflora	0.4	20	FG					0.4							
Rytidosperma caespitosum	3	100	GG				3								
Salsola australis	0.4	2	SG			0.4									
Sclerolaena muricata var. semiglabra	5	80	SG			5									
Sisymbrium erysimoides	5	200	EX								5				
Sporobolus caroli	3	80	GG				3								

Q174E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	372398
PCT 26 – Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion (derived)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6138251
Date: 14/08/2021			23	18	0	5	4	9	0	0	5	0		Orientation	285°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			89.2	65.1	0	8	39	18.1	0	0	24.1	0		BAM Attributes 20x50m plot	
Atriplex semibaccata	3	80	SG			3								Stem classes	
Austrostipa aristiglumis	2	30	GG				2							80+	0
Avena barbata	4	100	EX								4			50-79	0
Crassula sieberiana	0.1	10	FG					0.1						30-49	0
Echium plantagineum	0.1	1	EX								0.1			20-29	No
Enteropogon acicularis	25	200	GG				25							10-19	No
Goodenia pinnatifida	0.4	40	FG					0.4						5-9	No
Hordeum leporinum	8	200	EX								8			<5	No
Hypoxis glabella var. glabella	0.5	60	FG					0.5						Hollows	0
Isoetopsis graminifolia	0.1	10	FG					0.1						Length logs (m)	0
Lolium perenne	10	200	EX								10				
Maireana pentagona	0.1	5	FG					0.1						BAM Attributes 1x1 plot (%)	
Medicago minima	2	100	EX								2			Litter (%)	8
Oxalis perennans	0.3	40	FG					0.3							
Panicum decompositum	10	100	GG				10								
Rhodanthe corymbiflora	15	500	FG					15							
Rhodanthe pygmaea	0.8	70	FG					0.8							
Rytidosperma caespitosum	2	60	GG				2								
Salsola australis	0.6	20	SG			0.6									
Sclerolaena brachyptera	3	80	SG			3									
Sclerolaena diacantha	1	30	SG			1									
Sclerolaena muricata var. semiglabra	0.4	3	SG			0.4									
Vittadinia cuneata var. cuneata	0.8	40	FG					0.8							

Q175E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	373589
PCT 26 – Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6136677
Date: 14/08/2021			24	21	1	7	7	6	0	0	3	0		Orientation	63°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			97.7	91.2	32	39.6	16	3.6	0	0	6.5	0		BAM Attributes 20x50m plot	
Acacia pendula	32	20	TG		32									Stem classes	
Atriplex semibaccata	20	100	SG			20								80+	0
Austrostipa aristiglumis	0.5	10	GG				0.5							50-79	0
Austrostipa nodosa	2	60	GG				2							30-49	0
Calotis scabiosifolia var. scabiosifolia	0.4	10	FG					0.4						20-29	Yes
Einadia nutans subsp. nutans	1	40	FG					1						10-19	Yes
Enchylaena tomentosa	2	40	SG			2								5-9	Yes
Enteropogon acicularis	1	30	GG				1							<5	Yes
Hordeum leporinum	2	80	EX								2			Hollows	0
Leiocarpa websteri	0.2	5	FG					0.2						Length logs (m)	6
Lolium perenne	4	80	EX								4				
Maireana aphylla	0.2	1	SG			0.2								BAM Attributes 1x1 plot (%)	
Maireana enchylaenoides	0.8	15	FG					0.8						Litter (%)	41
Maireana sclerolaenoides	1	40	SG			1									
Medicago minima	0.5	40	EX								0.5				
Oxalis perennans	0.6	30	FG					0.6							
Paspalidium constrictum	0.5	30	GG				0.5								
Rhodanthe corymbiflora	0.6	30	FG					0.6							
Rytidosperma caespitosum	10	100	GG				10								
Rytidosperma setaceum	1	40	GG				1								
Salsola australis	0.8	20	SG			0.8									
Sclerolaena diacantha	0.6	10	SG			0.6									
Sclerolaena muricata var. muricata	15	90	SG			15									
Sporobolus caroli	1	60	GG				1								

Q176E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	376391
PCT 13 – Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6133060
Date: 14/08/2021			16	11	1	4	3	2	1	0	5	0		Orientation	106°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			94.7	80.9	32	42.1	5.1	0.9	0.8	0	13.8	0		BAM Attributes 20x50m plot	
Atriplex semibaccata	15	100	SG			15								Stem classes	
Avena fatua	0.8	40	EX								0.8			80+	2
Calotis scabiosifolia var. scabiosifolia	0.1	5	FG					0.1						50-79	2
Duma florulenta	2	8	SG			2								30-49	4
Einadia nutans subsp. nutans	0.8	10	FG					0.8						20-29	Yes
Enteropogon acicularis	3	60	GG				3							10-19	Yes
Eucalyptus largiflorens	32	9	TG		32									5-9	No
Hordeum leporinum	1	80	EX								1			<5	No
Iseilema membranaceum	0.1	5	GG				0.1							Hollows	8
Lolium perenne	8	200	EX								8			Length logs (m)	47
Marsilea drummondii	0.8	40	EG						0.8						
Panicum decompositum	2	40	GG				2							BAM Attributes 1x1 plot (%)	
Salsola australis	0.1	5	SG			0.1								Litter (%)	55
Sclerolaena muricata var. muricata	25	100	SG			25									
Sisymbrium erysimoides	2	100	EX								2				
Sisymbrium orientale	2	20	EX								2				

Q177E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	376266
PCT 216 - Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion (poor)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6133115
Date: 14/08/2021			18	14	0	3	2	8	1	0	4	0		Orientation	282°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			80.2	**49.2**	0	25.3	20	3.8	0.1	0	**31**	0		**BAM Attributes 20x50m plot**	
Atriplex semibaccata	0.2	5	SG			0.2								**Stem classes**	
Avena fatua	4	80	EX								4			**80+**	0
Bulbine semibarbata	0.1	2	FG					0.1						**50-79**	0
Calotis scabiosifolia var. scabiosifolia	0.6	30	FG					0.6						**30-49**	0
Enteropogon acicularis	5	80	GG				5							**20-29**	No
Erodium crinitum	1	100	FG					1						**10-19**	No
Hordeum leporinum	2	80	EX								2			**5-9**	No
Leiocarpa tomentosa	0.1	1	FG					0.1						**<5**	No
Lolium perenne	15	200	EX								15			**Hollows**	0
Marsilea drummondii	0.1	5	EG						0.1					**Length logs (m)**	0
Medicago minima	10	300	EX								10				
Oxalis perennans	0.3	30	FG					0.3						**BAM Attributes 1x1 plot (%)**	
Panicum decompositum	15	100	GG				15							**Litter (%)**	0
Rhodanthe corymbiflora	0.8	40	FG					0.8							
Sclerolaena muricata var. semiglabra	25	100	SG			25									
Sida intricata	0.1	5	SG			0.1									
Solanum esuriale	0.4	20	FG					0.4							
Vittadinia cuneata var. cuneata	0.5	20	FG					0.5							

Q178E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	375766
PCT 46 - Curly windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6133764
Date: 14/08/2021			19	15	0	2	5	8	0	0	4	0		Orientation	168°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			101	50.9	0	0.8	46	4.1	0	0	50.1	0		BAM Attributes 20x50m plot	
Atriplex semibaccata	0.3	5	SG			0.3								Stem classes	
Austrostipa aristiglumis	0.4	3	GG				0.4							80+	0
Austrostipa nodosa	5	80	GG				5							50-79	0
Austrostipa scabra	0.6	30	GG				0.6							30-49	0
Avena fatua	20	200	EX								20			20-29	No
Calotis scabiosifolia var. scabiosifolia	0.4	20	FG					0.4						10-19	No
Einadia nutans subsp. nutans	0.1	5	FG					0.1						5-9	No
Enteropogon acicularis	35	300	GG				35							<5	No
Erodium crinitum	0.8	30	FG					0.8						Hollows	0
Hypoxis glabella var. glabella	0.1	10	FG					0.1						Length logs (m)	0
Leiocarpa tomentosa	0.1	1	EX								0.1				
Lolium perenne	15	100	EX								15			BAM Attributes 1x1 plot (%)	
Maireana enchylaenoides	0.1	5	FG					0.1						Litter (%)	0
Medicago minima	15	200	EX								15				
Oxalis perennans	0.4	20	FG					0.4							
Panicum decompositum	5	90	GG				5								
Rhodanthe corymbiflora	2	100	FG					2							
Sclerolaena muricata var. muricata	0.5	2	SG			0.5									
Vittadinia cuneata var. cuneata	0.2	10	FG					0.2							

Q179E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	376684
PCT 46 - Curly windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6132583
Date: 14/08/2021			20	16	0	4	4	8	0	0	4	0		Orientation	332°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		Plot size	20 X 20 X 50
			93.3	57.9	0	4.7	46.8	6.4	0	0	35.4	0		BAM Attributes 20x50m plot	
Arctotheca calendula	0.4	30	EX								0.4			Stem classes	
Atriplex semibaccata	0.8	20	SG			0.8								80+	0
Austrostipa nodosa	0.4	10	GG				0.4							50-79	0
Avena fatua	5	100	EX								5			30-49	0
Calotis scabiosifolia var. scabiosifolia	0.4	40	FG					0.4						20-29	No
Crassula sieberiana	0.4	100	FG					0.4						10-19	No
Enteropogon acicularis	45	500	GG				45							5-9	No
Erodium crinitum	4	90	FG					4						<5	No
Hypoxis glabella var. glabella	0.6	50	FG					0.6						Hollows	0
Lolium perenne	15	300	EX								15			Length logs (m)	0
Maireana excavata	0.1	3	SG			0.1									
Medicago minima	15	300	EX								15			BAM Attributes 1x1 plot (%)	
Oxalis perennans	0.3	30	FG					0.3						Litter (%)	0
Panicum decompositum	1	30	GG				1								
Rhodanthe corymbiflora	0.1	5	FG					0.1							
Rhodanthe pygmaea	0.1	5	FG					0.1							
Salsola australis	3	80	SG			3									
Sclerolaena muricata var. muricata	0.8	5	SG			0.8									
Sporobolus caroli	0.4	10	GG				0.4								
Vittadinia cuneata var. cuneata	0.5	30	FG					0.5							

Q180E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	377037
PCT 28 – White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone (poor)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6132022
Date: 14/08/2021			16	6	1	1	2	2	0	0	10	0		Orientation	180°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			89.7	15.3	8	3	0.2	4.1	0	0	74.4	0		BAM Attributes 20x50m plot	
Arctotheca calendula	5	100	EX								5			Stem classes	
Callitris glaucophylla	8	4	TG		8									80+	2
Chenopodium album	0.1	5	EX								0.1			50-79	2
Cotula australis	0.1	10	FG					0.1						30-49	0
Crassula sieberiana	4	500	FG					4						20-29	No
Cucumis myriocarpus	0.4	25	EX								0.4			10-19	No
Echium plantagineum	15	500	EX								15			5-9	No
Eragrostis cilianensis	45	1000	EX								45			<5	No
Hordeum leporinum	5	1000	EX								5			Hollows	0
Leontodon rhagadioloides	0.8	50	EX								0.8			Length logs (m)	5
Lolium perenne	2	500	EX								2				
Marrubium vulgare	0.1	5	EX								0.1			BAM Attributes 1x1 plot (%)	
Medicago minima	1	500	EX								1			Litter (%)	13
Panicum decompositum	0.1	10	GG				0.1								
Salsola australis	3	500	SG			3									
Sporobolus caroli	0.1	10	GG				0.1								

Q181E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	380475
PCT 26 – Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion (poor)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6127499
Date: 14/08/2021			33	26	1	5	5	15	0	0	7	1		Orientation	298°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			66	55.9	8	7.9	33.8	6.2	0	0	10.1	0.1		BAM Attributes 20x50m plot	
Acacia pendula	8	5	TG		8									Stem classes	
Arctotheca calendula	0.5	20	EX								0.5			80+	0
Asperula conferta	0.1	5	FG					0.1						50-79	0
Atriplex semibaccata	1	50	SG			1								30-49	0
Austrostipa aristiglumis	15	80	GG				15							20-29	Yes
Austrostipa scabra	0.8	30	GG				0.8							10-19	Yes
Avena sp.	2	100	EX								2			5-9	Yes
Calotis scabiosifolia var. scabiosifolia	0.8	40	FG					0.8						<5	Yes
Chrysocephalum semipapposum	1	80	FG					1						Hollows	0
Echium plantagineum	0.4	10	EX								0.4			Length logs (m)	0
Einadia nutans subsp. nutans	0.7	40	FG					0.7							
Enchylaena tomentosa	0.4	3	SG			0.4								BAM Attributes 1x1 plot (%)	
Enteropogon acicularis	10	100	GG				10							Litter (%)	2.4
Erodium cicutarium	0.1	5	EX								0.1				
Goodenia pinnatifida	0.2	20	FG					0.2							
Hypoxis glabella var. glabella	0.2	40	FG					0.2							
Linum marginale	0.1	10	FG					0.1							
Lolium ridgidum	3	100	EX								3				
Maireana enchylaenoides	0.2	5	FG					0.2							
Maireana excavata	0.2	10	SG			0.2									
Medicago laciniata	4	100	EX								4				
Oxalis perennans	0.6	30	FG					0.6							
Panicum decompositum	6	90	GG				6								
Plantago varia	0.1	5	FG					0.1							
Rhodanthe corymbiflora	1	100	FG					1							
Rhodanthe pygmaea	0.4	40	FG					0.4							
Romulea rosea	0.1	10	HT									0.1			
Rumex brownii	0.1	1	FG					0.1							
Salsola australis	0.3	10	SG			0.3									
Sclerolaena muricata var. muricata	6	30	SG			6									
Sida corrugata	0.2	10	FG					0.2							
Sporobolus caroli	2	60	GG				2								
Vittadinia cuneata var. cuneata	0.5	20	FG					0.5							

Q182E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	381280
PCT 46 - Curly windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6126491
Date: 14/08/2021			21	14	0	3	6	5	0	0	7	0		Orientation	114°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			94.9	64.8	0	2.1	61.2	1.5	0	0	30.1	0		BAM Attributes 20x50m plot	
Arctotheca calendula	0.4	20	EX								0.4			Stem classes	
Atriplex semibaccata	1	40	SG			1								80+	0
Austrostipa aristiglumis	4	50	GG				4							50-79	0
Austrostipa nodosa	2	60	GG				2							30-49	0
Avena sp.	5	100	EX								5			20-29	No
Crassula sieberiana	0.1	10	FG					0.1						10-19	No
Enteropogon acicularis	45	500	GG				45							5-9	No
Hordeum sp.	4	100	EX								4			<5	No
Hypoxis glabella var. glabella	0.2	30	FG					0.2						Hollows	0
Lolium ridgidum	10	200	EX								10			Length logs (m)	0
Maireana humillima	0.1	1	FG					0.1							
Medicago laciniata	10	200	EX								10			BAM Attributes 1x1 plot (%)	
Medicago minima	0.5	50	EX								0.5			Litter (%)	0
Oxalis perennans	0.8	50	FG					0.8							
Panicum decompositum	5	100	GG				5								
Rytidosperma duttonianum	0.2	10	GG				0.2								
Salsola australis	0.3	10	SG			0.3									
Sclerolaena muricata var. muricata	0.8	4	SG			0.8									
Sonchus oleraceus	0.2	5	EX								0.2				
Sporobolus caroli	5	100	GG				5								
Vittadinia cuneata var. cuneata	0.3	10	FG					0.3							

Q183E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	381872
PCT 26 – Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion (poor)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6125798
Date: 14/08/2021			22	17	1	4	5	6	1	0	5	0		Orientation	340°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			83.3	**56.9**	8	23.1	17.3	8.3	0.2	0	**26.4**	0		**BAM Attributes 20x50m plot**	
Acacia pendula	8	8	TG		8									**Stem classes**	
Arctotheca calendula	0.4	10	EX								0.4			**80+**	0
Atriplex semibaccata	3	50	SG			3								**50-79**	0
Austrostipa aristiglumis	2	40	GG				2							**30-49**	0
Austrostipa nodosa	0.8	15	GG				0.8							**20-29**	No
Avena sp.	8	100	EX								8			**10-19**	Yes
Crassula sieberiana	0.2	50	FG					0.2						**5-9**	Yes
Duma florulenta	8	8	SG			8								**<5**	Yes
Echium plantagineum	4	60	EX								4			**Hollows**	0
Enteropogon acicularis	10	100	GG				10							**Length logs (m)**	8
Erodium crinitum	0.8	30	FG					0.8							
Euphorbia drummondii	0.1	3	FG					0.1						**BAM Attributes 1x1 plot (%)**	
Hordeum leporinum	4	100	EX								4			**Litter (%)**	6
Lolium ridgidum	10	200	EX								10				
Maireana enchylaenoides	0.2	10	FG					0.2							
Marsilea drummondii	0.2	40	EG						0.2						
Oxalis perennans	2	80	FG					2							
Panicum decompositum	4	70	GG				4								
Rytidosperma caespitosum	0.5	20	GG				0.5								
Salsola australis	0.1	2	SG			0.1									
Sclerolaena muricata var. muricata	12	50	SG			12									
Vittadinia cuneata var. cuneata	5	100	FG					5							

Q184E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	444121
PCT 80 – Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6100833
Date: 15/08/2021			37	31	2	3	12	13	1	0	6	1		Orientation	65°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			108.2	106.1	32	1.1	57.9	14.9	0.2	0	2.1	0.5		BAM Attributes 20x50m plot	
Anthosachne scabra	0.2	5	GG				0.2							Stem classes	
Arthropodium minus	2	70	FG					2						80+	2
Atriplex semibaccata	0.6	20	SG			0.6								50-79	0
Austrostipa bigeniculata	1	20	GG				1							30-49	Yes
Austrostipa scabra	25	300	GG				25							20-29	Yes
Bulbine semibarbata	0.1	5	FG					0.1						10-19	Yes
Calandrinia eremaea	0.2	10	FG					0.2						5-9	Yes
Callitris glaucophylla	22	10	TG		22									<5	Yes
Calotis cuneifolia	2	80	FG					2						Hollows	3
Cheilanthes sieberi	0.2	10	EG						0.2					Length logs (m)	32
Crassula sieberiana	0.1	40	FG					0.1							
Echium plantagineum	0.1	5	EX								0.1			BAM Attributes 1x1 plot (%)	
Einadia nutans subsp. nutans	7	90	FG					7						Litter (%)	45
Enneapogon nigricans	0.6	10	GG				0.6								
Enteropogon acicularis	8	100	GG				8								
Eucalyptus microcarpa	10	1	TG		10										
Hakea tephrosperma	0.4	3	SG			0.4								0.1	
Hypericum gramineum	0.2	10	FG					0.2							
Lolium ridgidum	0.8	20	EX								0.8				
Lomandra filiformis subsp. coriacea	0.3	10	GG				0.3								
Lomandra multiflora	2	80	GG				2								
Maireana enchylaenoides	0.2	10	FG					0.2							
Microlaena stipoides	1	50	GG				1								
Oxalis perennans	1	60	FG					1							
Poranthera microphylla	0.8	40	FG					0.8							
Romulea rosea	0.5	80	HT									0.5			
Rytidosperma caespitosum	15	200	GG				15								
Rytidosperma fulvum	0.8	20	GG				0.8								
Rytidosperma setaceum	1	60	GG				1								
Senna artemisioides subsp. filifolia	0.1	1	SG			0.1									
Sida corrugata	0.8	40	FG					0.8							
Sisymbrium officinale	0.5	10	EX								0.5				
Sisymbrium orientale	0.1	5	EX								0.1				
Sonchus oleraceus	0.1	5	EX								0.1				
Sporobolus caroli	3	50	GG				3								
Vittadinia gracilis	0.3	10	FG					0.3							
Wurmbea diocia subsp. diocia	0.2	40	FG					0.2							

Q185E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	441644
PCT 75 – Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion (poor)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6101704
Date: 15/08/2021			21	11	2	0	3	6	0	0	10	1		Orientation	182°
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
			125.6	59	38	0	18.4	2.6	0	0	66.6	0.2		BAM Attributes 20x50m plot	
Austrostipa aristiglumis	15	80	GG				15							Stem classes	
Austrostipa scabra	0.4	20	GG				0.4							80+	2
Avena fatua	20	200	EX								20			50-79	3
Callitris glaucophylla	26	12	TG		26									30-49	5
Cucumis myriocarpus	0.4	10	EX								0.4			20-29	Yes
Dianella revoluta var. revoluta	0.2	10	FG					0.2						10-19	No
Echium plantagineum	4	100	EX								4			5-9	No
Einadia nutans subsp. nutans	1	20	FG					1						<5	No
Enteropogon acicularis	3	60	GG				3							Hollows	6
Erodium crinitum	0.5	30	FG					0.5						Length logs (m)	55
Eucalyptus melliodora	12	1	TG		12										
Hordeum leporinum	10	100	EX								10			BAM Attributes 1x1 plot (%)	
Lolium ridgidum	20	300	Ex								20			Litter (%)	26
Lycium ferocissimum	0.2	10	HT									0.2			
Maireana enchylaenoides	0.2	10	FG					0.2							
Marrubium vulgare	0.8	10	EX								0.8				
Oxalis pes-caprae	6	100	EX								6				
Rumex brownii	0.1	5	FG					0.1							
Sida corrugata	0.6	40	FG					0.6							
Sisymbrium officinale	5	100	EX								5				
Solanum nigrum	0.2	10	EX								0.2				

Q186E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	4410895
PCT 75 – Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion (poor)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6101908
Date: 15/08/2021			28	14	2	0	3	9	0	0	14	0		Orientation	265°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			148.9	**57.5**	37	0	9.6	10.9	0	0	**91.4**	0		**BAM Attributes 20x50m plot**	
Arctotheca calendula	0.1	5	EX								0.1			**Stem classes**	
Asperula conferta	0.8	40	FG					0.8						**80+**	0
Austrostipa scabra	0.6	20	GG				0.6							**50-79**	2
Avena fatua	30	500	EX								30			**30-49**	6
Callitris glaucophylla	23	12	TG		23									**20-29**	Yes
Cirsium vulgare	0.1	1	EX								0.1			**10-19**	Yes
Crassula sieberiana	0.2	30	FG					0.2						**5-9**	Yes
Cucumis myriocarpus	4	30	EX								4			**<5**	Yes
Daucus glochidiatus	0.2	10	FG					0.2						**Hollows**	6
Echium plantagineum	0.6	10	EX								0.6			**Length logs (m)**	40
Einadia nutans subsp. nutans	1	40	FG					1							
Enteropogon acicularis	8	60	GG				8							**BAM Attributes 1x1 plot (%)**	
Erodium crinitum	4	10	FG					4						**Litter (%)**	47
Eucalyptus melliodora	14	3	TG		14										
Hordeum leporinum	10	100	EX								10				
Hypochaeris radicata	1	40	EX								1				
Lolium ridgidum	20	200	EX								20				
Maireana enchylaenoides	0.6	30	FG					0.6							
Malva parviflora	0.8	20	EX								0.8				
Marrubium vulgare	3	50	EX								3				
Oxalis pes-caprae	2	60	EX								2				
Paspalidium constrictum	1	60	GG				1								
Rumex brownii	0.1	1	FG					0.1							
Sida corrugata	2	80	FG					2							
Sisymbrium officinale	12	100	EX								12				
Sonchus oleraceus	0.8	30	EX								0.8				
Trifolium arvense	7	100	EX								7				
Urtica incisa	2	40	FG					2							

Q187E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	439673
PCT 75 – Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion (poor)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6102254
Date: 15/08/2021			20	8	2	0	1	5	0	0	12	0		Orientation	282°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			136.9	48.6	36	0	0.5	12.1	0	0	88.3	0		BAM Attributes 20x50m plot	
Arctotheca calendula	2	30	EX								2			Stem classes	
Avena fatua	15	200	EX								15			**80+**	0
Callitris glaucophylla	14	3	TG		14									**50-79**	2
Crassula sieberiana	0.4	80	FG					0.4						**30-49**	4
Echium plantagineum	2	50	EX								2			**20-29**	Yes
Einadia nutans subsp. nutans	0.5	20	FG					0.5						**10-19**	Yes
Enteropogon acicularis	0.5	30	GG				0.5							**5-9**	No
Eucalyptus melliodora	22	8	TG		22									**<5**	No
Hordeum leporinum	10	100	EX								10			Hollows	2
Lolium ridgidum	15	200	EX								15			Length logs (m)	15
Malva parviflora	15	100	EX								15				
Marrubium vulgare	0.4	10	EX								0.4			BAM Attributes 1x1 plot (%)	
Oxalis pes-caprae	2	80	EX								2			**Litter (%)**	45
Rumex brownii	0.4	5	FG					0.4							
Sida corrugata	0.8	20	FG					0.8							
Sisymbrium officinale	25	200	EX								25				
Solanum nigrum	0.8	20	EX								0.8				
Sonchus oleraceus	1	50	EX								1				
Tragopogon porrifolius	0.1	2	EX								0.1				
Urtica incisa	10	100	FG					10							

Q188E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	438818
PCT 75 – Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6102514
Date: 15/08/2021			33	20	2	2	7	8	0	1	13	1		Orientation	272°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			98.7	69.9	19	1.4	45.2	4.2	0	0.1	28.8	0.5		BAM Attributes 20x50m plot	
Arctotheca calendula	0.5	10	EX								0.5			Stem classes	
Arthropodium minus	0.5	20	FG					0.5						80+	1
Austrostipa aristiglumis	12	80	GG				12							50-79	1
Austrostipa nodosa	0.4	10	GG				0.4							30-49	2
Austrostipa scabra	3	60	GG				3							20-29	Yes
Avena fatua	6	70	EX								6			10-19	Yes
Callitris glaucophylla	5	1	TG		5									5-9	No
Convolvulus angustissimus	0.1	1	OG							0.1				<5	No
Dianella revoluta var. revoluta	1	10	FG					1						Hollows	2
Echium plantagineum	1	40	EX								1			Length logs (m)	8
Enneapogon nigricans	0.4	10	GG				0.4								
Enteropogon acicularis	25	100	GG				25							BAM Attributes 1x1 plot (%)	
Erodium crinitum	0.6	10	FG					0.6						Litter (%)	21
Eucalyptus melliodora	14	2	TG		14										
Hordeum leporinum	1	50	EX								1				
Hypochaeris radicata	0.2	5	EX								0.2				
Lactuca serriola f. serriola	0.5	10	EX								0.5				
Lolium ridgidum	15	200	EX								15				
Maireana enchylaenoides	0.2	20	FG					0.2							
Marrubium vulgare	0.1	1	EX								0.1				
Medicago polymorpha	0.8	20	EX								0.8				
Oxalis perennans	0.4	5	FG					0.4							
Oxalis pes-caprae	2	80	EX								2				
Paspalidium constrictum	0.4	10	GG				0.4								
Rhagodia spinescens	1	1	SG			1									
Romulea rosea	0.5	70	HT									0.5			
Rumex brownii	0.1	2	FG					0.1							
Rytidosperma caespitosum	4	80	GG				4								
Sclerolaena muricata var. semiglabra	0.4	3	SG			0.4									
Sida corrugata	0.6	10	FG					0.6							
Sisymbrium orientale	0.8	40	EX								0.8				
Sonchus oleraceus	0.4	10	EX								0.4				
Vittadinia gracilis	0.8	15	FG					0.8							

Q189E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	434601
PCT 44 - Forb-rich Speargrass - Windmill Grass - White Top grasslands of the Riverina Bioregion (Moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6103729
Date: 15/08/2021			25	21	0	3	3	15	0	0	4	1		Orientation	271°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			60.6	58.2	0	1.8	44	12.4	0	0	2.4	2		BAM Attributes 20x50m plot	
Alternanthera denticulata	0.1	10	FG					0.1						Stem classes	
Arctotheca calendula	0.1	10	EX								0.1			80+	0
Atriplex semibaccata	0.7	20	SG			0.7								50-79	0
Austrostipa scabra	25	1000	GG				25							30-49	0
Chrysocephalum apiculatum	1	30	FG					1						20-29	No
Crassula sieberiana	1	500	FG					1						10-19	No
Cressa australis	0.5	30	FG					0.5						5-9	No
Enteropogon acicularis	15	500	GG				15							<5	No
Hypochaeris radicata	0.1	10	EX								0.1			Hollows	0
Leiocarpa panaetioides	0.7	40	FG					0.7						Length logs (m)	0
Maireana excavata	1	10	SG			1									
Maireana pentagona	1	20	FG					1						BAM Attributes 1x1 plot (%)	
Marsilea drummondii	0.1	15	FG					0.1						Litter (%)	0
Medicago minima	0.2	20	EX								0.2				
Microseris lanceolata	0.5	20	FG					0.5							
Pycnosorus globosus	0.8	30	FG					0.8							
Rhodanthe corymbiflora	3	100	FG					3							
Rhodanthe pygmaea	2	80	FG					2							
Romulea rosea	2	500	HT									2			
Rytidosperma caespitosum	4	50	GG				4								
Salsola australis	0.1	10	SG			0.1									
Sida corrugata	0.7	40	FG					0.7							
Swainsona procumbens	0.1	2	FG					0.1							
Swainsona swainsonioides	0.8	50	FG					0.8							
Teucrium racemosum	0.1	5	FG					0.1							

Q190E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	408260
PCT 45 – Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6107393
Date: 15/08/2021			24	16	0	2	4	9	1	0	8	1		Orientation	42°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			94.54	**62.8**	0	1.1	59	2.6	0.1	0	**31.74**	3		**BAM Attributes 20x50m plot**	
Arctotheca calendula	0.1	1	EX								0.1			**Stem classes**	
Austrostipa aristiglumis	32	100	GG				32							**80+**	0
Bulbine bulbosa	0.1	1	FG					0.1						**50-79**	0
Calotis scabiosifolia var. scabiosifolia	0.8	30	FG					0.8						**30-49**	0
Dissocarpus paradoxus	1	40	SG			1								**20-29**	No
Echium plantagineum	0.6	20	EX								0.6			**10-19**	No
Enteropogon acicularis	20	100	GG				20							**5-9**	No
Haloragis odontocarpa	0.1	5	FG					0.1						**<5**	No
Hordeum leporinum	3	80	EX								3			**Hollows**	0
Lolium perenne	5	100	EX								5			**Length logs (m)**	0
Lolium ridgidum	15	300	EX								15				
Marsilea drummondii	0.1	10	EG						0.1					**BAM Attributes 1x1 plot (%)**	No
Medicago minima	5	1100	EX								5			**Litter (%)**	0
Microseris lanceolata	0.1	5	FG					0.1							
Modiola caroliniana	0.04	20	EX								0.04				
Pycnosorus globosus	1	30	FG					1							
Romulea rosea	3	200	HT									3			
Rumex dumosus	0.1	2	FG					0.1							
Rytidosperma caespitosum	2	60	GG				2								
Sclerolaena muricata var. semiglabra	0.1	2	SG			0.1									
Solanum esuriale	0.1	2	FG					0.1							
Swainsona swainsonioides	0.2	10	FG					0.2							
Teucrium racemosum	0.1	10	FG					0.1							
Walwhalleya proluta	5	80	GG				5								

Q191E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	408768
PCT 46 – Curly windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6107569
Date: 15/08/2021			29	25	0	3	5	15	1	1	4	0		Orientation	36°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		Plot size	20 X 20 X 50
			96.1	69.3	0	4	56.1	8.9	0.2	0.1	26.8	0		BAM Attributes 20x50m plot	
Asperula conferta	0.1	5	FG					0.1						Stem classes	
Atriplex semibaccata	0.6	30	SG			0.6								80+	0
Calotis scabiosifolia var. scabiosifolia	0.1	5	FG					0.1						50-79	0
Chrysocephalum apiculatum	0.2	10	FG					0.2						30-49	0
Convolvulus angustissimus	0.1	1	OG							0.1				20-29	No
Craspedia variabilis	0.2	10	FG					0.2						10-19	No
Crassula decumbens var. decumbens	0.1	5	FG					0.1						5-9	No
Einadia nutans subsp. nutans	0.2	10	FG					0.2						<5	No
Enneapogon nigricans	1	40	GG				1							Hollows	0
Enteropogon acicularis	40	200	GG				40							Length logs (m)	0
Erodium crinitum	0.4	20	FG					0.4							
Eryngium ovinum	0.4	10	FG					0.4						BAM Attributes 1x1 plot (%)	
Goodenia pinnatifida	1	50	FG					1						Litter (%)	0
Haloragis odontocarpa	0.3	20	FG					0.3							
Hypochaeris glabra	0.8	40	EX								0.8				
Juncus radula	0.1	10	GG				0.1								
Leiocarpa panaetioides	4	40	FG					4							
Linum marginale	0.1	5	FG					0.1							
Lolium perenne	5	100	EX								5				
Lolium ridgidum	15	200	EX								15				
Maireana decalvans	3	20	SG			3									
Marsilea drummondii	0.2	30	EG						0.2						
Medicago minima	6	90	EX								6				
Panicum decompositum	12	100	GG				12								
Pycnosorus globosus	1	30	FG					1							
Rytidosperma duttonianum	3	60	GG				3								
Sclerolaena muricata var. semiglabra	0.4	2	SG			0.4									
Swainsona swainsonioides	0.2	15	FG					0.2							
Vittadinia gracilis	0.6	20	FG					0.6							

Q192E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	382800
PCT 17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion) (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6124468
Date: 16/08/2021			23	14	0	2	5	6	1	0	9	0		Orientation	178°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			95.6	**48.9**	0	30.5	16.1	2.2	0.1	0	**46.7**	0		**BAM Attributes 20x50m plot**	
Arctotheca calendula	0.4	10	EX								0.4			**Stem classes**	
Asperula conferta	0.5	40	FG					0.5						**80+**	0
Austrostipa nodosa	0.6	20	GG				0.6							**50-79**	0
Avena fatua	0.8	20	EX								0.8			**30-49**	0
Calotis scabiosifolia var. scabiosifolia	0.4	30	FG					0.4						**20-29**	No
Cotula bipinnata	0.1	5	EX								0.1			**10-19**	No
Duma florulenta	30	40	SG			30								**5-9**	No
Echium plantagineum	0.2	10	EX								0.2			**<5**	No
Enteropogon acicularis	5	80	GG				5							**Hollows**	0
Erodium crinitum	0.6	20	FG					0.6						**Length logs (m)**	0
Hordeum leporinum	35	500	EX								35				
Juncus radula	0.2	20	GG				0.2							**BAM Attributes 1x1 plot (%)**	
Lolium ridgidum	5	200	EX								5			**Litter (%)**	0
Marrubium vulgare	0.1	5	EX								0.1				
Marsilea drummondii	0.1	20	EG						0.1						
Medicago minima	5	200	EX								5				
Rhodanthe corymbiflora	0.5	30	FG					0.5							
Rumex dumosus	0.1	1	FG					0.1							
Rytidosperma caespitosum	0.3	20	GG				0.3								
Sclerolaena muricata var. semiglabra	0.5	10	SG			0.5									
Sonchus oleraceus	0.1	5	EX								0.1				
Vittadinia cuneata var. cuneata	0.1	3	FG					0.1							
Walwhalleya proluta	10	100	GG				10								

Q193E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	383092
PCT 45 – Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6124002
Date: 16/08/2021			27	19	0	1	3	15	0	0	8	2		Orientation	270°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			99.5	**79.1**	0	1	46	32.1	0	0	**20.4**	0.5		**BAM Attributes 20x50m plot**	
Austrostipa aristiglumis	40	100	GG				40							**Stem classes**	
Avena fatua	0.8	20	EX								0.8			**80+**	0
Brachyscome lineariloba	0.1	10	FG					0.1						**50-79**	0
Calotis anthemoides	0.2	20	FG					0.2						**30-49**	0
Carthamus lanatus	0.1	2	HT									0.1		**20-29**	No
Chrysocephalum apiculatum	5	100	FG					5						**10-19**	No
Crassula decumbens var. decumbens	0.1	5	FG					0.1						**5-9**	No
Crassula sieberiana	0.1	10	FG					0.1						**<5**	No
Enteropogon acicularis	1	30	GG				1							**Hollows**	0
Erodium botrys	3	100	EX								3			**Length logs (m)**	0
Erodium crinitum	3	100	FG					3							
Goodenia pusilliflora	5	300	FG					5						**BAM Attributes 1x1 plot (%)**	
Hordeum leporinum	10	300	EX								10			**Litter (%)**	0
Hypoxis glabella var. glabella	0.1	10	FG					0.1							
Lolium ridgidum	2	60	EX								2				
Maireana enchylaenoides	0.1	3	FG					0.1							
Maireana excavata	1	70	SG			1									
Maireana humillima	0.1	3	FG					0.1							
Maireana pentagona	0.1	5	FG					0.1							
Medicago minima	4	100	EX								4				
Panicum decompositum	5	80	GG				5								
Rhodanthe corymbiflora	3	90	FG					3							
Rhodanthe pygmaea	15	200	FG					15							
Romulea rosea	0.4	60	HT									0.4			
Sonchus oleraceus	0.1	5	EX								0.1				
Teucrium racemosum	0.1	3	FG					0.1							
Vittadinia cuneata var. cuneata	0.1	5	FG					0.1							

Q194E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	383602
PCT 47 – Swamp grassland wetland of the Riverine Plain (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6123437
Date: 16/08/2021			21	15	0	3	7	5	0	0	6	1		Orientation	48°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		Plot size	20 X 20 X 50
			97.3	77.2	0	4.4	69	3.8	0	0	20.1	1		BAM Attributes 20x50m plot	
Arctotheca calendula	2	40	EX								2			Stem classes	
Calocephalus sonderi	0.2	10	FG					0.2						80+	0
Duma florulenta	1	10	SG			1								50-79	0
Enteropogon acicularis	0.8	30	GG				0.8							30-49	0
Erodium botrys	0.8	40	EX								0.8			20-29	No
Erodium crinitum	0.4	20	FG					0.4						10-19	No
Juncus flavidus	0.1	5	GG				0.1							5-9	No
Juncus radula	0.1	5	GG				0.1							<5	No
Lachnagrostis filiformis	3	60	GG				3							Hollows	0
Lolium ridgidum	10	200	EX								10			Length logs (m)	0
Medicago minima	6	100	EX								6				
Rhodanthe corymbiflora	3	100	FG					3						BAM Attributes 1x1 plot (%)	
Romulea rosea	1	70	HT									1		Litter (%)	0
Rumex dumosus	0.1	5	FG					0.1							
Rytidosperma duttonianum	45	300	GG				45								
Sclerolaena muricata var. muricata	0.4	3	SG			0.4									
Sclerolaena muricata var. semiglabra	3	20	SG			3									
Sonchus oleraceus	0.3	20	EX								0.3				
Sporobolus caroli	10	100	GG				10								
Swainsona procumbens	0.1	5	FG					0.1							
Walwhalleya proluta	10	100	GG				10								

Q195E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	383800
PCT 44 – Forb-rich Speargrass - Windmill Grass - White Top grasslands of the Riverina Bioregion (Moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6123224
Date: 16/08/2021			31	25	0	3	7	15	0	0	6	0		Orientation	28°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			79	71	0	7.1	35.3	28.6	0	0	8	0		BAM Attributes 20x50m plot	
Arctotheca calendula	0.1	2	EX								0.1			Stem classes	
Austrostipa aristiglumis	3	20	GG				3							80+	0
Austrostipa nodosa	20	200	GG				20							50-79	0
Austrostipa scabra subsp. falcata	0.5	10	GG				0.5							30-49	0
Brachyscome lineariloba	0.1	10	FG					0.1						20-29	No
Calocephalus sonderi	0.8	40	FG					0.8						10-19	No
Calotis scabiosifolia var. scabiosifolia	0.2	15	FG					0.2						5-9	No
Chrysocephalum apiculatum	0.5	20	FG					0.5						<5	No
Crassula decumbens var. decumbens	0.2	30	FG					0.2						Hollows	0
Crassula sieberiana	0.1	50	FG					0.1						Length logs (m)	0
Enteropogon acicularis	4	80	GG				4								
Erodium botrys	1	60	EX								1			BAM Attributes 1x1 plot (%)	
Goodenia pusilliflora	10	300	FG					10						Litter (%)	0
Hypochaeris glabra	0.5	20	EX								0.5				
Hypoxis glabella var. glabella	0.2	40	Fg					0.2							
Isoetopsis graminifolia	0.1	10	FG					0.1							
Lolium ridgidum	0.4	10	EX								0.4				
Maireana excavata	3	80	SG			3									
Medicago laciniata	1	40	EX								1				
Medicago minima	5	100	EX								5				
Microseris lanceolata	0.1	2	FG					0.1							
Panicum decompositum	1	30	GG				1								
Rhagodia ulicina	4	100	SG			4									
Rhodanthe corymbiflora	15	500	FG					15							
Rytidosperma caespitosum	6	100	GG				6								
Rytidosperma setaceum	0.8	20	GG				0.8								
Sclerolaena muricata var. semiglabra	0.1	1	SG			0.1									
Swainsona plagiotropis	0.1	5	FG					0.1							
Triptilodiscus pygmaeus	0.5	30	FG					0.5							
Vittadinia cuneata var. cuneata	0.6	30	FG					0.6							
Wurmbea diocia subsp. diocia	0.1	20	FG					0.1							

Q196E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	384603
PCT 45 – Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6122142
Date: 16/08/2021			26	18	0	2	4	12	0	0	8	0		Orientation	81°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			94.8	**71.7**	0	1.1	61	9.6	0	0	**23.1**	0		**BAM Attributes 20x50m plot**	
Arctotheca calendula	0.5	10	EX								0.5			**Stem classes**	
Austrostipa aristiglumis	55	300	GG				55							**80+**	0
Austrostipa scabra subsp. falcata	1	40	GG				1							**50-79**	0
Avena fatua	0.5	10	EX								0.5			**30-49**	0
Crassula decumbens var. decumbens	0.1	5	FG					0.1						**20-29**	No
Crassula sieberiana	0.4	60	FG					0.4						**10-19**	No
Enteropogon acicularis	3	60	GG				3							**5-9**	No
Erodium botrys	1	50	EX								1			**<5**	No
Erodium crinitum	2	80	FG					2						**Hollows**	0
Goodenia pusilliflora	4	100	FG					4						**Length logs (m)**	0
Hordeum leporinum	5	100	EX								5				
Hypochaeris glabra	0.7	40	EX								0.7			**BAM Attributes 1x1 plot (%)**	No
Hypoxis glabella var. glabella	0.1	20	FG					0.1						**Litter (%)**	0
Lolium ridgidum	5	60	EX								5				
Maireana excavata	1	70	SG			1									
Maireana humillima	0.1	10	FG					0.1							
Maireana pentagona	0.4	40	FG					0.4							
Medicago minima	10	100	EX								10				
Rhodanthe corymbiflora	0.8	50	FG					0.8							
Rhodanthe pygmaea	0.6	50	FG					0.6							
Rytidosperma setaceum	2	80	GG				2								
Sclerolaena muricata var. semiglabra	0.1	1	SG			0.1									
Sonchus oleraceus	0.4	10	EX								0.4				
Teucrium racemosum	0.1	5	FG					0.1							
Triptilodiscus pygmaeus	0.2	20	FG					0.2							
Vittadinia cuneata var. cuneata	0.8	15	FG					0.8							

Q197E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	388433
PCT 26 – Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion (poor)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6119961
Date: 16/08/2021			25	19	1	2	5	10	0	1	6	2		Orientation	68°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			58.6	**33**	5	6.4	15.8	5.4	0	0.4	**25.6**	0.4		**BAM Attributes 20x50m plot**	
Acacia pendula	5	2	TG		5									**Stem classes**	
Amyema quandang var. quandang	0.4	1	OG							0.4				**80+**	0
Arctotheca calendula	1	30	EX								1			**50-79**	0
Asperula conferta	0.1	5	FG					0.1						**30-49**	0
Austrostipa aristiglumis	10	80	GG				10							**20-29**	Yes
Austrostipa nodosa	2	40	GG				2							**10-19**	No
Chrysocephalum apiculatum	0.8	20	FG					0.8						**5-9**	No
Crassula sieberiana	0.1	5	FG					0.1						**<5**	Yes
Echium plantagineum	0.2	10	EX								0.2			**Hollows**	0
Enteropogon acicularis	2	60	GG				2							**Length logs (m)**	0
Erodium crinitum	0.8	30	FG					0.8							
Lolium ridgidum	4	80	EX								4			**BAM Attributes 1x1 plot (%)**	
Lycium ferocissimum	0.1	1	HT									0.1		**Litter (%)**	4.8
Maireana aphylla	0.4	1	SG			0.4									
Maireana humillima	0.5	20	FG					0.5							
Maireana pentagona	0.6	20	FG					0.6							
Medicago minima	20	300	EX								20				
Panicum decompositum	1	20	GG				1								
Rhodanthe corymbiflora	2	80	FG					2							
Romulea rosea	0.3	30	HT									0.3			
Rytidosperma caespitosum	0.8	30	GG				0.8								
Sclerolaena muricata var. muricata	6	40	SG			6									
Sida corrugata	0.2	10	FG					0.2							
Vittadinia cuneata var. cuneata	0.2	10	FG					0.2							
Vittadinia gracilis	0.1	2	FG					0.1							

Q198E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	403083
PCT 5 - River Red Gum herbaceous-grassy very tall open forest wetland on inner flodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6110032
Date: 24/08/2021			24	11	1	3	2	5	0	0	13	0		Orientation	10°
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
			93.1	42.1	35	4.8	0.2	2.1	0	0	51	0		BAM Attributes 20x50m plot	
Atriplex semibaccata	0.7	15	SG			0.7								Stem classes	
Austrostipa sp. (no fertile material)	0.1	5	GG				0.1							80+	3
Avena fatua	1	50	EX								1			50-79	1
Boerhavia coccinea	0.1	5	FG					0.1						30-49	0
Brassica tournefortii	1	20	EX								1			20-29	No
Cirsium vulgare	5	50	EX								5			10-19	Yes
Echium plantagineum	10	500	EX								10			5-9	Yes
Enneapogon nigricans	0.1	15	GG				0.1							<5	Yes
Eucalyptus camaldulensis	35	10	TG		35									Hollows	4
Hypochaeris radicata	0.1	10	EX								0.1			Length logs (m)	8
Lolium ridgidum	25	1000	EX								25				
Malva parviflora	0.5	20	EX								0.5			BAM Attributes 1x1 plot (%)	
Marrubium vulgare	3	20	EX								3			Litter (%)	23
Medicago polymorpha	2	50	EX								2				
Oxalis pes-caprae	0.6	30	EX								0.6				
Pittosporum angustifolium	4	4	SG			4									
Pycnosorus globosus	0.1	1	FG					0.1							
Rumex brownii	1	50	FG					1							
Sclerolaena muricata var. semiglabra	0.1	2	SG			0.1									
Sonchus oleraceus	0.8	20	EX								0.8				
Trifolium arvense	1	50	EX								1				
Trifolium glomeratum	1	50	EX								1				
Urtica incisa	0.1	10	FG					0.1							
Vittadinia cuneata var. cuneata	0.8	30	FG					0.8							

Q199E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	424808
PCT 7 – River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6109243
Date: 25/08/2021			16	8	1	0	6	0	0	1	8	3		Orientation	197°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			136.9	**109.6**	60	0	49.5	0	0	0.1	**27.3**	11		**BAM Attributes 20x50m plot**	
Bothriochloa macra	3	100	GG				3							**Stem classes**	
Bromus diandrus	5	300	HT									5		**80+**	1
Cirsium vulgare	4	100	EX								4			**50-79**	2
Convolvulus angustissimus	0.1	1	OG							0.1				**30-49**	2
Enneapogon nigricans	0.8	20	GG				0.8							**20-29**	Yes
Enteropogon acicularis	0.2	20	GG				0.2							**10-19**	Yes
Eucalyptus camaldulensis	60	18	TG		60									**5-9**	Yes
Hypochaeris radicata	4	500	EX								4			**<5**	Yes
Juncus flavidus	0.4	10	GG				0.4							**Hollows**	0
Medicago minima	0.3	100	EX								0.3			**Length logs (m)**	5
Panicum decompositum	0.1	10	GG				0.1								
Paspalidium jubiflorum	45	2000	GG				45							**BAM Attributes 1x1 plot (%)**	
Paspalum dilatatum	4	100	HT									4		**Litter (%)**	54
Romulea rosea	2	500	HT									2			
Sonchus oleraceus	3	500	EX								3				
Trifolium arvense	5	1000	EX								5				

Q200E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	467759
PCT 75 – Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6099062
Date: 27/08/2021			26	22	2	0	6	13	1	0	4	0		Orientation	317°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			74.5	73	57	0	5.9	9.1	1	0	1.5	0		BAM Attributes 20x50m plot	
Aristida behriana	0.1	15	GG				0.1							Stem classes	
Arthropodium fimbriatum	0.2	30	FG					0.2						80+	0
Austrostipa bigeniculata	3	50	GG				3							50-79	2
Callitris glaucophylla	50	100	TG		50									30-49	1
Cheilanthes sieberi subsp. sieberi	1	50	EG						1					20-29	No
Crassula sieberiana	0.1	20	FG					0.1						10-19	Yes
Daucus glochidiatus	0.1	20	FG					0.1						5-9	Yes
Einadia nutans subsp. nutans	4	100	FG					4						<5	Yes
Enteropogon acicularis	0.3	10	GG				0.3							Hollows	0
Erodium crinitum	0.8	10	FG					0.8						Length logs (m)	37
Eucalyptus melliodora	7	2	TG		7										
Goodenia pinnatifida	0.1	1	FG					0.1						BAM Attributes 1x1 plot (%)	
Goodenia pusilliflora	0.2	30	FG					0.2						Litter (%)	69
Hypoxis glabella var. glabella	0.8	100	FG					0.8							
Linum marginale	0.9	50	FG					0.9							
Lolium ridgidum	0.2	20	EX								0.2				
Lomandra effusa	0.7	20	GG				0.7								
Maireana enchylaenoides	0.3	20	FG					0.3							
Medicago minima	0.2	30	EX								0.2				
Oxalis pes-caprae	1	100	EX								1				
Rytidosperma caespitosum	0.8	20	GG				0.8								
Rytidosperma setaceum	1	100	GG				1								
Sida corrugata	0.5	20	FG					0.5							
Solanum nigrum	0.1	1	EX								0.1				
Vittadinia cuneata var. cuneata	1	50	FG					1							
Wahlenbergia luteola	0.1	1	FG					0.1							

Q201E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	528706
PCT 319 – Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6102434
Date: 28/08/2021			37	22	2	2	4	11	3	0	15	1		Orientation	148°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			111.9	**103.2**	35	5.1	12.2	25.8	25.1	0	**8.7**	0.2		**BAM Attributes 20x50m plot**	
Adiantum aethiopicum	0.1	1	EG						0.1					**Stem classes**	
Arctotheca calendula	0.8	50	EX								0.8			**80+**	0
Aristida ramosa	10	100	GG				10							**50-79**	0
Arthropodium fimbriatum	0.5	100	FG					0.5						**30-49**	2
Asperula conferta	0.1	10	FG					0.1						**20-29**	Yes
Briza maxima	0.8	100	EX								0.8			**10-19**	Yes
Callitris glaucophylla	10	2	TG		10									**5-9**	Yes
Cheilanthes austrotenuifolia	15	500	EG						15					**<5**	No
Cheilanthes sieberi subsp. sieberi	10	500	EG						10					**Hollows**	1
Crassula sieberiana	5	1000	FG					5						**Length logs (m)**	60
Dactylis glomerata	0.5	50	EX								0.5				
Drosera peltata	0.1	10	FG					0.1						**BAM Attributes 1x1 plot (%)**	
Eragrostis brownii	1	100	GG				1							**Litter (%)**	17
Erodium cicutarium	0.6	40	EX								0.6				
Eucalyptus blakeyi x dealbata	25	10	TG		25										
Geranium homeanum	3	500	FG					3							
Gonocarpus teucrioides	5	500	FG					5							
Hibbertia obtusifolia	5	30	SG			5									
Hydrocotyle laxiflora	7	1000	FG					7							
Hypochaeris radicata	0.1	15	EX								0.1				
Hypoxis glabella var. glabella	0.5	20	FG					0.5							
Medicago minima	1	100	EX								1				
Melichrus urceolatus	0.1	1	SG			0.1									
Orobanche minor	0.1	10	EX								0.1				
Oxalis pes-caprae	1	100	EX								1				
Panicum decompositum	0.2	20	GG				0.2								
Petrorhagia nanteuilii	0.1	10	EX								0.1				
Poranthera microphylla	0.4	20	FG					0.4							
Rumex acetosella	1	200	EX								1				
Rytidosperma setaceum	1	100	GG				1								
Schismus barbatus	1	500	EX								1				
Silybum marianum	0.2	20	HT									0.2			
Stypandra glauca	4	100	FG					4							
Trifolium arvense	0.2	20	EX								0.2				
Trifolium glomeratum	0.7	100	EX								0.7				
Trifolium pratense	0.6	50	EX								0.6				
Wurmbea diocia subsp. diocia	0.2	20	FG					0.2							

Q202E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	532351
PCT 277 – Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion (poor)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6104659
Date: 30/08/2021			29	14	2	1	5	5	1	0	15	2		Orientation	170°
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
			114.4	52.2	36	4	9.8	1.9	0.5	0	62.2	6		BAM Attributes 20x50m plot	
Acacia baileyana	4	2	SG			4								Stem classes	
Arctotheca calendula	0.5	100	EX								0.5			80+	1
Asperula conferta	0.4	100	FG					0.4						50-79	1
Austrostipa nodosa	2	100	GG				2							30-49	2
Avena fatua	10	100	EX								10			20-29	Yes
Brachychiton populneus subsp. populneus	1	3	TG		1									10-19	Yes
Cheilanthes sieberi subsp. sieberi	0.5	30	EG						0.5					5-9	Yes
Dianella revoluta var. revoluta	0.5	10	FG					0.5						<5	Yes
Echium plantagineum	0.2	10	EX								0.2			Hollows	1
Eragrostis curvula	4	50	HT									4		Length logs (m)	5
Eucalyptus melliodora	35	20	TG		35										
Hypochaeris radicata	3	500	EX								3			BAM Attributes 1x1 plot (%)	
Lolium perenne	15	1000	EX								15			Litter (%)	38
Lomandra multiflora	0.3	50	GG				0.3								
Marrubium vulgare	0.5	20	EX								0.5				
Medicago minima	0.4	50	EX								0.4				
Oxalis perennans	0.8	100	FG					0.8							
Oxalis pes-caprae	4	500	EX								4				
Panicum effusum	1	500	GG				1								
Paspalidium constrictum	0.5	20	GG				0.5								
Phalaris minor	20	1000	EX								20				
Plantago lanceolata	0.2	10	EX								0.2				
Romulea rosea	2	500	HT									2			
Rosa rubiginosa	0.6	2	EX								0.6				
Rumex brownii	0.1	10	FG					0.1							
Rytidosperma erianthum	6	100	GG				6								
Sonchus oleraceus	1	500	EX								1				
Trifolium arvense	0.8	500	EX								0.8				
Vittadinia cuneata var. cuneata	0.1	10	FG					0.1							

Q203E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	476495
PCT 80 – Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6100922
Date: 30/08/2021			20	16	2	3	4	6	0	1	4	0		Orientation	24°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			94.1	**42.9**	10.5	10.1	13.5	8.7	0	0.1	**51.2**	0		**BAM Attributes 20x50m plot**	
Atriplex semibaccata	7	500	SG			7								**Stem classes**	
Austrostipa bigeniculata	7	5	GG				7							**80+**	2
Brachychiton populneus subsp. populneus	0.5	1	TG		0.5									**50-79**	0
Cirsium vulgare	0.1	1	EX								0.1			**30-49**	0
Convolvulus angustissimus	0.1	1	OG							0.1				**20-29**	No
Dianella revoluta var. revoluta	0.3	10	FG					0.3						**10-19**	No
Einadia nutans subsp. nutans	4	100	FG					4						**5-9**	Yes
Enteropogon acicularis	5	10	GG				5							**<5**	No
Eucalyptus melliodora	10	1	TG		10									**Hollows**	2
Lolium ridgidum	50	1000	EX								50			**Length logs (m)**	13
Lomandra filiformis subsp. coriacea	0.5	20	GG				0.5								
Maireana enchylaenoides	0.7	100	FG					0.7						**BAM Attributes 1x1 plot (%)**	
Oxalis perennans	0.6	50	FG					0.6						**Litter (%)**	30
Oxalis pes-caprae	1	100	EX								1				
Rytidosperma caespitosum	1	100	GG				1								
Salsola australis	0.1	1	SG			0.1									
Sclerolaena muricata var. villosa	3	50	SG			3									
Sida corrugata	3	500	FG					3							
Sonchus oleraceus	0.1	1	EX								0.1				
Vittadinia gracilis	0.1	10	FG					0.1							

Q204E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	461871
PCT 75 – Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6097102
Date: 31/08/2021			28	21	1	4	5	10	0	1	7	1		Orientation	250°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			60.7	**56.4**	25	6.4	17.3	7.5	0	0.2	**4.3**	0.7		**BAM Attributes 20x50m plot**	
Atriplex semibaccata	4	500	SG			4								**Stem classes**	
Austrostipa bigeniculata	15	500	GG				15							**80+**	1
Austrostipa scabra subsp. falcata	1	100	GG				1							**50-79**	0
Bulbine bulbosa	0.1	10	FG					0.1						**30-49**	0
Calotis anthemoides	1	100	FG					1						**20-29**	No
Carex inversa	0.1	10	GG				0.1							**10-19**	Yes
Convolvulus angustissimus	0.2	20	OG							0.2				**5-9**	Yes
Echium plantagineum	0.3	50	EX								0.3			**<5**	Yes
Einadia nutans subsp. nutans	4	500	FG					4						**Hollows**	0
Enchylaena tomentosa	2	500	SG			2								**Length logs (m)**	15
Enteropogon acicularis	0.2	20	GG				0.2								
Eucalyptus melliodora	25	17	TG		25									**BAM Attributes 1x1 plot (%)**	
Euphorbia drummondii	0.1	20	FG					0.1						**Litter (%)**	26
Hypochaeris radicata	0.1	10	EX								0.1				
Lolium ridgidum	1	500	EX								1				
Maireana enchylaenoides	0.8	100	FG					0.8							
Maireana humillima	0.1	10	FG					0.1							
Marrubium vulgare	2	100	EX								2				
Oxalis pes-caprae	0.1	10	EX								0.1				
Romulea rosea	0.7	100	HT									0.7			
Rumex brownii	0.1	5	FG					0.1							
Rytidosperma caespitosum	1	100	GG				1								
Salsola australis	0.1	5	SG			0.1									
Sclerolaena muricata var. muricata	0.3	10	SG			0.3									
Senecio glossanthus	0.1	1	FG					0.1							
Sida corrugata	0.8	100	FG					0.8							
Sisymbrium officinale	0.1	10	EX								0.1				
Vittadinia gracilis	0.4	40	FG					0.4							

Q205E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	462005
PCT 75 – Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion (derived)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6097105
Date: 31/08/2021			27	18	0	3	4	11	0	0	9	1		Orientation	8°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			62.4	**52.2**	0	2.5	35.7	14	0	0	**10.2**	0.3		**BAM Attributes 20x50m plot**	
Atriplex semibaccata	2	100	SG			2								**Stem classes**	
Austrostipa bigeniculata	35	1000	GG				35							**80+**	0
Calotis anthemoides	4	1000	FG					4						**50-79**	0
Crassula sieberiana	0.1	20	FG					0.1						**30-49**	0
Echium plantagineum	2	500	EX								2			**20-29**	No
Enteropogon acicularis	0.3	100	GG				0.3							**10-19**	No
Erodium cicutarium	4	500	EX								4			**5-9**	No
Goodenia pinnatifida	7	100	FG					7						**<5**	No
Goodenia pusilliflora	0.1	10	FG					0.1						**Hollows**	0
Hordeum leporinum	0.3	30	EX								0.3			**Length logs (m)**	0
Hypoxis glabella var. glabella	0.2	50	FG					0.2							
Lolium ridgidum	1	100	EX								1			**BAM Attributes 1x1 plot (%)**	
Maireana enchylaenoides	0.8	100	FG					0.8						**Litter (%)**	6
Maireana excavata	0.3	50	SG			0.3									
Medicago minima	0.1	10	EX								0.1				
Ptilotus erubescens	0.1	10	FG					0.1							
Pycnosorus globosus	0.4	10	FG					0.4							
Romulea minutiflora	0.3	50	EX								0.3				
Romulea rosea	0.3	20	HT									0.3			
Rytidosperma caespitosum	0.3	50	GG				0.3								
Rytidosperma setaceum	0.1	10	GG				0.1								
Salsola australis	0.2	20	SG			0.2									
Schismus barbatus	2	500	EX								2				
Sida corrugata	0.6	50	FG					0.6							
Trifolium arvense	0.2	50	EX								0.2				
Vittadinia cuneata var. cuneata	0.5	100	FG					0.5							
Wurmbea diocia subsp. diocia	0.2	50	FG					0.2							

Q206E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	462294
PCT 75 – Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion (derived)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6097155
Date: 31/08/2021			29	21	0	2	5	14	0	0	8	1		Orientation	340°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			90.9	82.6	0	1.6	71.1	9.9	0	0	8.3	0.5		BAM Attributes 20x50m plot	
Austrostipa bigeniculata	35	1000	GG				35							Stem classes	
Austrostipa scabra subsp. falcata	20	1000	GG				20							**80+**	0
Crassula sieberiana	0.3	100	FG					0.3						**50-79**	0
Echium plantagineum	1	50	EX								1			**30-49**	0
Enteropogon acicularis	15	100	GG				15							**20-29**	No
Erodium cicutarium	2	1000	EX								2			**10-19**	No
Goodenia pinnatifida	3	100	FG					3						**5-9**	No
Goodenia pusilliflora	1	500	FG					1						**<5**	No
Hypochaeris radicata	0.2	20	EX								0.2			Hollows	0
Hypoxis glabella var. glabella	0.5	1000	FG					0.5						Length logs (m)	0
Isoetopsis graminifolia	0.1	10	FG					0.1							
Linum marginale	0.3	40	FG					0.3						BAM Attributes 1x1 plot (%)	
Lolium ridgidum	2	500	EX								2			**Litter (%)**	4
Maireana enchylaenoides	0.8	100	FG					0.8							
Maireana excavata	0.6	100	SG			0.6									
Maireana humillima	0.5	100	FG					0.5							
Medicago minima	0.3	100	EX								0.3				
Oxalis pes-caprae	0.3	100	EX								0.3				
Pycnosorus globosus	0.5	20	FG					0.5							
Rhodanthe corymbiflora	0.1	10	FG					0.1							
Romulea rosea	0.5	1000	HT									0.5			
Rytidosperma sp.	0.1	10	GG				0.1								
Salsola australis	1	100	SG			1									
Sida corrugata	1	500	FG					1							
Sporobolus caroli	1	100	GG				1								
Trifolium arvense	2	500	EX								2				
Triptilodiscus pygmaeus	0.5	50	FG					0.5							
Vittadinia cuneata var. cuneata	0.8	50	FG					0.8							
Vittadinia gracilis	0.5	20	FG					0.5							

Q207E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	468471
PCT 80 – Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6099472
Date: 31/08/2021			32	27	2	1	7	15	1	1	5	0		Orientation	262°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			93.3	**91.8**	70	1	13.2	6.3	1	0.3	**1.5**	0		**BAM Attributes 20x50m plot**	
Austrostipa nodosa	0.3	20	GG				0.3							**Stem classes**	
Austrostipa scabra subsp. falcata	10	100	GG				10							**80+**	0
Callitris glaucophylla	65	100	TG		65									**50-79**	1
Calotis cuneifolia	0.4	20	FG					0.4						**30-49**	0
Cheilanthes sieberi subsp. sieberi	1	100	EG						1					**20-29**	No
Chenopodium desertorum subsp. microphyllu	1	40	SG			1								**10-19**	Yes
Convolvulus angustissimus	0.3	100	OG							0.3				**5-9**	Yes
Crassula sieberiana	0.2	100	FG					0.2						**<5**	Yes
Dactylis glomerata	0.1	10	EX								0.1			**Hollows**	0
Daucus glochidiatus	0.1	10	FG					0.1						**Length logs (m)**	3
Einadia nutans subsp. nutans	1	100	FG					1							
Enteropogon acicularis	1	50	GG				1							**BAM Attributes 1x1 plot (%)**	
Eriochloa pseudoacrotricha	0.1	10	GG				0.1							**Litter (%)**	14
Erodium crinitum	0.3	20	FG					0.3							
Eucalyptus microcarpa	5	3	TG		5										
Goodenia pinnatifida	0.9	20	FG					0.9							
Linum marginale	0.5	100	FG					0.5							
Lomandra filiformis subsp. coriacea	0.5	50	GG				0.5								
Maireana enchylaenoides	0.4	20	FG					0.4							
Oxalis pes-caprae	0.3	100	EX								0.3				
Plantago gaudichaudii	1	100	FG					1							
Pterostylis mutica	0.1	3	FG					0.1							
Ptilotus erubescens	0.1	2	FG					0.1							
Romulea minutiflora	0.1	10	EX								0.1				
Rytidosperma fulvum	1	50	GG				1								
Rytidosperma sp.	0.3	10	GG				0.3								
Sida corrugata	0.3	30	FG					0.3							
Sisymbrium officinale	0.1	10	EX								0.1				
Trifolium arvense	0.9	100	EX								0.9				
Vittadinia cuneata var. cuneata	0.3	20	FG					0.3							
Vittadinia gracilis	0.3	20	FG					0.3							
Wurmbea diocia subsp. diocia	0.4	100	FG					0.4							

Q208E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	664531
PCT 319 - Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion (derived)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6179720
Date: 31/10/2021			19	9	0	0	5	4	0	0	10	1		Orientation	260°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			89.8	**53.6**	0	0	52.3	1.3	0	0	**36.2**	0.5		**BAM Attributes 20x50m plot**	
Aira elegantissima	0.1	50	EX								0.1			**Stem classes**	
Arctotheca calendula	0.1	5	EX								0.1			**80+**	0
Aristida ramosa	0.1	10	GG				0.1							**50-79**	0
Austrostipa nodosa	50	1000	GG				50							**30-49**	2
Austrostipa scabra subsp. falcata	0.1	20	GG				0.1							**20-29**	Yes
Bromus diandrus	0.5	50	HT									0.5		**10-19**	Yes
Bromus hordeaceus	0.2	50	EX								0.2			**5-9**	Yes
Crassula colorata var. acuminata	1	500	FG					1						**<5**	Yes
Cynodon dactylon	0.1	1	GG				0.1							**Hollows**	6
Enteropogon acicularis	2	50	GG				2							**Length logs (m)**	40
Isotoma axillaris	0.1	1	FG					0.1							
Medicago praecox	2	100	EX								2			**BAM Attributes 1x1 plot (%)**	
Oxalis corniculata	0.1	2	EX								0.1			**Litter (%)**	47
Schismus barbatus	30	1000	EX								30				
Solanum esuriale	0.1	1	FG					0.1							
Taraxacum officinale	0.1	10	EX								0.1				
Tragopogon porrifolius	0.1	10	EX								0.1				
Trifolium arvense	3	100	EX								3				
Wahlenbergia luteola	0.1	5	FG					0.1							

Q209E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	303876
PCT 160 – Nitre Goosefoot shrublannd wetland on clays of the inland floodplains (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6145442
Date: 11/09/2021			24	17	0	7	0	9	0	1	7	0		Orientation	265°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			104.8	**74.2**	0	26.6	0	47.5	0	0.1	**30.6**	0		**BAM Attributes 20x50m plot**	
Atriplex leptocarpa	0.1	1	SG			0.1								**Stem classes**	
Atriplex semibaccata	0.8	20	SG			0.8								**80+**	0
Billardiera versicolor	0.1	1	OG							0.1				**50-79**	0
Calotis scabiosifolia var. scabiosifolia	0.1	1	FG					0.1						**30-49**	0
Chenopodium nitrariaceum	20	20	SG			20								**20-29**	No
Duma florulenta	3	6	SG			3								**10-19**	No
Einadia nutans subsp. nutans	0.6	10	FG					0.6						**5-9**	No
Erodium cicutarium	0.3	20	EX								0.3			**<5**	No
Erodium crinitum	0.4	10	FG					0.4						**Hollows**	0
Goodenia pusilliflora	0.4	100	FG					0.4						**Length logs (m)**	0
Hordeum leporinum	2	60	EX								2				
Isoetopsis graminifolia	0.4	100	FG					0.4						**BAM Attributes 1x1 plot (%)**	
Lolium ridgidum	3	80	EX								3			**Litter (%)**	0
Medicago minima	20	500	EX								20				
Medicago polymorpha	4	100	EX								4				
Oxalis pes-caprae	0.1	1	FG					0.1							
Plantago drummondii	10	20	FG					10							
Rhodanthe corymbiflora	35	100	FG					35							
Sclerolaena muricata var. villosa	2	50	SG			2									
Sclerolaena tricuspis	0.6	2	SG			0.6									
Senecio glossanthus	0.5	20	FG					0.5							
Sida intricata	0.1	2	SG			0.1									
Sisymbrium erysimoides	0.8	30	EX								0.8				
Vulpia myuros	0.5	60	EX								0.5				

Q210E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	299542
PCT 24 – Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6145964
Date: 11/09/2021			22	14	0	4	1	9	0	0	8	0		Orientation	275°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			115.5	48.2	0	6.3	25	16.9	0	0	67.3	0		BAM Attributes 20x50m plot	
Brachyscome lineariloba	0.4	60	FG					0.4						Stem classes	
Brachyscome smithwhitei	2	80	FG					2						**80+**	0
Bulbine bulbosa	0.4	20	FG					0.4						**50-79**	0
Calandrinia eremaea	0.1	3	FG					0.1						**30-49**	0
Chenopodium nitrariaceum	5	3	SG			5								**20-29**	No
Einadia nutans subsp. nutans	0.1	3	FG					0.1						**10-19**	No
Eragrostis australasica	25	30	GG				25							**5-9**	No
Erodium cicutarium	0.4	20	EX								0.4			**<5**	No
Goodenia pusilliflora	0.1	5	FG					0.1						Hollows	0
Hordeum leporinum	1	40	EX								1			Length logs (m)	0
Lolium ridgidum	40	500	EX								40				
Maireana aphylla	1	3	SG			1								BAM Attributes 1x1 plot (%)	
Malva parviflora	0.1	1	EX								0.1			**Litter (%)**	0
Medicago minima	15	200	EX								15				
Medicago polymorpha	10	200	EX								10				
Plantago drummondii	3	100	FG					3							
Rhodanthe corymbiflora	10	500	FG					10							
Sclerolaena tricuspis	0.2	2	SG			0.2									
Senecio glossanthus	0.8	20	FG					0.8							
Sida intricata	0.1	2	SG			0.1									
Sisymbrium erysimoides	0.5	30	EX								0.5				
Sonchus oleraceus	0.3	5	EX								0.3				

Q211E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	298958
PCT 24 – Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6146047
Date: 11/09/2021			24	14	0	4	1	9	0	0	10	0		Orientation	232°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			103.2	57.1	0	21.7	10	25.4	0	0	46.1	0		BAM Attributes 20x50m plot	
Atriplex semibaccata	0.1	1	SG			0.1								Stem classes	
Brachyscome lineariloba	0.2	20	FG					0.2						80+	0
Brachyscome papillosa	0.2	16	FG					0.2						50-79	0
Brassica tournefortii	0.1	2	EX								0.1			30-49	0
Calandrinia eremaea	0.1	5	FG					0.1						20-29	No
Chenopodium nitrariaceum	1	1	SG			1								10-19	No
Einadia nutans subsp. nutans	0.4	5	FG					0.4						5-9	No
Eragrostis australasica	10	10	GG				10							<5	No
Erodium cicutarium	0.4	20	EX								0.4			Hollows	0
Erodium crinitum	0.4	20	FG					0.4						Length logs (m)	0
Hordeum leporinum	10	200	EX								10				
Leiocarpa tomentosa	0.6	5	SG			0.6								BAM Attributes 1x1 plot (%)	
Lolium ridgidum	15	200	EX								15			Litter (%)	0
Maireana aphylla	20	20	SG			20									
Maireana humillima	0.1	3	FG					0.1							
Malva parviflora	0.1	2	EX								0.1				
Medicago minima	10	100	EX								10				
Medicago polymorpha	10	200	EX								10				
Plantago drummondii	3	90	FG					3							
Rhodanthe corymbiflora	20	500	FG					20							
Senecio glossanthus	1	50	FG					1							
Sisymbrium erysimoides	0.2	10	EX								0.2				
Sisymbrium orientale	0.1	5	EX								0.1				
Sonchus oleraceus	0.2	5	EX								0.2				

Q212E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	380169
PCT 44 – Forb-rich Speargrass - Windmill Grass - White Top grasslands of the Riverina Bioregion (Moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6127957
Date: 12/09/2021			37	35	0	4	4	26	0	1	2	0		Orientation	242°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			92.2	**91.3**	0	15.3	12	63.9	0	0.1	**0.9**	0		**BAM Attributes 20x50m plot**	
Arthropodium minus	0.1	1	FG					0.1						**Stem classes**	
Atriplex semibaccata	0.1	1	SG			0.1								**80+**	0
Austrostipa nodosa	3	40	GG				3							**50-79**	0
Austrostipa scabra subsp. falcata	6	100	GG				6							**30-49**	2
Brachyscome lineariloba	0.8	40	FG					0.8						**20-29**	No
Bulbine bulbosa	0.2	20	FG					0.2						**10-19**	No
Calotis scabiosifolia var. scabiosifolia	3	40	FG					3						**5-9**	No
Chloris truncata	1	20	GG				1							**<5**	No
Chrysocephalum apiculatum	8	90	FG					8						**Hollows**	0
Convolvulus angustissimus	0.1	1	OG							0.1				**Length logs (m)**	0
Crassula colorata var. acuminata	0.3	60	FG					0.3							
Crassula decumbens var. decumbens	0.1	10	FG					0.1						**BAM Attributes 1x1 plot (%)**	
Erodium crinitum	1	30	FG					1						**Litter (%)**	0
Goodenia pinnatifida	0.2	10	FG					0.2							
Goodenia pusilliflora	10	500	FG					10							
Hyalosperma semisterile	12	200	FG					12							
Hypochaeris glabra	0.1	2	EX								0.1				
Leiocarpa panaetioides	0.2	5	FG					0.2							
Leptorhynchos sp.	0.6	40	FG					0.6							
Leucochrysum molle	0.4	20	FG					0.4							
Maireana excavata	15	200	SG			15									
Maireana humillima	0.8	30	FG					0.8							
Oxalis perennans	0.1	10	FG					0.1							
Plantago drummondii	4	100	FG					4							
Pogonolepis muelleriana	0.3	20	FG					0.3							
Ptilotus exaltatus	0.6	10	FG					0.6							
Rhodanthe corymbiflora	8	100	FG					8							
Rhodanthe pygmaea	12	500	FG					12							
Salsola australis	0.1	5	SG			0.1									
Sclerolaena muricata var. muricata	0.1	1	SG			0.1									
Sida corrugata	0.1	10	FG					0.1							
Sporobolus caroli	2	50	GG				2								
Teucrium racemosum	0.5	40	FG					0.5							
Triptilodiscus pygmaeus	0.4	30	FG					0.4							
Vittadinia gracilis	0.1	3	FG					0.1							
Vulpia myuros	0.8	30	EX								0.8				
Wahlenbergia gracilenta	0.1	40	FG					0.1							

Q213E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	412804
PCT 44 – Forb-rich Speargrass - Windmill Grass - White Top grasslands of the Riverina Bioregion (Moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6109146
Date: 13/09/2021			39	31	0	2	7	22	0	0	8	1		Orientation	62°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			88.4	**75.5**	0	2.1	26.7	46.7	0	0	**12.9**	0.4		**BAM Attributes 20x50m plot**	
Arthropodium minus	0.1	2	FG					0.1						**Stem classes**	
Asperula conferta	0.1	5	FG					0.1						**80+**	0
Austrostipa aristiglumis	3	30	GG				3							**50-79**	0
Austrostipa nodosa	6	80	GG				6							**30-49**	0
Austrostipa scabra subsp. falcata	15	90	GG				15							**20-29**	No
Bulbine bulbosa	0.2	10	FG					0.2						**10-19**	No
Calocephalus sonderi	0.8	20	FG					0.8						**5-9**	No
Calotis hispidula	0.2	20	FG					0.2						**<5**	No
Calotis scabiosifolia var. scabiosifolia	0.2	5	FG					0.2						**Hollows**	0
Chrysocephalum apiculatum	5	80	FG					5						**Length logs (m)**	0
Cotula bipinnata	0.1	5	EX								0.1				
Crassula colorata var. acuminata	0.2	30	FG					0.2						**BAM Attributes 1x1 plot (%)**	
Crassula decumbens var. decumbens	0.4	40	FG					0.4						**Litter (%)**	0
Crassula sieberiana	0.2	30	FG					0.2							
Echium plantagineum	0.4	10	EX								0.4				
Enteropogon acicularis	0.4	5	GG				0.4								
Erodium botrys	3	100	EX								3				
Erodium cicutarium	2	80	EX								2				
Euphorbia drummondii	0.1	10	FG					0.1							
Goodenia pusilliflora	12	200	FG					12							
Hyalosperma semisterile	8	100	FG					8							
Isoetopsis graminifolia	7	200	FG					7							
Lolium ridgidum	1	40	EX								1				
Maireana aphylla	0.1	1	SG			0.1									
Maireana excavata	2	80	SG			2									
Maireana humillima	0.6	20	FG					0.6							
Maireana pentagona	0.4	10	FG					0.4							
Medicago minima	3	80	EX								3				
Panicum decompositum	0.5	5	GG				0.5								
Rhodanthe corymbiflora	4	100	FG					4							
Rhodanthe pygmaea	6	100	FG					6							
Romulea rosea	0.4	50	HT									0.4			
Rytidosperma caespitosum	0.8	20	GG				0.8								
Sida corrugata	0.5	10	FG					0.5							
Sporobolus caroli	1	20	GG				1								
Swainsona murrayana	0.4	25	FG					0.4							
Teucrium racemosum	0.2	10	FG					0.2							
Tricoryne elatior	0.1	5	FG					0.1							
Vulpia myuros	3	50	EX								3				

Q214E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	415335
PCT 216 - Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion (poor)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6110087
Date: 13/09/2021			20	14	0	2	2	10	0	0	6	1		Orientation	65°
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
			99.8	55	0	7	0.7	47.3	0	0	44.8	0.2		BAM Attributes 20x50m plot	
Austrostipa nodosa	0.2	10	GG				0.2							Stem classes	
Brachyscome lineariloba	0.1	10	FG					0.1						80+	0
Calocephalus sonderi	1	20	FG					1						50-79	0
Calotis scabiosifolia var. scabiosifolia	2	100	FG					2						30-49	0
Chloris truncata	0.5	20	GG				0.5							20-29	No
Cotula bipinnata	10	500	EX								10			10-19	No
Euphorbia drummondii	0.1	10	FG					0.1						5-9	No
Hordeum leporinum	0.6	70	EX								0.6			<5	No
Isoetopsis graminifolia	10	1000	FG					10						Hollows	0
Lolium ridgidum	7	300	EX								7			Length logs (m)	0
Maireana excavata	4	100	SG			4									
Maireana pentagona	6	400	FG					6						BAM Attributes 1x1 plot (%)	
Medicago minima	15	500	EX								15			Litter (%)	0
Plantago drummondii	14	500	FG					14							
Rhodanthe corymbiflora	12	500	FG					12							
Romulea rosea	0.2	20	HT									0.2			
Sclerolaena muricata var. semiglabra	3	40	SG			3									
Sida corrugata	0.1	10	FG					0.1							
Swainsona murrayana	2	300	FG					2							
Vulpia myuros	12	500	EX								12				

Q215E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	415001
PCT 216 - Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion (poor)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6109984
Date: 13/09/2021			16	10	0	1	2	7	0	0	6	1		Orientation	65°
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
			106.1	51.7	0	20	5	26.7	0	0	54.4	0.4		BAM Attributes 20x50m plot	
Austrostipa scabra subsp. falcata	4	90	GG				4							Stem classes	
Calocephalus sonderi	2	80	FG					2						80+	0
Chrysocephalum apiculatum	0.6	40	FG					0.6						50-79	0
Cotula bipinnata	6	300	EX								6			30-49	0
Hordeum leporinum	10	100	EX								10			20-29	No
Isoetopsis graminifolia	0.8	100	FG					0.8						10-19	No
Lolium ridgidum	10	100	EX								10			5-9	No
Maireana pentagona	0.1	5	FG					0.1						<5	No
Medicago minima	25	500	EX								25			Hollows	0
Plantago drummondii	3	200	FG					3						Length logs (m)	0
Rhodanthe corymbiflora	20	1000	FG					20							
Romulea rosea	0.4	40	HT									0.4		BAM Attributes 1x1 plot (%)	
Sclerolaena muricata var. semiglabra	20	100	SG			20								Litter (%)	0
Sporobolus caroli	1	20	GG				1								
Swainsona murrayana	0.2	80	FG					0.2							
Vulpia myuros	3	100	EX								3				

Q216E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	409564
PCT 46 – Curly windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6107955
Date: 13/09/2021			35	26	0	2	6	18	0	0	9	1		Orientation	228°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			127.3	**84.3**	0	0.5	50.1	33.7	0	0	**43**	0.5		**BAM Attributes 20x50m plot**	
Asperula conferta	0.6	40	FG					0.6						**Stem classes**	
Atriplex eardleyae	0.1	2	SG			0.1								**80+**	0
Austrostipa scabra subsp. falcata	10	10	GG				10							**50-79**	0
Avena barbata	15	200	EX								15			**30-49**	0
Calocephalus sonderi	0.4	10	FG					0.4						**20-29**	No
Calotis scabiosifolia var. scabiosifolia	8	100	FG					8						**10-19**	No
Chloris truncata	0.5	10	GG				0.5							**5-9**	No
Chrysocephalum apiculatum	0.8	10	FG					0.8						**<5**	No
Cotula bipinnata	0.1	25	EX								0.1			**Hollows**	0
Crassula colorata var. acuminata	0.6	40	FG					0.6						**Length logs (m)**	0
Daucus glochidiatus	0.8	50	FG					0.8							
Enteropogon acicularis	35	200	GG				35							**BAM Attributes 1x1 plot (%)**	
Erodium botrys	1	40	EX								1			**Litter (%)**	0
Erodium cicutarium	2	100	EX								2				
Erodium crinitum	0.1	5	FG					0.1							
Goodenia pusilliflora	15	200	FG					15							
Hyalosperma semisterile	0.5	30	FG					0.5							
Isoetopsis graminifolia	0.4	30	FG					0.4							
Leiocarpa panaetioides	0.5	5	FG					0.5							
Lolium ridgidum	15	200	EX								15				
Maireana humillima	1	20	FG					1							
Medicago minima	8	100	EX								8				
Microseris lanceolata	0.8	20	FG					0.8							
Plantago drummondii	2	100	FG					2							
Ptilotus exaltatus	0.1	5	FG					0.1							
Rhodanthe corymbiflora	0.7	50	FG					0.7							
Romulea minutiflora	0.4	20	EX								0.4				
Romulea rosea	0.5	40	HT									0.5			
Rytidosperma caespitosum	0.2	5	GG				0.2								
Salsola australis	0.4	5	SG			0.4									
Sporobolus caroli	4	80	GG				4								
Swainsona murrayana	0.4	15	FG					0.4							
Vittadinia gracilis	1	20	FG					1							
Vulpia myuros	1	80	EX								1				
Walwhalleya proluta	0.4	5	GG				0.4								

Q217E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	408764
PCT 46 – Curly windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6107621
Date: 13/09/2021			38	29	0	5	5	18	0	1	9	1		Orientation	232°
Species	**Cover**	**Abundance**	Sum cover	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum	Sum		Plot size	20 X 20 X 50
			122.4	59.7	0	0.9	31.9	26.8	0	0.1	62.7	0.4		BAM Attributes 20x50m plot	
Arctotheca calendula	0.8	30	EX								0.8			Stem classes	
Atriplex eardleyae	0.1	2	SG			0.1								80+	0
Atriplex semibaccata	0.2	5	SG			0.2								50-79	0
Austrostipa aristiglumis	0.2	5	GG				0.2							30-49	0
Brachyscome lineariloba	0.8	40	FG					0.8						20-29	No
Calocephalus citreus	0.1	5	FG					0.1						10-19	No
Calocephalus sonderi	0.6	20	FG					0.6						5-9	No
Calotis scabiosifolia var. scabiosifolia	10	100	FG					10						<5	No
Chrysocephalum apiculatum	0.6	10	FG					0.6						Hollows	0
Convolvulus angustissimus	0.1	5	OG							0.1				Length logs (m)	0
Crassula colorata var. acuminata	0.1	20	FG					0.1							
Dactylis glomerata	0.5	40	EX								0.5			BAM Attributes 1x1 plot (%)	
Echium plantagineum	0.2	10	EX								0.2			Litter (%)	0
Einadia nutans subsp. nutans	0.1	1	FG					0.1							
Enteropogon acicularis	30	200	GG				30								
Erodium cicutarium	2	100	EX								2				
Eryngium ovinum	0.4	10	FG					0.4							
Hypochaeris glabra	10	200	EX								10				
Isoetopsis graminifolia	0.4	80	FG					0.4							
Leiocarpa panaetioides	8	60	FG					8							
Lolium ridgidum	45	1000	EX								45				
Maireana decalvans	0.4	10	SG			0.4									
Medicago minima	3	100	EX								3				
Microseris lanceolata	0.2	10	FG					0.2							
Panicum decompositum	0.8	10	GG				0.8								
Pycnosorus globosus	0.8	10	FG					0.8							
Rhodanthe corymbiflora	0.6	40	FG					0.6							
Romulea rosea	0.4	30	HT									0.4			
Rytidosperma duttonianum	0.4	10	GG				0.4								
Salsola australis	0.1	2	SG			0.1									
Sclerolaena muricata var. muricata	0.1	1	SG			0.1									
Sida corrugata	0.8	10	FG					0.8							
Solanum esuriale	0.1	1	FG					0.1							
Swainsona murrayana	0.1	2	FG					0.1							
Swainsona procumbens	0.1	3	FG					0.1							
Vittadinia gracilis	3	80	FG					3							
Vulpia myuros	0.8	50	EX								0.8				
Walwhalleya proluta	0.5	10	GG				0.5								

Q218E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	421375
PCT 45 – Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6111422
Date: 14/09/2021			23	19	0	4	4	11	0	0	4	0		Orientation	196°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			96.6	**51.8**	0	12.6	31.2	8	0	0	**44.8**	0		**BAM Attributes 20x50m plot**	
Atriplex semibaccata	0.1	3	SG			0.1								**Stem classes**	
Austrostipa aristiglumis	15	60	GG				15							**80+**	0
Avena barbata	2	100	EX								2			**50-79**	0
Calocephalus citreus	1	40	FG					1						**30-49**	0
Calotis scabiosifolia var. scabiosifolia	2	60	FG					2						**20-29**	No
Daucus glochidiatus	0.1	5	FG					0.1						**10-19**	No
Hypoxis glabella var. glabella	0.1	5	FG					0.1						**5-9**	No
Juncus flavidus	0.2	10	GG				0.2							**<5**	No
Leiocarpa panaetioides	3	50	FG					3						**Hollows**	0
Linum marginale	0.1	5	FG					0.1						**Length logs (m)**	0
Lolium ridgidum	40	1000	EX								40				
Maireana aphylla	12	50	SG			12								**BAM Attributes 1x1 plot (%)**	
Maireana excavata	0.1	3	SG			0.1								**Litter (%)**	0
Medicago minima	2	80	EX								2				
Oxalis pes-caprae	0.8	30	EX								0.8				
Rhodanthe corymbiflora	0.4	20	FG					0.4							
Sclerolaena muricata var. muricata	0.4	2	SG			0.4									
Sida corrugata	0.1	5	FG					0.1							
Sporobolus caroli	1	50	GG				1								
Swainsona murrayana	0.6	10	FG					0.6							
Swainsona procumbens	0.2	10	FG					0.2							
Vittadinia gracilis	0.4	10	FG					0.4							
Walwhalleya proluta	15	80	GG				15								

Q219E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	421908
PCT 45 - Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion (Moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6111057
Date: 14/09/21			35	26	0	7	8	10	1	0	9	0		Orientation	152°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			109.9	**84.8**	0	0.7	79.4	4.5	0.2	0	**25.1**	0		**BAM Attributes 20x50m plot**	
Arctotheca calendula	1	50	EX								1			**Stem classes**	
Asperula conferta	1	40	FG					1						**80+**	0
Atriplex semibaccata	0.1	1	SG			0.1								**50-79**	0
Austrostipa aristiglumis	30	100	GG				30							**30-49**	0
Avena fatua	2	80	EX								2			**20-29**	No
Chloris truncata	0.8	30	GG				0.8							**10-19**	No
Crassula decumbens var. decumbens	0.2	30	FG					0.2						**5-9**	No
Daucus glochidiatus	0.4	20	FG					0.4						**<5**	No
Duma florulenta	0.1	1	SG			0.1								**Hollows**	0
Echium plantagineum	0.6	20	EX								0.6			**Length logs (m)**	0
Eleocharis plana	1	40	GG				1								
Eleocharis pusilla	2	90	GG				2							**BAM Attributes 1x1 plot (%)**	
Erodium botrys	0.2	20	EX								0.2			**Litter (%)**	0
Geranium homeanum	0.1	5	FG					0.1							
Haloragis odontocarpa	0.1	2	FG					0.1							
Hypochaeris glabra	0.8	40	EX								0.8				
Isolepis victoriensis	0.1	5	GG				0.1								
Juncus radula	0.5	20	GG				0.5								
Leiocarpa panaetioides	0.6	3	FG					0.6							
Lolium ridgidum	10	200	EX								10				
Maireana decalvans	0.1	1	SG			0.1									
Maireana excavata	0.1	2	SG			0.1									
Maireana humillima	0.1	5	SG			0.1									
Marrubium vulgare	0.1	2	EX								0.1				
Marsilea drummondii	0.2	20	EG						0.2						
Medicago polymorpha	10	100	EX								10				
Rhodanthe corymbiflora	0.6	40	FG					0.6							
Romulea minutiflora	0.4	40	EX								0.4				
Rumex dumosus	0.8	10	FG					0.8							
Rytidosperma duttonianum	10	50	GG				10								
Salsola australis	0.1	2	SG			0.1									
Sclerolaena muricata var. semiglabra	0.1	1	SG			0.1									
Triptilodiscus pygmaeus	0.2	10	FG					0.2							
Vittadinia gracilis	0.5	10	FG					0.5							
Walwhalleya proluta	35	200	GG				35								

Q220E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	455402
PCT 45 - Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6097619
Date: 15/09/2021			23	14	0	0	3	10	1	0	9	2		Orientation	93°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			106.7	**69.4**	0	0	63	6.3	0.1	0	**37.3**	0.5		**BAM Attributes 20x50m plot**	
Arctotheca calendula	0.6	30	EX								0.6			**Stem classes**	
Asperula conferta	3	100	FG					3						**80+**	0
Austrostipa aristiglumis	45	200	GG				45							**50-79**	0
Calocephalus sonderi	0.8	80	FG					0.8						**30-49**	0
Calotis anthemoides	0.3	50	FG					0.3						**20-29**	No
Carrichtera annua	0.1	5	HT									0.1		**10-19**	No
Crassula decumbens var. decumbens	0.1	10	FG					0.1						**5-9**	No
Erodium cicutarium	10	300	EX								10			**<5**	No
Erodium crinitum	0.2	10	FG					0.2						**Hollows**	0
Hordeum leporinum	2	80	EX								2			**Length logs (m)**	0
Hypochaeris glabra	4	100	EX								4				
Lobelia concolor	0.4	40	FG					0.4						**BAM Attributes 1x1 plot (%)**	
Lolium ridgidum	20	500	EX								20			**Litter (%)**	0
Marsilea drummondii	0.1	10	EG						0.1						
Romulea rosea	0.4	50	HT									0.4			
Rumex dumosus	0.2	10	FG					0.2							
Rytidosperma duttonianum	3	60	GG				3								
Senecio quadridentatus	0.8	20	FG					0.8							
Sida corrugata	0.1	10	FG					0.1							
Sonchus oleraceus	0.1	2	EX								0.1				
Trifolium glomeratum	0.1	5	EX								0.1				
Vittadinia gracilis	0.4	20	FG					0.4							
Walwhalleya proluta	15	100	GG				15								

Q221E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	455176
PCT 45 - Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6097696
Date: 15/09/2021			23	15	0	0	4	11	0	0	8	0		Orientation	82°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			117.8	74.9	0	0	60.8	14.1	0	0	42.9	0		BAM Attributes 20x50m plot	
Arctotheca calendula	4	100	EX								4			Stem classes	
Asperula conferta	0.4	20	FG					0.4						80+	0
Austrostipa aristiglumis	40	200	GG				40							50-79	0
Calocephalus sonderi	2	90	FG					2						30-49	0
Calotis anthemoides	8	200	FG					8						20-29	No
Centaurea melitensis	0.5	10	EX								0.5			10-19	No
Crassula decumbens var. decumbens	0.2	50	FG					0.2						5-9	No
Daucus glochidiatus	0.3	40	FG					0.3						<5	No
Eleocharis pallens	0.2	10	GG				0.2							Hollows	0
Erodium botrys	2	80	EX								2			Length logs (m)	0
Erodium cicutarium	6	200	EX								6				
Hordeum leporinum	15	3600	EX								15			BAM Attributes 1x1 plot (%)	
Hypochaeris glabra	5	300	EX								5			Litter (%)	0
Lobelia concolor	0.1	5	FG					0.1							
Lolium ridgidum	10	200	EX								10				
Oxalis perennans	0.2	20	FG					0.2							
Rhodanthe corymbiflora	1	80	FG					1							
Rytidosperma duttonianum	0.6	10	GG				0.6								
Senecio quadridentatus	1	40	FG					1							
Sida corrugata	0.1	5	FG					0.1							
Sonchus oleraceus	0.4	20	EX								0.4				
Vittadinia gracilis	0.8	30	FG					0.8							
Walwhalleya proluta	20	100	GG				20								

Q222E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	451558
PCT 249 - River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW (derived)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6098910
Date: 15/09/2021			24	16	1	2	3	10	0	0	8	1		Orientation	175°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			113.6	56	0.6	9	40.5	5.9	0	0	57.6	0.4		BAM Attributes 20x50m plot	
Austrostipa aristiglumis	35	200	GG				35							Stem classes	
Capsella bursa-pastoris	1	60	EX								1			**80+**	0
Cirsium vulgare	0.4	5	EX								0.4			**50-79**	0
Daucus glochidiatus	1	70	FG					1						**30-49**	0
Duma florulenta	3	30	SG			3								**20-29**	No
Dysphania glomulifera subsp. glomulifera	0.1	5	FG					0.1						**10-19**	No
Erodium crinitum	0.5	20	FG					0.5						**5-9**	No
Eucalyptus camaldulensis	0.6	1	TG		0.6									**<5**	Yes
Glycyrrhiza acanthocarpa	0.1	1	FG					0.1						Hollows	0
Haloragis odontocarpa	0.1	10	FG					0.1						Length logs (m)	0
Hordeum leporinum	25	500	EX								25				
Lachnagrostis filiformis	0.5	10	GG				0.5							BAM Attributes 1x1 plot (%)	
Lolium ridgidum	10	100	EX								10			**Litter (%)**	0.4
Marrubium vulgare	0.5	3	EX								0.5				
Medicago polymorpha	20	500	EX								20				
Oxalis pes-caprae	0.3	10	EX								0.3				
Plantago cunninghamii	0.8	30	FG					0.8							
Rhodanthe corymbiflora	1	80	FG					1							
Romulea rosea	0.4	40	HT									0.4			
Rumex dumosus	0.2	5	FG					0.2							
Sclerolaena muricata var. semiglabra	6	50	SG			6									
Senecio glossanthus	0.1	5	FG					0.1							
Senecio quadridentatus	2	60	FG					2							
Walwhalleya proluta	5	40	GG				5								

Q223E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	451387
PCT 249 - River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW (derived)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6098887
Date: 15/09/2021			22	11	1	2	2	6	0	0	11	2		Orientation	247°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			109.9	**30.2**	3	10	14	3.2	0	0	**79.7**	1		**BAM Attributes 20x50m plot**	
Arctotheca calendula	0.8	40	EX								0.8			**Stem classes**	
Austrostipa aristiglumis	10	90	GG				10							**80+**	0
Bromus diandrus	0.8	10	HT									0.8		**50-79**	0
Capsella bursa-pastoris	1	50	EX								1			**30-49**	0
Cirsium vulgare	0.1	1	EX								0.1			**20-29**	No
Daucus glochidiatus	0.1	3	FG					0.1						**10-19**	No
Duma florulenta	2	8	SG			2								**5-9**	Yes
Erodium crinitum	0.1	5	FG					0.1						**<5**	Yes
Eucalyptus camaldulensis	3	2	TG		3									**Hollows**	0
Fumaria bastardii	0.5	10	EX								0.5			**Length logs (m)**	0
Haloragis odontocarpa	0.4	20	FG					0.4							
Hordeum leporinum	15	500	EX								15			**BAM Attributes 1x1 plot (%)**	
Hypochaeris glabra	0.8	30	EX								0.8			**Litter (%)**	1.2
Lolium ridgidum	5	60	EX								5				
Marrubium vulgare	0.5	5	EX								0.5				
Medicago polymorpha	55	1000	EX								55				
Plantago cunninghamii	0.6	30	FG					0.6							
Rhodanthe corymbiflora	1	70	FG					1							
Romulea rosea	0.2	20	HT									0.2			
Sclerolaena muricata var. semiglabra	8	40	SG			8									
Senecio quadridentatus	1	30	FG					1							
Walwhalleya proluta	4	60	GG				4								

Q224E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	451021
PCT 249 - River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6098860
Date: 15/09/2021			24	16	1	3	4	7	1	0	8	0		Orientation	22°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			116.8	**73.9**	15	18.1	36.5	4.1	0.2	0	**42.9**	0		**BAM Attributes 20x50m plot**	
Arctotheca calendula	1	40	EX								1			**Stem classes**	
Austrostipa aristiglumis	35	200	GG				35							**80+**	1
Austrostipa scabra subsp. falcata	0.2	5	GG				0.2							**50-79**	1
Chenopodium desertorum subsp. virosum	0.1	1	SG			0.1								**30-49**	0
Cirsium vulgare	0.8	10	EX								0.8			**20-29**	No
Crassula sieberiana	0.1	10	FG					0.1						**10-19**	No
Duma florulenta	15	40	SG			15								**5-9**	No
Einadia nutans subsp. nutans	1	60	FG					1						**<5**	Yes
Erodium crinitum	1	50	FG					1						**Hollows**	3
Eucalyptus camaldulensis	15	3	TG		15									**Length logs (m)**	22
Hordeum leporinum	20	300	EX								20				
Lachnagrostis filiformis	0.5	10	GG				0.5							**BAM Attributes 1x1 plot (%)**	
Lobelia concolor	0.4	30	FG					0.4						**Litter (%)**	4
Lolium ridgidum	5	100	EX								5				
Marrubium vulgare	0.6	20	EX								0.6				
Marsilea drummondii	0.2	20	EG						0.2						
Medicago polymorpha	15	200	EX								15				
Oxalis perennans	0.4	20	FG					0.4							
Rhodanthe corymbiflora	1	60	FG					1							
Sclerolaena muricata var. semiglabra	3	30	SG			3									
Senecio quadridentatus	0.2	10	FG					0.2							
Solanum nigrum	0.1	1	EX								0.1				
Sonchus oleraceus	0.4	10	EX								0.4				
Walwhalleya proluta	0.8	10	GG				0.8								

Q225E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	451576
PCT 249 - River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6099663
Date: 15/09/2021			23	14	1	2	2	8	1	0	9	0		Orientation	136°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			149.8	**66.1**	26	15	10.2	14.8	0.1	0	**82.7**	0		**BAM Attributes 20x50m plot**	
Arctotheca calendula	0.8	20	EX								0.8			**Stem classes**	
Austrostipa aristiglumis	10	100	GG				10							**80+**	2
Capsella bursa-pastoris	0.5	30	EX								0.5			**50-79**	0
Dactylis glomerata	0.4	20	EX								0.4			**30-49**	0
Duma florulenta	10	30	SG			10								**20-29**	No
Dysphania glomulifera subsp. glomulifera	8	60	FG					8						**10-19**	Yes
Echium plantagineum	20	300	EX								20			**5-9**	Yes
Einadia nutans subsp. nutans	0.1	5	FG					0.1						**<5**	Yes
Eleocharis pallens	0.2	20	GG				0.2							**Hollows**	8
Erodium crinitum	1	40	FG					1						**Length logs (m)**	24
Eucalyptus camaldulensis	26	3	TG		26										
Haloragis odontocarpa	0.1	5	FG					0.1						**BAM Attributes 1x1 plot (%)**	
Hordeum leporinum	25	500	EX								25			**Litter (%)**	13
Lolium ridgidum	10	100	EX								10				
Malva parviflora	15	100	EX								15				
Marsilea drummondii	0.1	10	EG						0.1						
Medicago polymorpha	10	200	EX								10				
Oxalis perennans	0.1	3	FG					0.1							
Plantago cunninghamii	0.1	5	FG					0.1							
Rhodanthe corymbiflora	0.4	30	FG					0.4							
Sclerolaena muricata var. semiglabra	6	40	SG			5									
Sisymbrium orientale	1	30	EX								1				
Urtica incisa	5	100	FG					5							

Q226E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	446504
PCT 75 – Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6100364
Date: 16/09/2021			43	38	2	4	7	22	1	2	6	0		Orientation	94°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			112.2	107.7	28	5.6	49.7	23.4	0.4	0.6	9.5	0		BAM Attributes 20x50m plot	
Arctotheca calendula	0.5	10	EX								0.5			Stem classes	
Aristida ramosa	4	80	GG				4							80+	2
Arthropodium minus	0.1	1	FG					0.1						50-79	1
Atriplex semibaccata	0.4	5	SG			0.4								30-49	1
Austrostipa scabra subsp. falcata	35	500	GG				35							20-29	Yes
Brachyscome lineariloba	0.1	5	FG					0.1						10-19	Yes
Brassica tournefortii	1	50	EX								1			5-9	Yes
Calandrinia eremaea	0.1	1	FG					0.1						<5	Yes
Callitris glaucophylla	10	20	TG		10									Hollows	3
Cheilanthes sieberi	0.4	20	EG						0.4					Length logs (m)	43
Chenopodium desertorum subsp. virosum	0.1	5	SG			0.1									
Chrysocephalum apiculatum	0.7	20	FG					0.7						BAM Attributes 1x1 plot (%)	
Convolvulus angustissimus	0.5	20	OG							0.5				Litter (%)	13
Crassula sieberiana	0.3	40	FG					0.3							
Daucus glochidiatus	0.6	50	FG					0.6							
Dianella revoluta var. revoluta	0.1	1	FG					0.1							
Einadia nutans subsp. nutans	5	80	FG					5							
Enteropogon acicularis	3	80	GG				3								
Erodium crinitum	0.1	5	FG					0.1							
Eucalyptus melliodora	18	2	TG		18										
Glycine tabacina	0.1	5	OG			5				0.1					
Goodenia pinnatifida	5	200	FG					5							
Goodenia pusilliflora	0.4	20	FG					0.4							
Hyalosperma semisterile	0.4	20	FG					0.4							
Hydrocotyle laxiflora	3	100	FG					3							
Hypochaeris radicata	2	100	EX								2				
Lolium ridgidum	4	100	EX								4				
Lomandra filiformis subsp. coriacea	0.1	1	GG				0.1								
Lomandra multiflora	0.6	40	GG				0.6								
Maireana enchylaenoides	0.4	10	FG					0.4							
Maireana humillima	0.8	20	FG					0.8							
Maireana microphylla	0.1	1	SG			0.1									
Medicago minima	1	50	EX								1				
Oxalis perennans	0.5	20	FG					0.5							
Poranthera microphylla	0.8	10	FG					0.8							
Ptilotus exaltatus	0.2	10	FG					0.2							
Rytidosperma fulvum	3	60	GG				3								
Rytidosperma setaceum	4	80	GG				4								
Sida corrugata	3	90	FG					3							
Stackhousia monogyna	0.8	50	FG					0.8							
Triptilodiscus pygmaeus	0.6	40	FG					0.6							
Vittadinia cuneata var. cuneata	0.4	10	FG					0.4							
Vulpia myuros	1	60	EX								1				

Q227E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	468195
PCT 80 – Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6099366
Date: 31/10/2021			21	15	3	1	4	7	0	0	6	0		Orientation	71°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			53.1	**51.3**	33	0.2	15.3	2.8	0	0	**1.8**	0		**BAM Attributes 20x50m plot**	
Arthropodium minus	0.2	20	FG					0.2						**Stem classes**	
Austrostipa nodosa	10	200	GG				10							**80+**	1
Callitris glaucophylla	5	8	TG		5									**50-79**	2
Daucus glochidiatus	0.1	1	FG					0.1						**30-49**	Yes
Einadia hastata	0.2	10	FG					0.2						**20-29**	Yes
Einadia nutans subsp. nutans	2	50	FG					2						**10-19**	Yes
Erodium cicutarium	0.1	1	EX								0.1			**5-9**	Yes
Eucalyptus melliodora	3	2	TG		3									**<5**	Yes
Eucalyptus microcarpa	25	10	TG		25									**Hollows**	3
Hibbertia obtusifolia	0.2	20	SG			0.2								**Length logs (m)**	36
Hordeum leporinum	0.1	1	EX								0.1				
Lolium ridgidum	1	40	EX								1			**BAM Attributes 1x1 plot (%)**	
Lomandra multiflora	0.2	20	GG				0.2							**Litter (%)**	74
Medicago minima	0.3	50	EX								0.3				
Oxalis corniculata	0.1	10	EX								0.1				
Rytidosperma caespitosum	0.1	5	GG				0.1								
Rytidosperma setaceum	5	100	GG				5								
Schismus barbatus	0.2	50	EX								0.2				
Sida corrugata	0.1	2	FG					0.1							
Tricoryne elatior	0.1	5	FG					0.1							
Vittadinia cuneata var. cuneata	0.1	5	FG					0.1							

Q228E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	476393
PCT 80 – Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion (derived)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6101006
Date: 31/10/2021			25	15	0	1	7	7	0	0	10	2		Orientation	21°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			82.2	35.9	0	0.1	34.7	1.1	0	0	46.3	0.2		BAM Attributes 20x50m plot	
Austrostipa aristiglumis	5	100	GG				5							Stem classes	
Austrostipa scabra subsp. falcata	25	300	GG				25							**80+**	0
Avena fatua	0.2	10	EX								0.2			**50-79**	0
Bromus diandrus	0.1	10	HT									0.1		**30-49**	0
Chloris truncata	0.1	20	GG				0.1							**20-29**	No
Crassula sieberiana	0.1	5	FG					0.1						**10-19**	No
Dissocarpus paradoxus	0.2	10	FG					0.2						**5-9**	No
Enteropogon acicularis	0.2	20	GG				0.2							**<5**	No
Euphorbia drummondii	0.2	30	FG					0.2						Hollows	0
Gamochaeta calviceps	0.1	1	EX								0.1			Length logs (m)	0
Geranium homeanum	0.1	10	FG					0.1							
Holcus lanatus	0.2	20	EX								0.2			BAM Attributes 1x1 plot (%)	
Hordeum leporinum	15	200	EX								15			**Litter (%)**	34
Lachnagrostis filiformis	0.2	10	GG				0.2								
Lolium perenne	25	300	EX								25				
Maireana microphylla	0.1	1	SG			0.1									
Medicago minima	5	60	EX								5				
Medicago sativa	0.1	20	EX								0.1				
Romulea rosea	0.1	10	HT									0.1			
Rytidosperma caespitosum	0.2	20	GG				0.2								
Rytidosperma setaceum	4	100	GG				4								
Sida corrugata	0.2	20	FG					0.2							
Sida sp.	0.1	5	FG					0.1							
Trifolium pratense	0.5	20	EX								0.5				
Triptilodiscus pygmaeus	0.2	20	FG					0.2							

Q229E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	54	Easting	731371
PCT 22 – Semi-arid shrubby Buloke - Slender Cypress Pine woodland, far south-western NSW (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6148674
Date: 25/10/2021			32	27	3	11	5	7	0	1	5	0		Orientation	0°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			89.8	**86**	12	29.3	42.1	2.5	0	0.1	**3.8**	0		**BAM Attributes 20x50m plot**	
Acacia oswaldii	2	5	TG		2									**Stem classes**	
Actinobole uliginosum	0.1	1	FG					0.1						**80+**	0
Allocasuarina luehmannii	8	2	TG		8									**50-79**	1
Aristida behriana	0.5	10	GG				0.5							**30-49**	1
Austrostipa nitida	20	200	GG				20							**20-29**	Yes
Convolvulus clementii	0.1	1	OG							0.1				**10-19**	No
Dissocarpus paradoxus	2	50	SG			2								**5-9**	No
Dodonaea viscosa subsp. angustissima	3	20	SG			3								**<5**	No
Echium plantagineum	0.4	10	EX								0.4			**Hollows**	0
Enchylaena tomentosa	3	30	SG			3								**Length logs (m)**	5
Enneapogon avenaceus	1	40	GG				1								
Enteropogon acicularis	20	300	GG				20							**BAM Attributes 1x1 plot (%)**	
Eucalyptus socialis	2	1	TG		2									**Litter (%)**	20
Geijera parviflora	0.1	1	SG			0.1									
Goodenia pinnatifida	0.6	40	FG					0.6							
Hypochaeris glabra	0.4	20	EX								0.4				
Limonium lobatum	0.6	30	EX								0.6				
Maireana brevifolia	0.8	10	SG			0.8									
Maireana rohrlachii	0.1	1	SG			0.1									
Pittosporum angustifolium	0.5	4	SG			0.5									
Ptilotus spathulatus	0.4	8	FG					0.4							
Rhagodia spinescens	0.6	5	SG			0.6									
Salsola australis	0.2	3	SG			0.2									
Salvia verbenaca	0.4	10	EX								0.4				
Sclerolaena diacantha	4	80	SG			4									
Sclerolaena obliquicuspis	15	200	SG			15									
Sida corrugata	0.6	20	FG					0.6							
Vittadinia cervicularis var. cervicularis	0.5	20	FG					0.5							
Vittadinia gracilis	0.2	5	FG					0.2							
Vulpia myuros	2	90	EX								2				
Wahlenbergia luteola	0.1	5	FG					0.1							
Walwhalleya proluta	0.6	20	GG				0.6								

Q230E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	476365
PCT 80 – Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6100895
Date: 31/10/21			40	29	2	7	10	9	0	1	11	2		Orientation	115˚
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			163.5	**131.6**	45.2	18.9	65.9	1.4	0	0.2	**31.9**	1.1		**BAM Attributes 20x50m plot**	
Acacia hakeoides	5	2	SG			5								**Stem classes**	
Anthosachne scabra	15	500	GG				15							**80+**	2
Arthropodium fimbriatum	0.1	1	FG					0.1						**50-79**	2
Asperula conferta	0.1	2	FG					0.1						**30-49**	1
Atriplex semibaccata	3	100	SG			3								**20-29**	Yes
Austrostipa aristiglumis	20	1000	GG				20							**10-19**	Yes
Austrostipa elegantissima	0.5	50	GG				0.5							**5-9**	No
Brachychiton populneus subsp. populneus	0.2	2	TG		0.2									**<5**	No
Brassica rapa	0.1	1	EX								0.1			**Hollows**	1
Bromus diandrus	1	50	HT									1		**Length logs (m)**	3
Carex appressa	0.1	1	GG				0.1								
Chenopodium desertorum subsp. microphyllum	0.1	10	SG			0.1								**BAM Attributes 1x1 plot (%)**	
Cirsium vulgare	0.2	5	EX								0.2			**Litter (%)**	32
Convolvulus graminetinus	0.2	3	OG							0.2					
Dillwynia sericea	10	20	SG			10									
Dodonaea viscosa subsp. cuneata	0.5	1	SG			0.5									
Einadia nutans	0.5	20	FG					0.5							
Enteropogon acicularis	5	20	GG				5								
Eucalyptus microcarpa	45	6	TG		45										
Goodenia pinnatifida	0.1	5	FG					0.1							
Hordeum leporinum	0.1	10	EX								0.1				
Lepidium africanum	0.1	1	EX								0.1				
Lolium perenne	15	1000	EX								15				
Lomandra filiformis subsp. coriacea	0.1	5	GG				0.1								
Maireana excavata	0.1	10	SG			0.1									
Maireana humillima	0.1	10	FG					0.1							
Marrubium vulgare	0.1	10	EX								0.1				
Oxalis pes-caprae	0.1	5	EX								0.1				
Panicum decompositum	0.1	10	GG				0.1								
Paspalidium constrictum	0.1	1	GG				0.1								
Romulea rosea	0.1	20	HT									0.1			
Rytidosperma caespitosum	20	800	GG				20								
Rytidosperma setaceum	5	500	GG				5								
Salsola australis	0.2	20	SG			0.2									
Sida trichopoda	0.2	30	FG					0.2							
Sonchus oleraceus	0.1	10	EX								0.1				
Vittadinia cuneata var. cuneata	0.1	5	FG					0.1							
Vulpia myuros	15	300	EX								15				
Wahlenbergia gracilis	0.1	10	FG					0.1							
Wahlenbergia luteola	0.1	20	FG					0.1							

Q231E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	491877
PCT 76 - Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6102971
Date: 30/11/21			33	22	1	6	7	7	0	1	11	1		Orientation	7°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		Plot size	20X20X50
			102.6	85.2	20	2.4	60.6	2.1	0	0.1	17.4	0.1		BAM Attributes 20x50m plot	
Acacia hakeoides	0.2	2	SG			0.2								Stem classes	
Arthropodium minus	0.1	1	FG					0.1						80+	0
Asperula conferta	0.2	30	FG					0.2						50-79	1
Austrostipa aristiglumis	30	300	GG				30							30-49	1
Austrostipa scabra subsp. falcata	20	300	GG				20							20-29	Yes
Avena fatua	0.5	50	EX								0.5			10-19	Yes
Bromus hordeaceus	5	100	EX								5			5-9	No
Chenopodium desertorum subsp. microphyllum	0.5	50	SG			0.5								<5	Yes
Convolvulus angustissimus	0.1	5	OG							0.1				Hollows	1
Crassula sieberiana	0.1	20	FG					0.1						Length logs (m)	16
Dodonaea viscosa subsp. angustissima	0.1	1	SG			0.1									
Echium plantagineum	0.1	10	EX								0.1			BAM Attributes 1x1 plot (%)	
Einadia nutans subsp. nutans	0.8	50	FG					0.8						Litter (%)	21
Enteropogon acicularis	0.2	20	GG				0.2								
Eremophila debilis	0.1	2	SG			0.1									
Eucalyptus microcarpa	20	5	TG		20										
Gamochaeta calviceps	0.1	1	EX								0.1				
Hordeum leporinum	0.1	10	EX								0.1				
Juncus flavidus	0.1	1	GG				0.1								
Lepidium pseudohyssopifolium	0.3	20	FG					0.3							
Lolium perenne	10	200	EX								10				
Lolium ridgidum	1	20	EX								1				
Lomandra multiflora	0.1	5	GG				0.1								
Medicago minima	0.2	10	EX								0.2				
Medicago polymorpha	0.2	20	EX								0.2				
Romulea rosea	0.1	20	HT									0.1			
Rytidosperma caespitosum	0.2	10	GG				0.2								
Rytidosperma setaceum	10	150	GG				10								
Sclerolaena muricata var. muricata	1	50	SG			1									
Sclerolaena muricata var. villosa	0.5	20	SG			0.5									
Sida trichopoda	0.1	10	FG					0.1							
Sonchus oleraceus	0.1	1	EX								0.1				
Vittadinia cuneata var. cuneata	0.5	60	FG					0.5							

Q232E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	513624
PCT 319 - Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6105157
Date: 31/10/2021			28	18	1	0	8	8	1	0	10	1		Orientation	24°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			87.8	**60.1**	15	0	43.7	1.2	0.2	0	**27.7**	0.1		**BAM Attributes 20x50m plot**	
Arctotheca calendula	0.1	5	EX								0.1			**Stem classes**	
Arthropodium fimbriatum	0.1	5	FG					0.1						**80+**	0
Austrostipa nodosa	0.2	20	GG				0.2							**50-79**	1
Austrostipa scabra subsp. falcata	40	300	GG				40							**30-49**	3
Bromus hordeaceus	0.1	5	EX								0.1			**20-29**	Yes
Calotis cuneifolia	0.1	20	FG					0.1						**10-19**	No
Capsella bursa-pastoris	0.1	5	EX								0.1			**5-9**	No
Cheilanthes sieberi subsp. sieberi	0.2	20	EG						0.2					**<5**	No
Chloris truncata	0.1	5	GG				0.1							**Hollows**	2
Cirsium vulgare	0.2	20	EX								0.2			**Length logs (m)**	21
Crassula sieberiana	0.2	50	FG					0.2							
Eucalyptus blakeyi x dealbata	15	5	TG		15									**BAM Attributes 1x1 plot (%)**	
Geranium homeanum	0.4	50	FG					0.4						**Litter (%)**	4
Hordeum leporinum	20	200	EX								20				
Hypericum perforatum	0.1	5	HT									0.1			
Hypochaeris radicata	1	60	EX								1				
Isotoma axillaris	0.1	20	FG					0.1							
Lolium perenne	1	50	EX								1				
Medicago polymorpha	0.1	5	EX								0.1				
Microlaena stipoides	0.1	10	GG				0.1								
Oxalis perennans	0.1	1	FG					0.1							
Panicum effusum	2	60	GG				2								
Paspalidium constrictum	1	560	GG				1								
Rytidosperma setaceum	0.1	5	GG				0.1								
Sporobolus caroli	0.2	15	GG				0.2								
Trifolium glomeratum	5	150	EX								5				
Urtica incisa	0.1	3	FG					0.1							
Wahlenbergia gracilis	0.1	5	FG					0.1							

Q233E			**Covers**	**Native**	Trees	Shrubs	Grass	Forb	Fern	Other	**Exotic**	HighThreat	55	**Easting**	513537
PCT 80 – Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion (poor)			**# spp**	**Count**	Count	Count	Count	Count	Count	Count	**Count**	Count		**Northing**	6105187
Date: 31/10/2021			**7**	**3**	2	0	0	1	0	0	**4**	0		**Orientation**	320°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			102.2	**25.2**	25	0	0	0.2	0	0	**77**	0		**BAM Attributes 20x50m plot**	
Callitris glaucophylla	5	2	TG		5									**Stem classes**	
Eucalyptus microcarpa	20	2	TG		20									**80+**	2
Hordeum glaucum	30	150	EX								30			**50-79**	0
Hordeum leporinum	30	150	EX								30			**30-49**	0
Malva parviflora	2	50	EX								2			**20-29**	No
Medicago sativa	15	70	EX								15			**10-19**	No
Urtica incisa	0.2	10	FG					0.2						**5-9**	No
														<5	No
														Hollows	2
														Length logs (m)	1
														BAM Attributes 1x1 plot (%)	
														Litter (%)	43

Q234E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	533396
PCT 5 - River Red Gum herbaceous-grassy very tall open forest wetland on inner flodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion (poor)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	3895449
Date: 31/10/2021			18	6	1	0	3	2	0	0	12	1		Orientation	330°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			112.5	**25.6**	25	0	0.4	0.2	0	0	**86.9**	40		**BAM Attributes 20x50m plot**	
Arctotheca calendula	0.1	10	EX								0.1			**Stem classes**	
Arthropodium minus	0.1	30	FG					0.1						**80+**	2
Bromus catharticus	0.1	5	EX								0.1			**50-79**	2
Bromus diandrus	40	300	HT									40		**30-49**	1
Bromus hordeaceus	0.2	20	EX								0.2			**20-29**	No
Carex appressa	0.1	2	GG				0.1							**10-19**	No
Cenchrus clandestinus	15	150	EX								15			**5-9**	No
Cirsium vulgare	0.1	1	EX								0.1			**<5**	No
Cynodon dactylon	0.2	25	GG				0.2							**Hollows**	3
Eucalyptus camaldulensis	25	3	TG		25									**Length logs (m)**	8
Hordeum leporinum	20	200	EX								20				
Lolium perenne	10	200	EX								10			**BAM Attributes 1x1 plot (%)**	
Malva parviflora	0.2	15	EX								0.2			**Litter (%)**	9
Medicago polymorpha	0.1	15	EX								0.1				
Microlaena stipoides	0.1	5	GG				0.1								
Rumex brownii	0.1	10	FG					0.1							
Taraxacum officinale	0.1	5	EX								0.1				
Trifolium glomeratum	1	50	EX								1				

Q235E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	523347
PCT5 - River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion (poor)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6103251
Date: 31/10/2021			18	4	2	0	2	0	0	0	14	3		Orientation	30°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			81.4	**39**	35	0	4	0	0	0	**42.4**	10.2		**BAM Attributes 20x50m plot**	
Arctotheca calendula	0.1	1	EX								0.1			**Stem classes**	
Avena fatua	30	1000	EX								30			**80+**	4
Bromus diandrus	10	1000	HT									10		**50-79**	5
Centaurea melitensis	0.1	1	EX								0.1			**30-49**	0
Cynodon dactylon	3	10	GG				3							**20-29**	No
Cyperus eragrostis	0.1	2	HT									0.1		**10-19**	No
Eucalyptus camaldulensis	10	1	TG		10									**5-9**	Yes
Eucalyptus microcarpa	25	2	TG		25									**<5**	No
Hordeum leporinum	0.2	100	EX								0.2			**Hollows**	5
Lepidium africanum	0.1	2	EX								0.1			**Length logs (m)**	10
Malva parviflora	0.2	20	EX								0.2				
Oxalis pes-caprae	0.1	1	EX								0.1			**BAM Attributes 1x1 plot (%)**	
Rumex crispus	0.1	10	HT									0.1		**Litter (%)**	16
Rytidosperma caespitosum	1	10	GG				1								
Silybum marianum	0.1	1	EX								0.1				
Sonchus oleraceus	1	30	EX								1				
Spergularia rubra	0.1	10	EX								0.1				
Trifolium glomeratum	0.2	30	EX								0.2				

Q239E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	471759
PCT 74 - Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6099121
Date:			29	14	2	3	5	3	0	1	15	2		Orientation	105
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		Plot size	20x20
			115.7	93.5	30	0.6	62.1	0.7	0	0.1	22.2	5.1		BAM Attributes 20x50m plot	
Atriplex semibaccata	0.3	30	SG			0.3								Stem classes	
Atriplex sp.	0.2	10	SG			0.2								80+	1
Austrostipa bigeniculata	0.4	20	GG				0.4							50-79	3
Austrostipa scabra	60	350	GG				60							30-49	0
Avena fatua	0.4	30	EX								0.4			20-29	Yes
Bromus diandrus	5	70	HT									5		10-19	No
Chloris truncata	0.2	20	GG				0.2							5-9	Yes
Cirsium vulgare	0.1	1	EX								0.1			<5	Yes
Convolvulus angustissimus	0.1	5	OG							0.1				Hollows	1
Echium plantagineum	0.1	1	EX								0.1			Length logs (m)	12
Einadia nutans	0.4	20	FG					0.4							
Enteropogon acicularis	0.5	50	GG				0.5							BAM Attributes 1x1 plot (%)	
Eucalyptus camaldulensis	20	3	TG		20									Litter (%)	63
Eucalyptus melliodora	10	2	TG		10										
Hordeum sp.	5	80	EX								5				
Lactuca serriola f. serriola	0.1	10	EX								0.1				
Lolium perenne	10	100	EX								10				
Malva parviflora	0.1	10	EX								0.1				
Marrubium vulgare	0.1	5	EX								0.1				
Paspalum dilatatum	0.1	2	HT									0.1			
Portulaca oleracea	0.1	10	EX								0.1				
Rumex acetosella	0.1	1	EX								0.1				
Rytidosperma setaceum	1	50	GG				1								
Salsola australis	0.1	3	SG			0.1									
Sida corrugata	0.2	30	FG					0.2							
Sonchus oleraceus	0.2	20	EX								0.2				
Trifolium repens	0.3	40	EX								0.3				
Trifolium angustifolium	0.5	50	EX								0.5				
Vittadinia cuneata var. cuneata	0.1	10	FG					0.1							

Q240E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	514123
PCT 319 - Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion (poor)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6105238
Date: 31/10/2021			13	5	1	0	1	3	0	0	8	0		Orientation	337°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			116.7	**34.3**	30	0	4	0.3	0	0	**82.4**	0		**BAM Attributes 20x50m plot**	
Arctotheca calendula	2	100	EX								2			**Stem classes**	
Austrostipa scabra subsp. falcata	4	100	GG				4							**80+**	0
Bromus hordeaceus	5	500	EX								5			**50-79**	0
Eucalyptus dealbata	30	6	TG		30									**30-49**	3
Hordeum leporinum	60	1000	EX								60			**20-29**	Yes
Lepidium africanum	0.1	20	EX								0.1			**10-19**	No
Lolium perenne	2	100	EX								2			**5-9**	No
Rumex brownii	0.1	1	FG					0.1						**<5**	No
Sonchus oleraceus	0.3	50	EX								0.3			**Hollows**	1
Trifolium arvense	3	500	EX								3			**Length logs (m)**	10
Urtica incisa	0.1	10	FG					0.1							
Vulpia myuros	10	500	EX								10			**BAM Attributes 1x1 plot (%)**	
Wahlenbergia luteola	0.1	15	FG					0.1						**Litter (%)**	12

Q241E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	530067
PCT 277 - Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion (derived)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6103792
Date: 01/11/2021			21	6	0	0	3	2	1	0	15	1		Orientation	150°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		Plot size	20 X 20 X 50
			122.6	41	0	0	40.7	0.2	0.1	0	81.6	0.1		BAM Attributes 20x50m plot	
Aristida jerichoensis var. jerichoensis	40	500	GG				40							Stem classes	
Austrostipa scabra subsp. falcata	0.5	50	GG				0.5							80+	0
Avena fatua	0.1	100	EX								0.1			50-79	0
Briza minor	2	500	EX								2			30-49	0
Bromus hordeaceus	10	500	EX								10			20-29	No
Cheilanthes sieberi	0.1	2	EG						0.1					10-19	No
Hydrocotyle laxiflora	0.1	5	FG					0.1						5-9	No
Hypericum perforatum	0.1	1	HT									0.1		<5	No
Hypochaeris glabra	0.1	10	EX								0.1			Hollows	0
Orobanche minor	0.1	20	EX								0.1			Length logs (m)	5
Oxalis pes-caprae	0.1	10	EX								0.1				
Prasophyllum patens	0.1	2	FG					0.1						BAM Attributes 1x1 plot (%)	
Rumex acetosella	5	800	EX								5			Litter (%)	10
Rytidosperma monticola	0.2	20	GG				0.2								
Spergularia rubra	2	500	EX								2				
Taraxacum officinale	0.1	50	EX								0.1				
Tolpis barbata	5	1000	EX								5				
Trifolium arvense	30	1000	EX								30				
Trifolium campestre	15	1000	EX								15				
Trifolium glomeratum	2	200	EX								2				
Vulpia bromoides	10	1000	EX								10				

Q242E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	530121
PCT 277 - Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6103800
Date: 01/11/2021			38	18	3	2	5	7	1	0	20	0		Orientation	170°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			124.5	**82.6**	31.1	14	28.1	8.4	1	0	**41.9**	0		**BAM Attributes 20x50m plot**	
Acacia dealbata subsp. dealbata	6	1	TG		6									**Stem classes**	
Aira elegantissima	6	500	EX								6			**80+**	1
Arctotheca calendula	0.3	20	EX								0.3			**50-79**	2
Aristida jerichoensis var. jerichoensis	1	100	GG				1							**30-49**	2
Arthropodium fimbriatum	0.1	2	FG					0.1						**20-29**	Yes
Austrostipa densiflora	0.3	10	GG				0.3							**10-19**	Yes
Austrostipa scabra subsp. scabra	1	100	GG				1							**5-9**	Yes
Bromus hordeaceus	1	100	EX								1			**<5**	Yes
Bromus rubens	2	200	EX								2			**Hollows**	1
Bursaria spinosa subsp. spinosa	7	5	SG			7								**Length logs (m)**	8
Callitris glaucophylla	0.1	1	TG		0.1										
Cheilanthes sieberi	1	500	EG						1					**BAM Attributes 1x1 plot (%)**	
Cirsium vulgare	0.1	1	EX								0.1			**Litter (%)**	20
Echium plantagineum	0.1	20	EX								0.1				
Eucalyptus blakelyi	25	7	TG		25										
Galium aparine	0.5	10	EX								0.5				
Gonocarpus elatus	3	300	FG					3							
Hydrocotyle laxiflora	4	100	FG					4							
Hypericum gramineum	0.5	100	FG					0.5							
Hypochaeris radicata	0.4	30	EX								0.4				
Lolium perenne	1	200	EX								1				
Melichrus urceolatus	7	10	SG			7									
Orobanche minor	0.2	20	EX								0.2				
Oxalis pes-caprae	0.1	20	EX								0.1				
Petrorhagia nanteuilii	0.1	20	EX								0.1				
Poaceae sp.	25	1000	GG				25								
Prasophyllum patens	0.1	10	FG					0.1							
Rumex acetosella	4	500	EX								4				
Rumex brownii	0.3	20	FG					0.3							
Rytidosperma monticola	0.8	50	GG				0.8								
Solanum nigrum	0.1	2	EX								0.1				
Sonchus oleraceus	0.1	10	EX								0.1				
Teucrium racemosum	0.4	50	FG					0.4							
Tolpis barbata	5	1000	EX								5				
Trifolium arvense	5	1000	EX								5				
Trifolium campestre	0.8	100	EX								0.8				
Trifolium angustifolium	0.1	10	EX								0.1				
Vulpia bromoides	15	1000	EX								15				

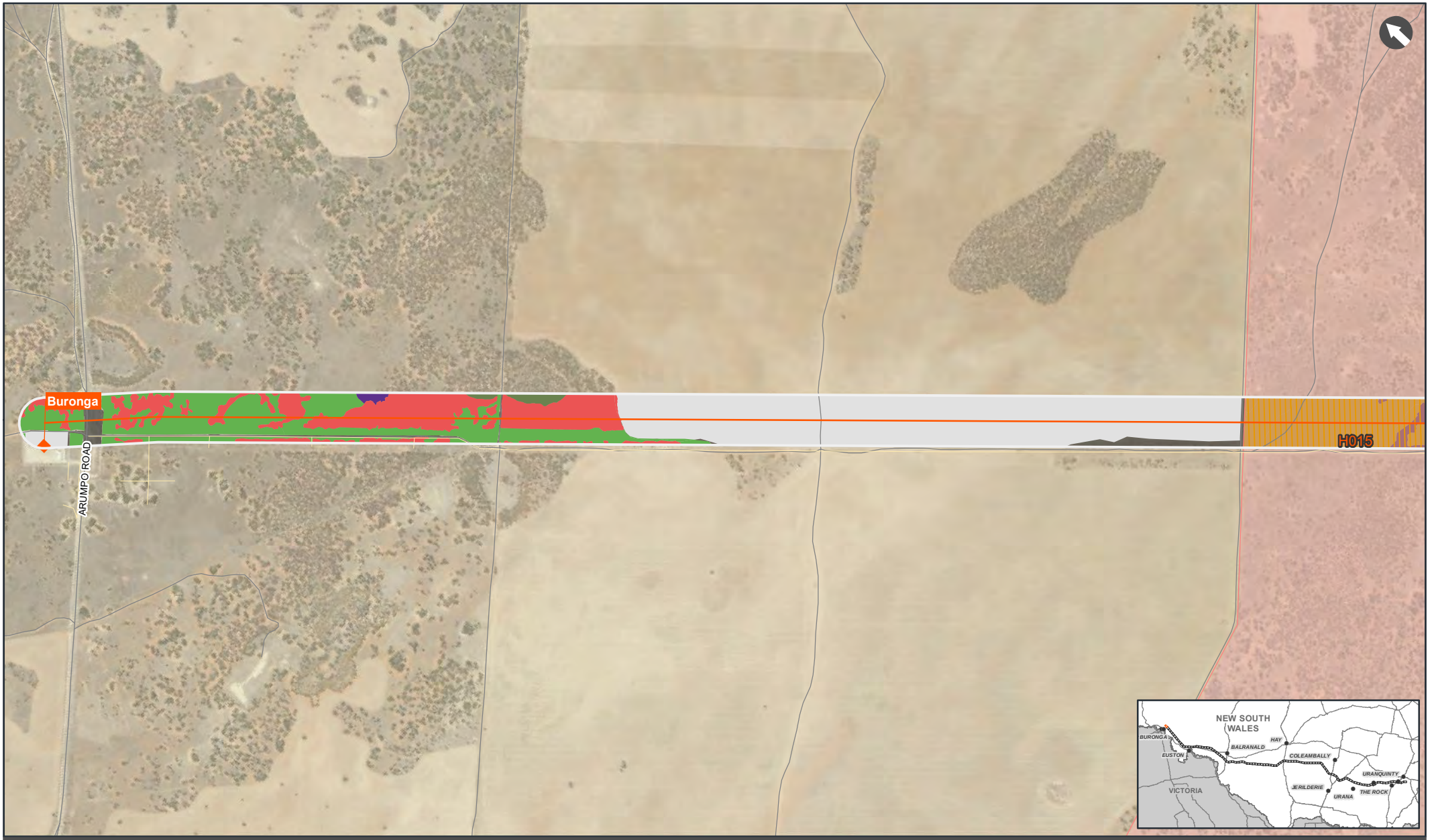
Q243E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	529935
PCT 319 - Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion (derived)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6103680
Date: 01/11/2021			27	11	0	1	3	6	1	0	16	1		Orientation	235°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			120.5	**57.9**	0	1	56	0.6	0.3	0	**62.6**	0.1		**BAM Attributes 20x50m plot**	
Aira elegantissima	20	1000	EX								20			**Stem classes**	
Aristida jerichoensis var. jerichoensis	50	1000	GG				50							**80+**	0
Arthropodium fimbriatum	0.1	2	FG					0.1						**50-79**	0
Austrostipa scabra subsp. scabra	1	100	GG				1							**30-49**	0
Avena fatua	0.2	50	EX								0.2			**20-29**	No
Briza maxima	0.1	20	EX								0.1			**10-19**	No
Bromus hordeaceus	5	500	EX								5			**5-9**	No
Cheilanthes sieberi subsp. sieberi	0.3	50	EG						0.3					**<5**	No
Echium plantagineum	0.5	20	EX								0.5			**Hollows**	0
Gonocarpus elatus	0.1	1	FG					0.1						**Length logs (m)**	0
Hibbertia obtusifolia	1	10	SG			1									
Hydrocotyle laxiflora	0.1	10	FG					0.1						**BAM Attributes 1x1 plot (%)**	
Hypericum perforatum	0.1	10	HT									0.1		**Litter (%)**	6
Hypochaeris radicata	0.1	5	EX								0.1				
Lolium sp.	0.1	2	EX								0.1				
Oxalis corniculata	0.1	2	EX								0.1				
Petrorhagia nanteuilii	0.5	20	EX								0.5				
Prasophyllum patens	0.1	5	FG					0.1							
Rumex acetosella	0.5	100	EX								0.5				
Rytidosperma monticola	5	100	GG				5								
Spergularia rubra	0.1	1	EX								0.1				
Taraxacum officinale	0.3	20	EX								0.3				
Tolpis barbata	5	800	EX								5				
Trifolium arvense	25	100	EX								25				
Triptilodiscus pygmaeus	0.1	1	FG					0.1							
Vulpia bromoides	5	300	EX								5				
Wahlenbergia fluminalis	0.1	1	FG					0.1							

Q244E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	529794
PCT 319 - Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion (derived)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6103575
Date: 01/11/2021			23	8	0	1	3	3	1	0	15	0		Orientation	170°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			59.8	**20.1**	0	2	16.8	0.3	1	0	**39.7**	0		**BAM Attributes 20x50m plot**	
Aira elegantissima	5	1000	EX								5			**Stem classes**	
Alternanthera nana	0.1	20	FG					0.1						**80+**	0
Arctotheca calendula	0.1	10	EX								0.1			**50-79**	0
Aristida jerichoensis var. jerichoensis	10	500	GG				10							**30-49**	0
Austrostipa scabra subsp. scabra	6	100	GG				6							**20-29**	No
Avena barbata	0.1	10	EX								0.1			**10-19**	No
Bromus hordeaceus	1	100	EX								1			**5-9**	No
Bromus rubens	0.1	20	EX								0.1			**<5**	No
Cheilanthes sieberi subsp. sieberi	1	100	EG						1					**Hollows**	0
Crassula colorata var. acuminata	0.1	20	FG					0.1						**Length logs (m)**	0
Echium plantagineum	0.8	20	EX								0.8				
Hibbertia obtusifolia	2	20	SG			2								**BAM Attributes 1x1 plot (%)**	
Hypochaeris radicata	0.2	20	EX								0.2			**Litter (%)**	6
Petrorhagia nanteuilii	2	1000	EX								2				
Rumex acetosella	10	500	EX								10				
Rytidosperma monticola	0.8	50	GG				0.8								
Sonchus oleraceus	0.1	10	EX								0.1				
Taraxacum officinale	0.2	20	EX								0.2				
Teucrium racemosum	0.1	10	FG					0.1							
Tolpis barbata	1	50	EX								1				
Trifolium arvense	15	1000	EX								15				
Trifolium glomeratum	0.1	10	EX								0.1				
Vulpia myuros	4	500	EX								4				

Q245E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	528744
PCT 110 - Western Grey Box - Cypress Pine shrubby woodland on stony footslopes in the NSW South Western Slopes Bioregion and Riverina bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6102508
Date: 01/11/2021			30	13	1	1	3	7	1	0	17	2		Orientation	291°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			46.3	**17.2**	4	2	7.5	3.6	0.1	0	**29.1**	2.1		**BAM Attributes 20x50m plot**	
Aira elegantissima	5	50	EX								5			**Stem classes**	
Arctotheca calendula	0.1	2	EX								0.1			**80+**	1
Arthropodium fimbriatum	0.1	2	FG					0.1						**50-79**	0
Arthropodium minus	0.1	10	FG					0.1						**30-49**	2
Briza minor	0.1	5	EX								0.1			**20-29**	Yes
Bromus diandrus	2	50	HT									2		**10-19**	Yes
Bromus hordeaceus	0.2	10	EX								0.2			**5-9**	Yes
Carduus tenuiflorus	0.1	5	EX								0.1			**<5**	Yes
Cheilanthes sieberi subsp. sieberi	0.1	10	EG						0.1					**Hollows**	0
Crassula colorata var. acuminata	0.1	100	FG					0.1						**Length logs (m)**	10
Eucalyptus microcarpa	4	20	TG		4										
Gonocarpus elatus	3	50	FG					3						**BAM Attributes 1x1 plot (%)**	
Hibbertia obtusifolia	2	10	SG			2								**Litter (%)**	31
Hordeum leporinum	0.5	50	EX								0.5				
Hydrocotyle laxiflora	0.1	2	FG					0.1							
Hypochaeris radicata	0.1	1	EX								0.1				
Juncus radula	0.5	50	GG				0.5								
Laxmannia gracilis	0.1	2	FG					0.1							
Lolium perenne	0.1	1	EX								0.1				
Orobanche minor	0.1	1	EX								0.1				
Oxalis corniculata	0.1	5	EX								0.1				
Romulea rosea	0.1	2	HT									0.1			
Rumex brownii	0.1	3	FG					0.1							
Rytidosperma fulvum	2	50	GG				2								
Rytidosperma monticola	5	50	GG				5								
Stellaria media	0.1	5	EX								0.1				
Taraxacum officinale	0.2	20	EX								0.2				
Trifolium campestre	0.3	20	EX								0.3				
Vulpia bromoides	5	20	EX								5				
Vulpia myuros	15	1000	EX								15				

Q246E			Covers	Native	Trees	Shrubs	Grass	Forb	Fern	Other	Exotic	HighThreat	55	Easting	529273
PCT 319 - Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion (moderate to good)			# spp	Count	Count	Count	Count	Count	Count	Count	Count	Count		Northing	6102806
Date: 01/11/2021			28	12	1	1	7	2	1	0	16	1		Orientation	130°
Species	**Cover**	**Abundance**	**Sum cover**	**Sum**	Sum	Sum	Sum	Sum	Sum	Sum	**Sum**	Sum		**Plot size**	20 X 20 X 50
			74.7	**44.4**	20	4	17.1	0.3	3	0	**30.3**	0.2		**BAM Attributes 20x50m plot**	
Aira elegantissima	3	100	EX								3			**Stem classes**	
Alternanthera nana	0.2	20	FG					0.2						**80+**	1
Arctotheca calendula	0.8	20	EX								0.8			**50-79**	1
Austrostipa densiflora	0.2	10	GG				0.2							**30-49**	0
Austrostipa scabra subsp. falcata	12	500	GG				12							**20-29**	No
Bromus diandrus	0.2	30	HT									0.2		**10-19**	No
Bromus hordeaceus	3	100	EX								3			**5-9**	No
Carex appressa	2	3	GG				2							**<5**	No
Cheilanthes sieberi subsp. sieberi	3	100	EG						3					**Hollows**	1
Cynodon dactylon	1	10	GG				1							**Length logs (m)**	53
Cyperus sp.	0.1	20	GG				0.1								
Erodium cicutarium	0.8	20	EX								0.8			**BAM Attributes 1x1 plot (%)**	
Eucalyptus dealbata	20	2	TG		20									**Litter (%)**	19
Hordeum leporinum	0.3	50	EX								0.3				
Hypochaeris radicata	0.1	10	EX								0.1				
Juncus flavidus	1	10	GG				1								
Lolium perenne	7	500	EX								7				
Melichrus urceolatus	4	10	SG			4									
Oxalis pes-caprae	0.1	1	EX								0.1				
Polypogon monspeliensis	0.1	10	EX								0.1				
Rumex brownii	0.1	100	FG					0.1							
Rytidosperma monticola	0.8	20	GG				0.8								
Solanum nigrum	2	2	EX								2				
Taraxacum officinale	0.3	40	EX								0.3				
Trifolium arvense	7	1000	EX								7				
Trifolium glomeratum	0.5	100	EX								0.5				
Vulpia myuros	5	500	EX								5				
Vulpia muralis	0.1	10	EX								0.1				

APPENDIX B-5
Native vegetation mapping of plant community types and zones



Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- State Vegetation Mapping
- Category 1 - Exempt Land

Plant Community Types

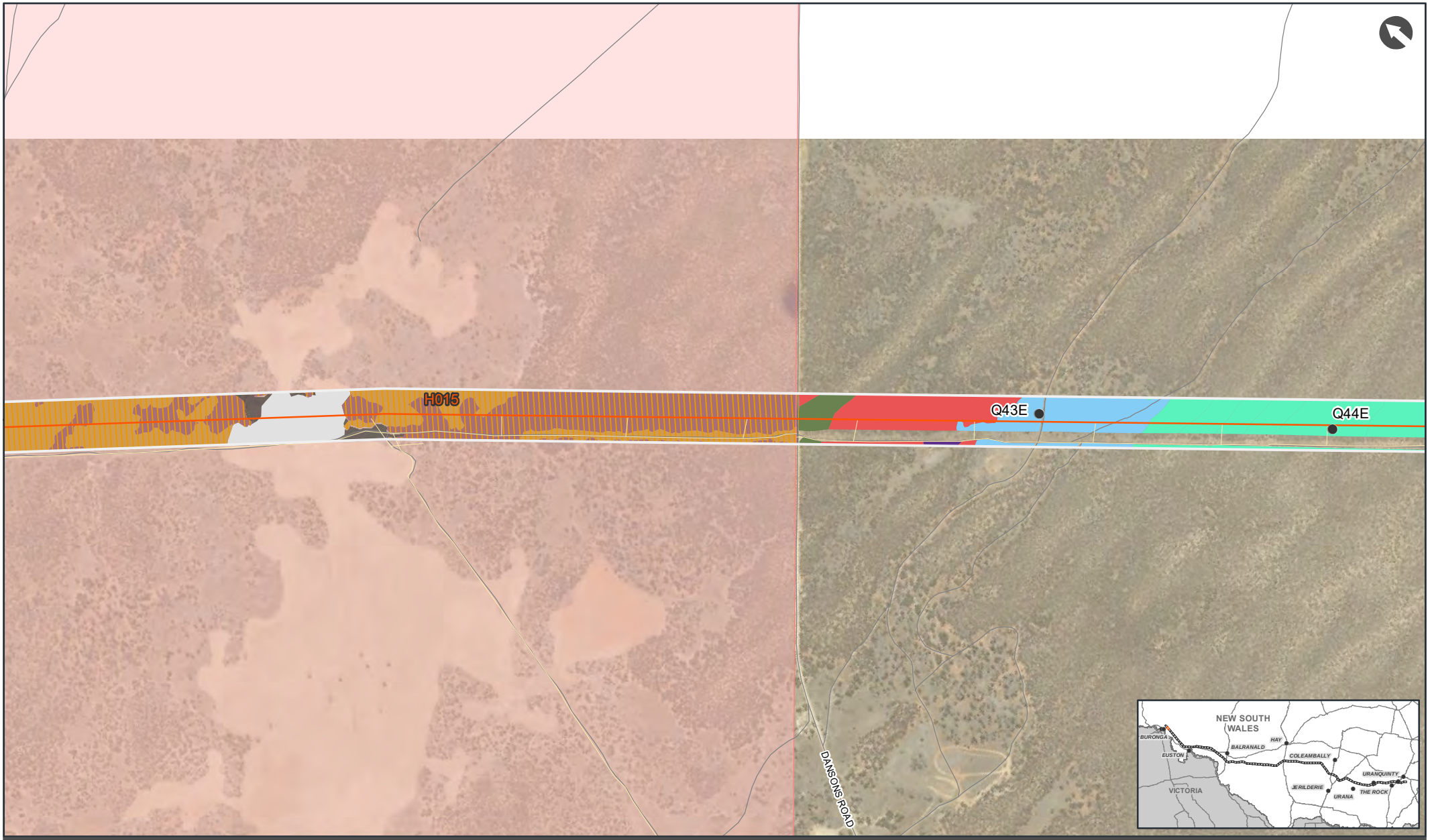
- PCT143 - Narrow-leaved Hopbush - Scrub Turpentine - Senna shrubland on semi-arid and arid sandplains and dunes. | Mod-good
- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | Derived
- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | Mod-good_whip
- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | SVM_Bench
- PCT171 - Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion | Mod-good_whip
- PCT58 - Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion | Mod-good
- PCT58 - Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion | SVM_Bench

BDAR - Figure B-5a

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



0 0.25 0.5 KM

BDAR - Figure B-5b

Native Vegetation Mapping of Plant Community Types and Zones

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping
- Category 1 - Exempt Land

Plant Community Types
- PCT143 - Narrow-leaved Hopbush - Scrub Turpentine - Senna shrubland on semi-arid and arid sandplains and dunes. | Mod-good
- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | Mod-good_whip
- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | SVM_Bench
- PCT171 - Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion | Mod-good_whip
- PCT172 - Deep sand mallee of irregular dunefields of the semi-arid (warm) zone | Mod-good_whip
- PCT58 - Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion | Mod-good
- PCT58 - Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion | SVM_Bench

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping

Plant Community Types

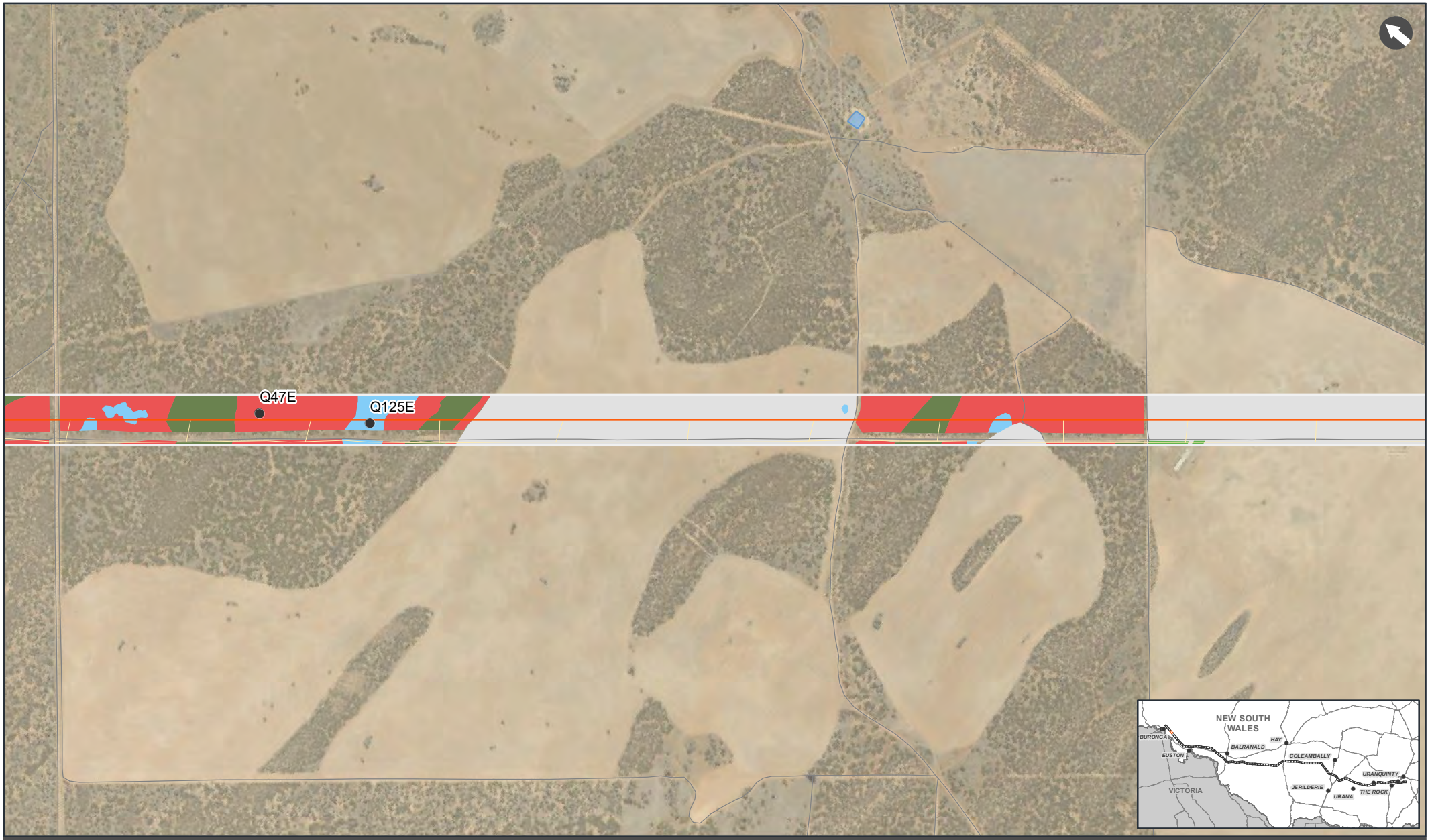
- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | Mod-good_whip
- PCT171 - Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion | Mod-good_whip
- PCT172 - Deep sand mallee of irregular dunefields of the semi-arid (warm) zone | Mod-good_whip
- PCT58 - Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion | Mod-good

BDAR - Figure B-5c

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-5d

Native Vegetation Mapping of Plant Community Types and Zones

(Page 4 of 100)

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping
- Category 1 - Exempt Land

Plant Community Types
- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | Derived
- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | Mod-good_whip
- PCT171 - Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion | Mod-good_whip
- PCT58 - Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion | Mod-good

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping
- Category 1 - Exempt Land

Plant Community Types

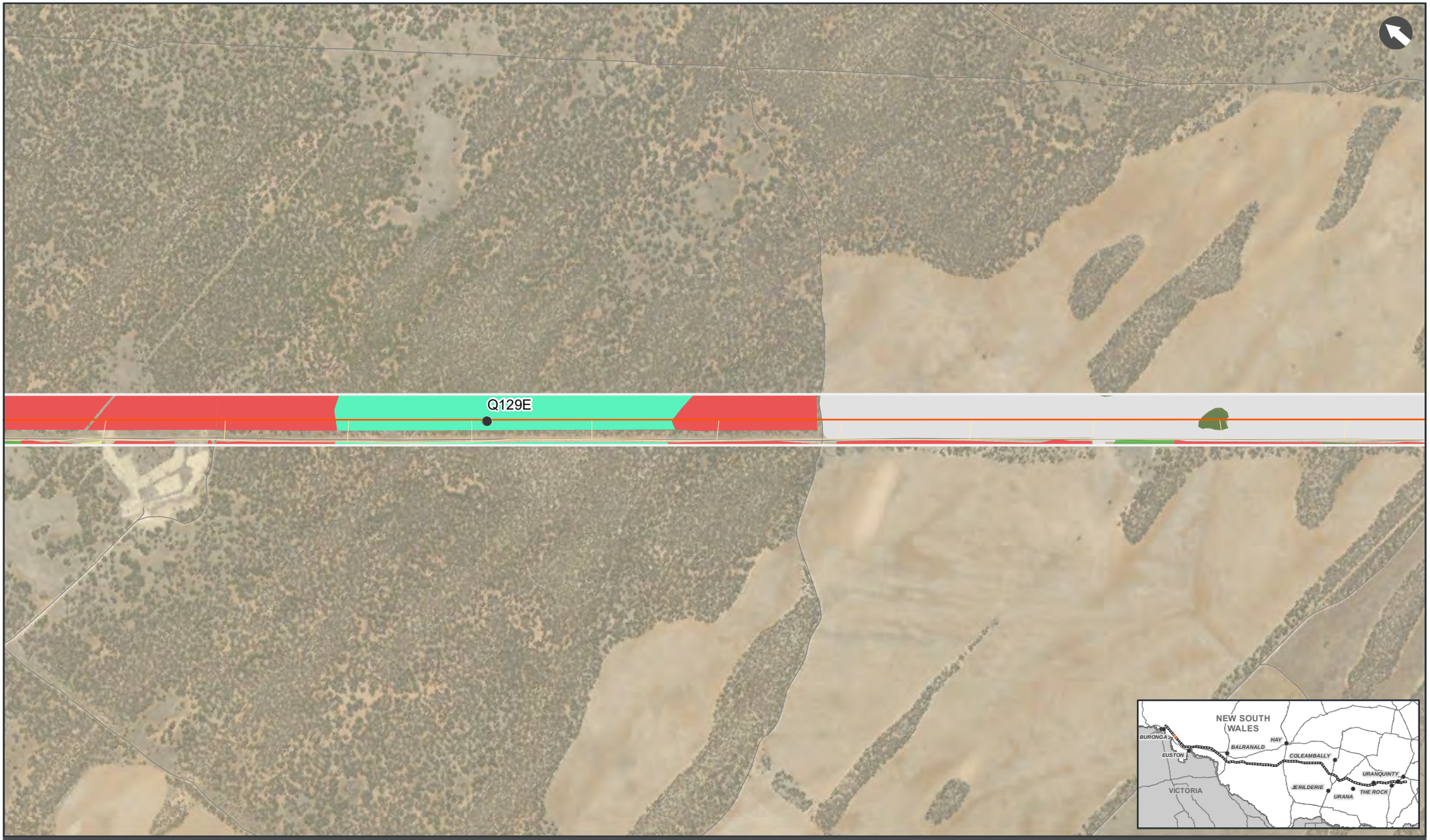
- PCT143 - Narrow-leaved Hopbush - Scrub Turpentine - Senna shrubland on semi-arid and arid sandplains and dunes. | Mod-good
- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | Derived
- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | Mod-good_bull
- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | Mod-good_whip
- PCT171 - Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion | Mod-good_whip

BDAR - Figure B-5e

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping
- Category 1 - Exempt Land

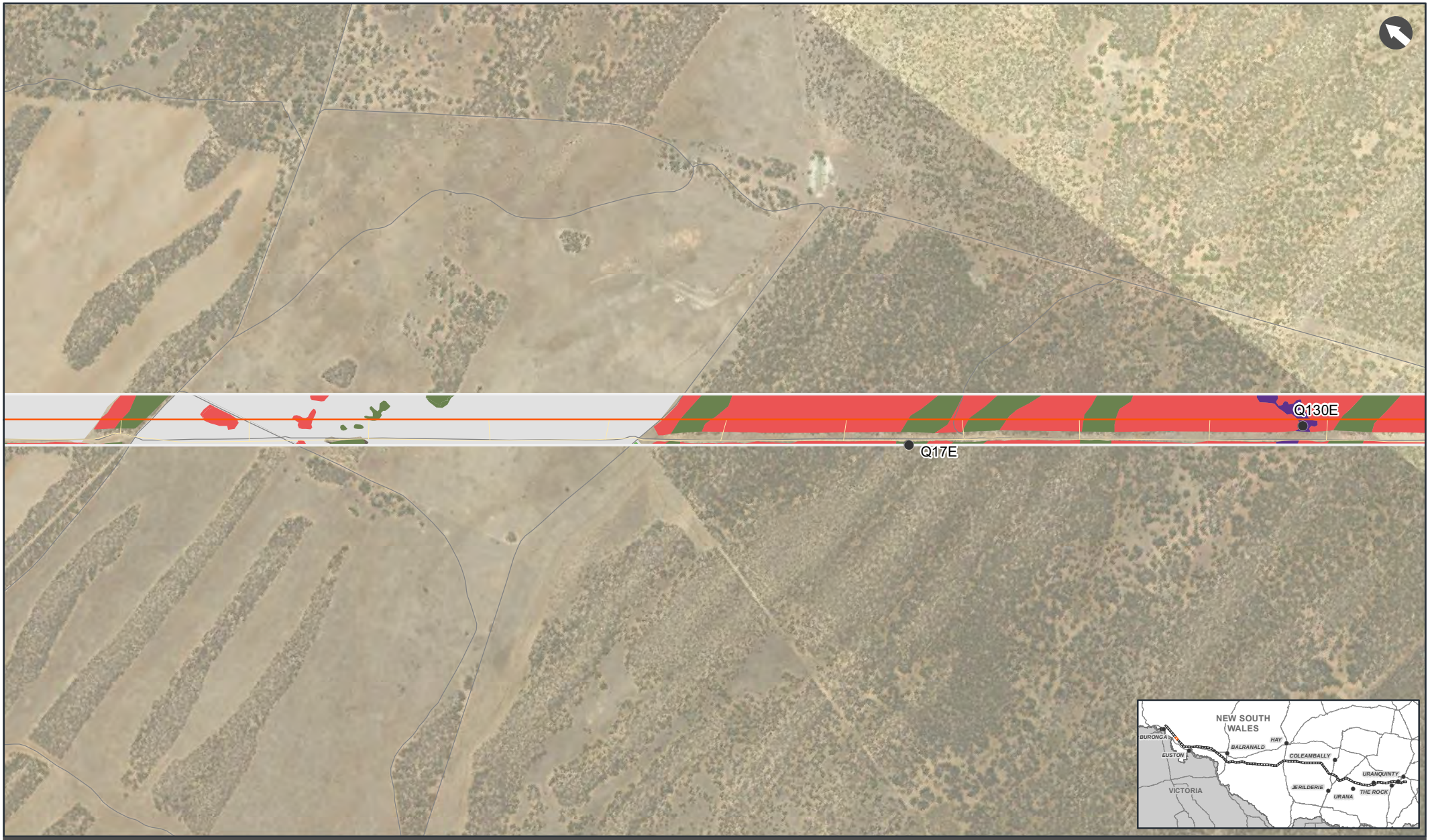
Plant Community Types
- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | Derived
- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | Mod-good_bull
- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | Mod-good_whip
- PCT171 - Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion | Mod-good_whip
- PCT172 - Deep sand mallee of irregular dunefields of the semi-arid (warm) zone | Mod-good_whip
- Miscellaneous/exotic

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Source: NSWSS, ESRI, Transgrid, WSP

BDAR - Figure B-5f

Native Vegetation Mapping of Plant Community Types and Zones



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BDAR - Figure B-5g

Native Vegetation Mapping of Plant Community Types and Zones

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping
- Category 1 - Exempt Land

Plant Community Types
- PCT143 - Narrow-leaved Hopbush - Scrub Turpentine - Senna shrubland on semi-arid and arid sandplains and dunes. | Mod-good
- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | Derived
- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | Mod-good_whip
- PCT171 - Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion | Mod-good_whip
- Miscellaneous/exotic

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping

Plant Community Types
- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | Mod-good_whip
- PCT171 - Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion | Derived
- PCT171 - Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion | Mod-good_whip
- Miscellaneous/exotic

BDAR - Figure B-5h

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping

Plant Community Types
- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | Derived
- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | Mod-good_whip
- PCT171 - Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion | Mod-good_whip
- Miscellaneous/exotic

BDAR - Figure B-5i

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- State Vegetation Mapping

Plant Community Types

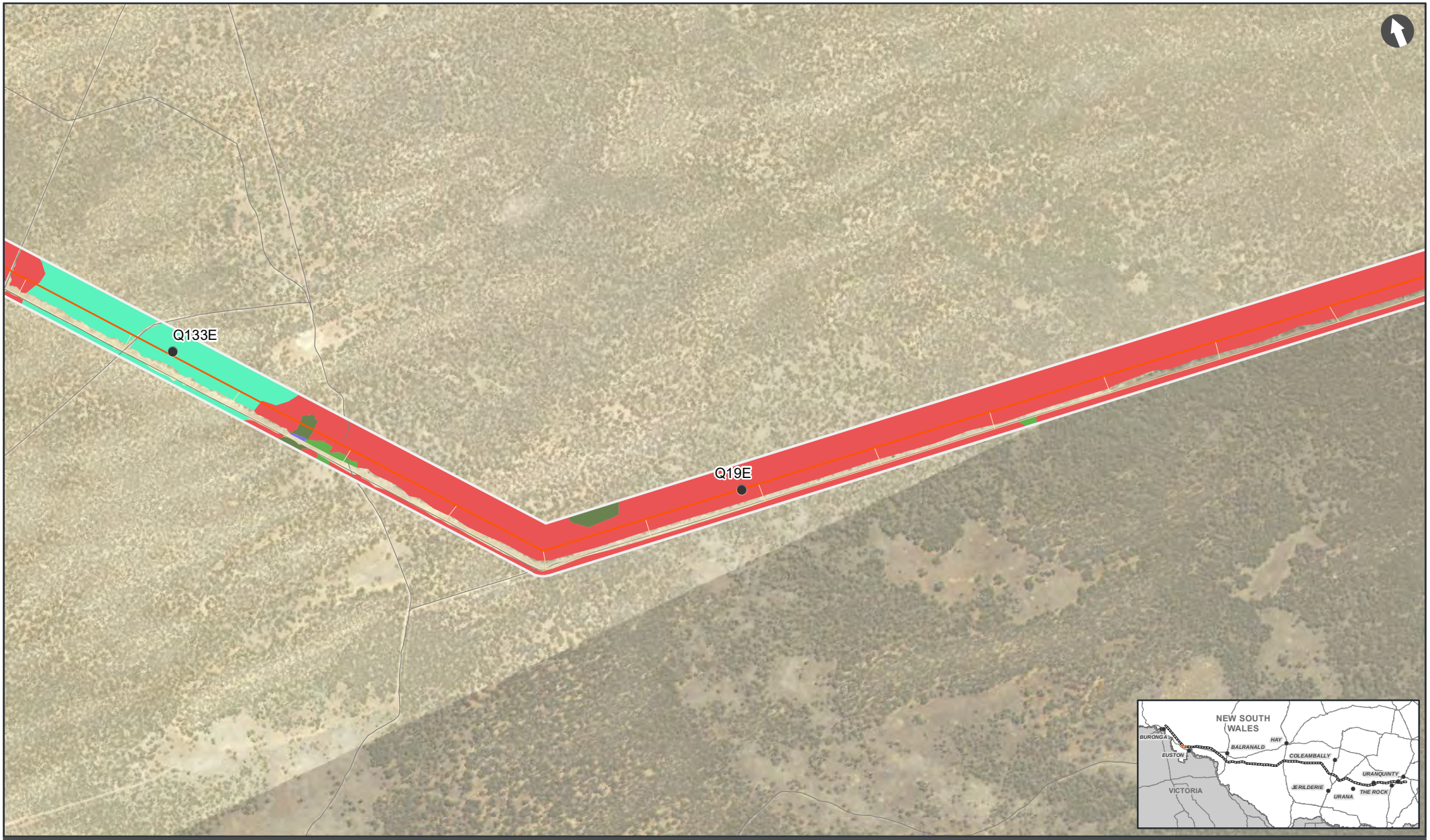
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- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | Mod-good_whip
- PCT171 - Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion | Mod-good_whip
- PCT172 - Deep sand mallee of irregular dunefields of the semi-arid (warm) zone | Mod-good_whip

BDAR - Figure B-5j

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping

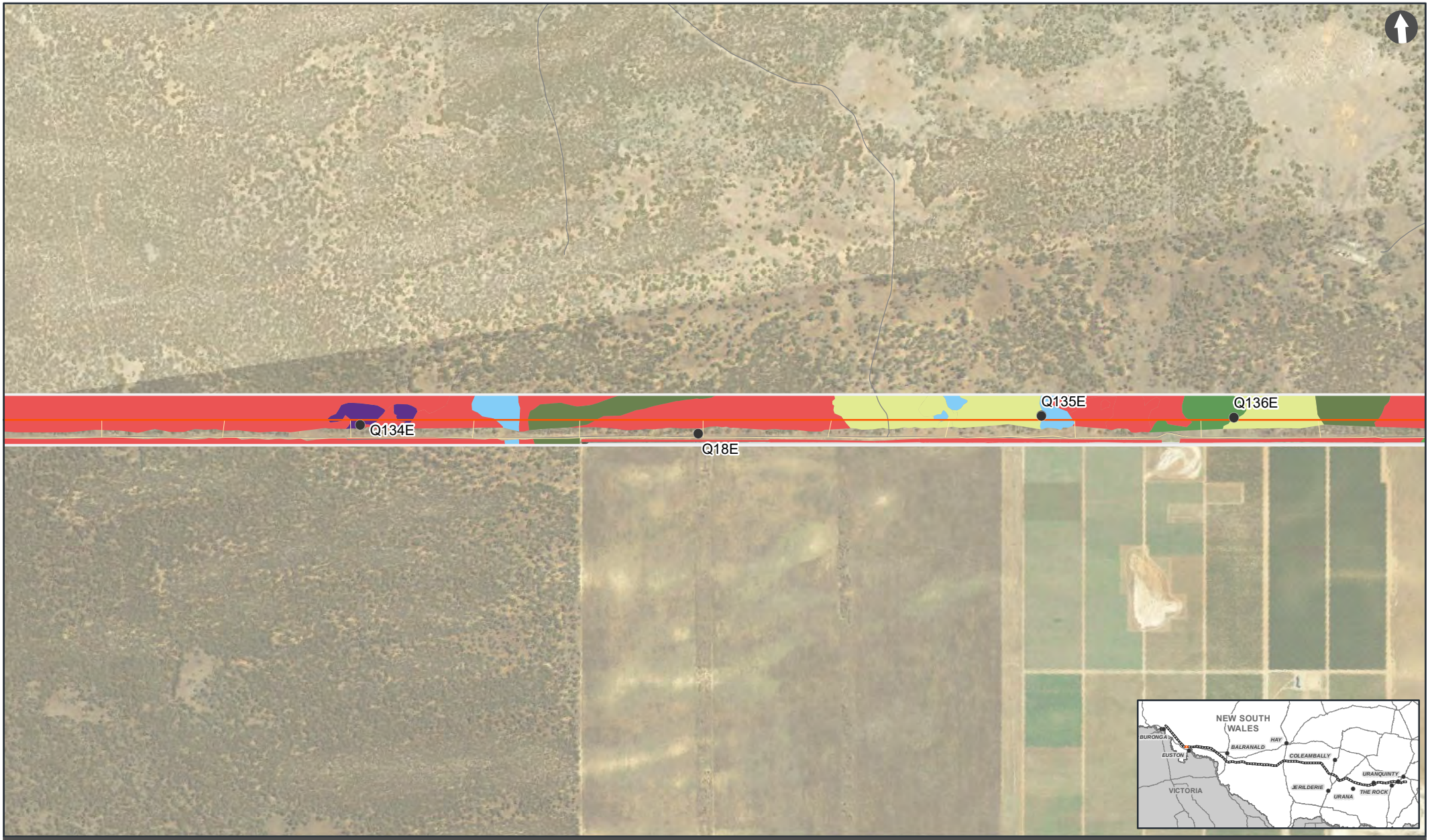
Plant Community Types
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- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | Mod-good_whip
- PCT171 - Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion | Derived
- PCT171 - Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion | Mod-good_whip
- PCT172 - Deep sand mallee of irregular dunefields of the semi-arid (warm) zone | Mod-good_whip

BDAR - Figure B-5k

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping
- Category 1 - Exempt Land

Plant Community Types

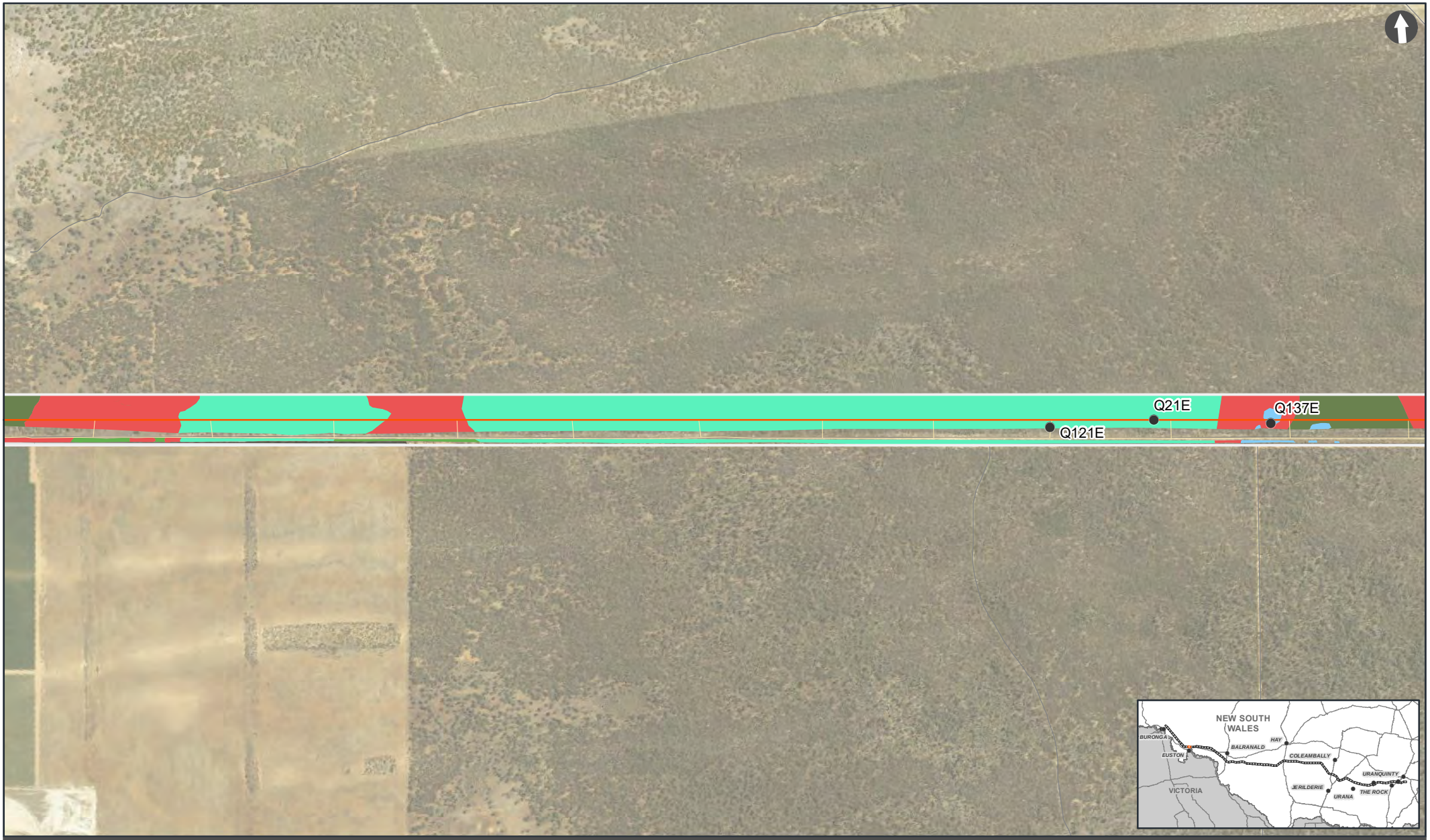
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- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | Mod-good_whip
- PCT171 - Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion | Mod-good_whip
- PCT199 - Hooked Needlewood - Needlewood - Mulga - Turpentine Bush open shrubland of the semi-arid and arid plains | Mod-good
- PCT58 - Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion | Mod-good
- Miscellaneous/exotic

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Source: NSWSS, ESRI, Transgrid, WSP

BDAR - Figure B-5l

Native Vegetation Mapping of Plant Community Types and Zones



0 0.25 0.5 KM

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping
- Category 1 - Exempt Land

Plant Community Types

- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | Derived
- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | Mod-good_whip
- PCT171 - Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion | Mod-good_whip
- PCT172 - Deep sand mallee of irregular dunefields of the semi-arid (warm) zone | Mod-good_whip
- PCT58 - Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion | Mod-good
- Miscellaneous/exotic

BDAR - Figure B-5m

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure B-5n

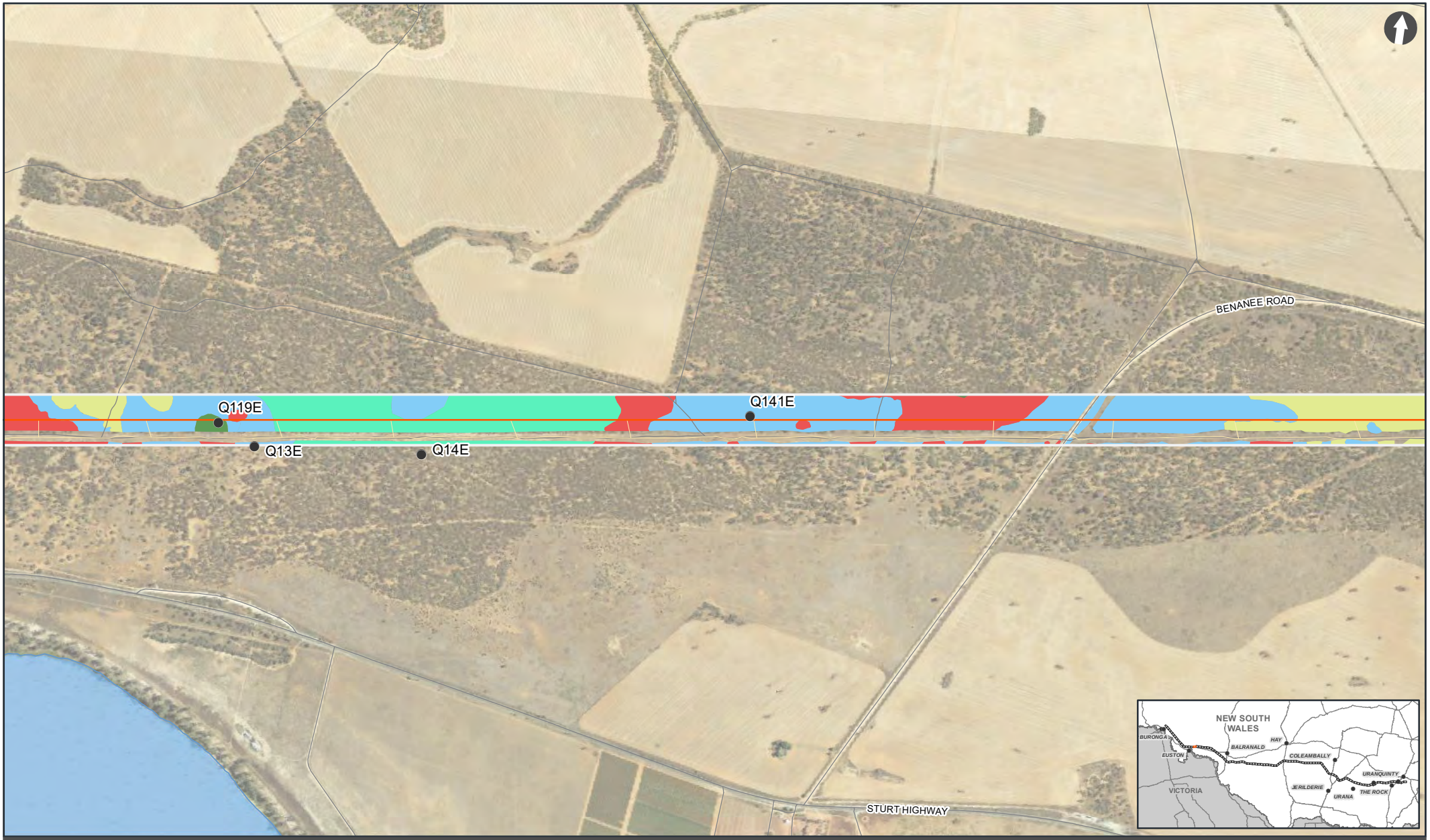
Native Vegetation Mapping of Plant Community Types and Zones

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping
- Category 1 - Exempt Land

Plant Community Types
- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | Derived
- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | Mod-good_bull
- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | Mod-good_whip
- PCT171 - Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion | Mod-good_whip
- PCT58 - Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion | Mod-good
- Miscellaneous/exotic

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Source: NSWSS, ESRI, Transgrid, WSP



0 0.25 0.5 KM

BDAR - Figure B-5o

Native Vegetation Mapping of Plant Community Types and Zones

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping

Plant Community Types
- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | Mod-good_bull
- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | Mod-good_whip
- PCT171 - Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion | Mod-good_whip
- PCT172 - Deep sand mallee of irregular dunefields of the semi-arid (warm) zone | Mod-good_whip
- PCT199 - Hooked Needlewood - Needlewood - Mulga - Turpentine Bush open shrubland of the semi-arid and arid plains | Mod-good
- PCT58 - Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion | Mod-good

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-5p

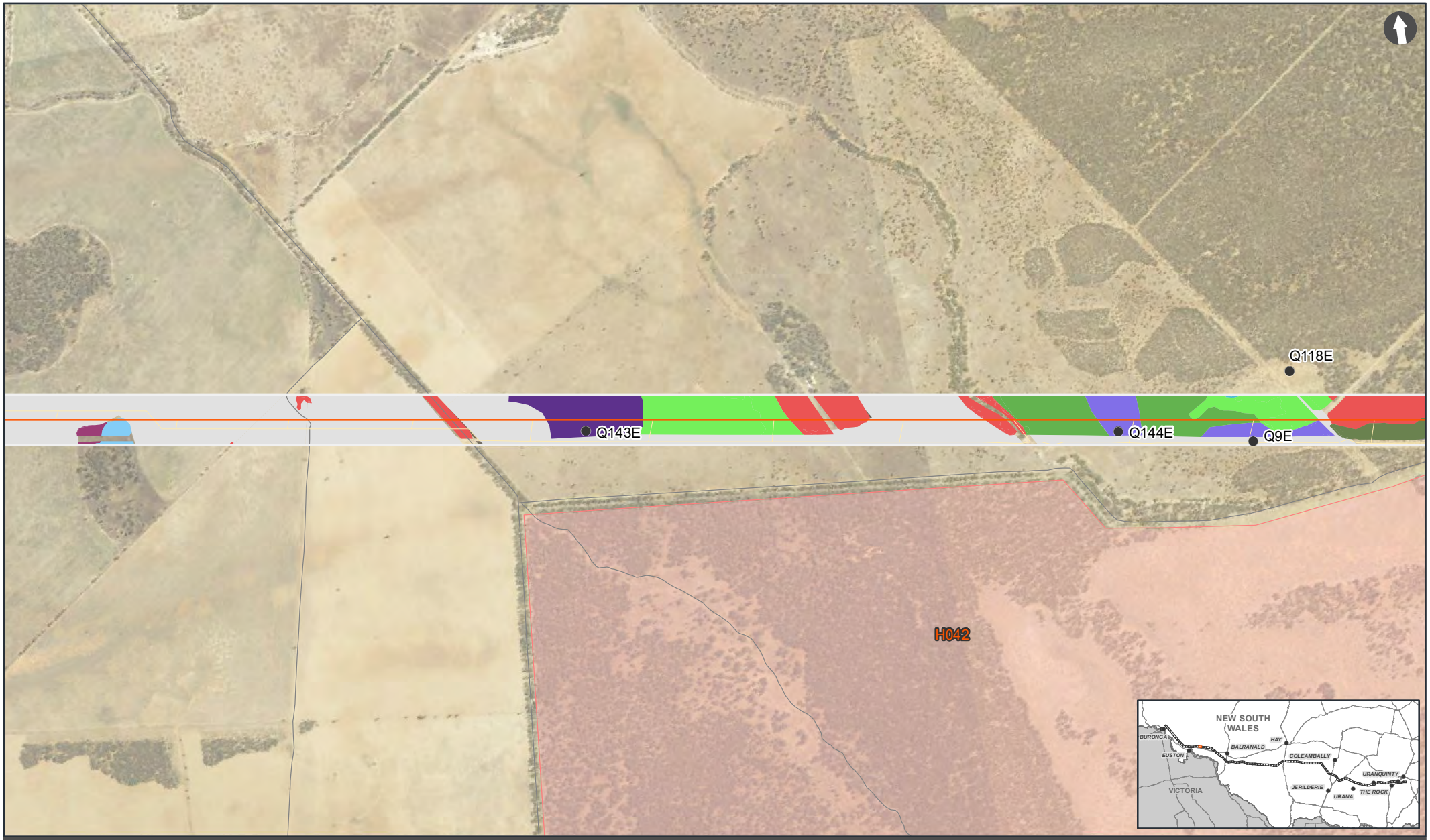
Native Vegetation Mapping of Plant Community Types and Zones

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping
- Category 1 - Exempt Land

Plant Community Types
- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | Mod-good_bull
- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | Mod-good_whip
- PCT23 - Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones | Mod-good
- PCT58 - Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion | Mod-good
- Miscellaneous/exotic

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-5q

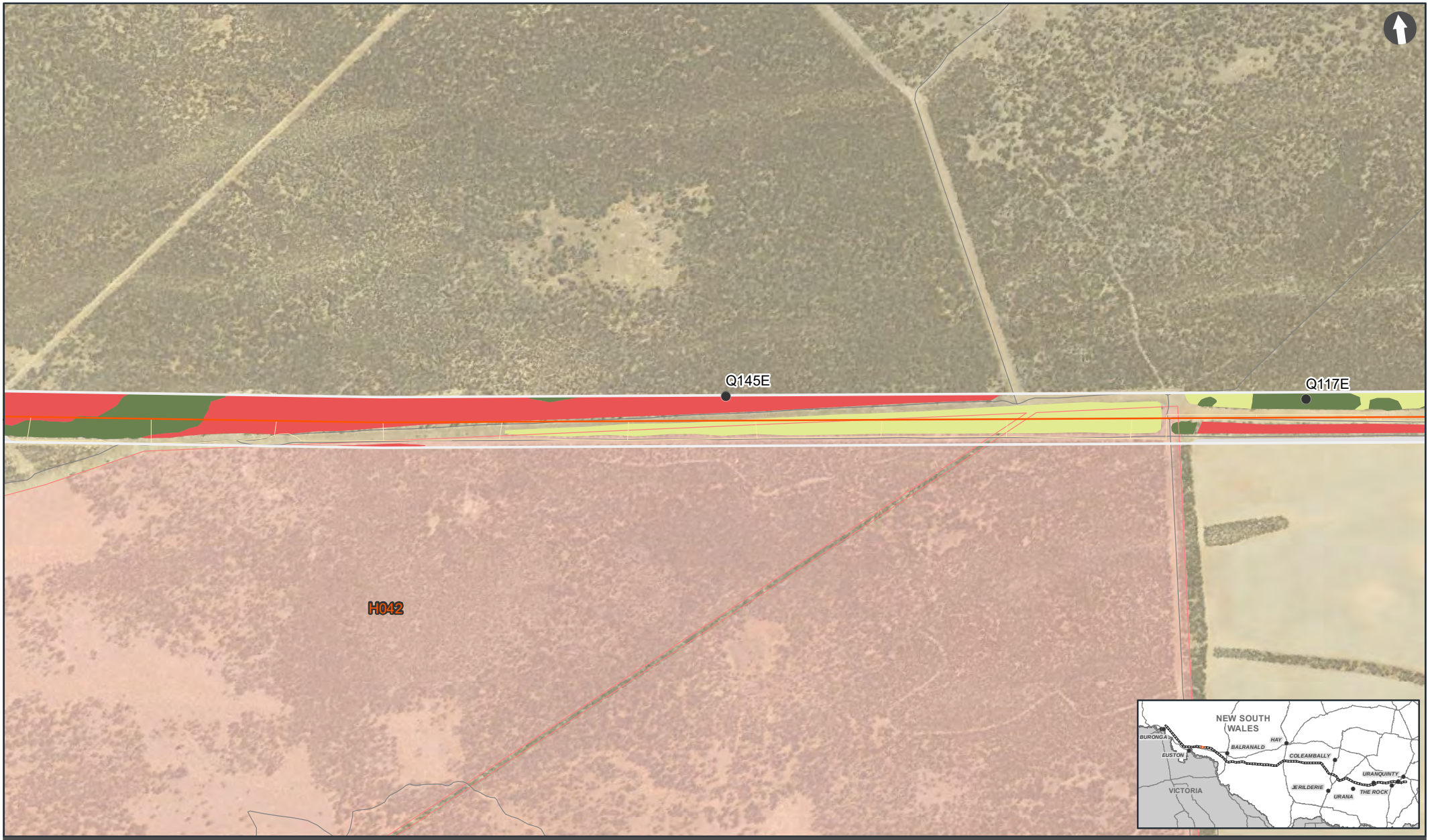
Native Vegetation Mapping of Plant Community Types and Zones

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping
- Category 1 - Exempt Land

Plant Community Types
- PCT143 - Narrow-leaved Hopbush - Scrub Turpentine - Senna shrubland on semi-arid and arid sandplains and dunes. | Mod-good
- PCT163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones | Mod-good
- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | Derived
- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | Mod-good_whip
- PCT171 - Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion | Derived
- PCT171 - Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion | Mod-good_whip
- PCT23 - Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones | Mod-good
- PCT271 - Spotted Fuchsia shrubland wetland in drainage depressions on inland plains | Mod-good
- PCT58 - Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion | Mod-good
- Miscellaneous/exotic

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping
- Category 1 - Exempt Land

Plant Community Types

- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | Derived
- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | Mod-good_bull
- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | Mod-good_whip
- PCT171 - Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion | Derived
- PCT171 - Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion | Mod-good_whip

BDAR - Figure B-5r

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-5s

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping
- Category 1 - Exempt Land

Plant Community Types
- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | Derived
- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | Mod-good_bull
- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | Mod-good_whip
- PCT171 - Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion | Derived
- PCT171 - Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion | Mod-good_whip
- PCT23 - Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones | Mod-good
- PCT24 - Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains | Mod-good

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-5t

Native Vegetation Mapping of Plant Community Types and Zones

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Project Components

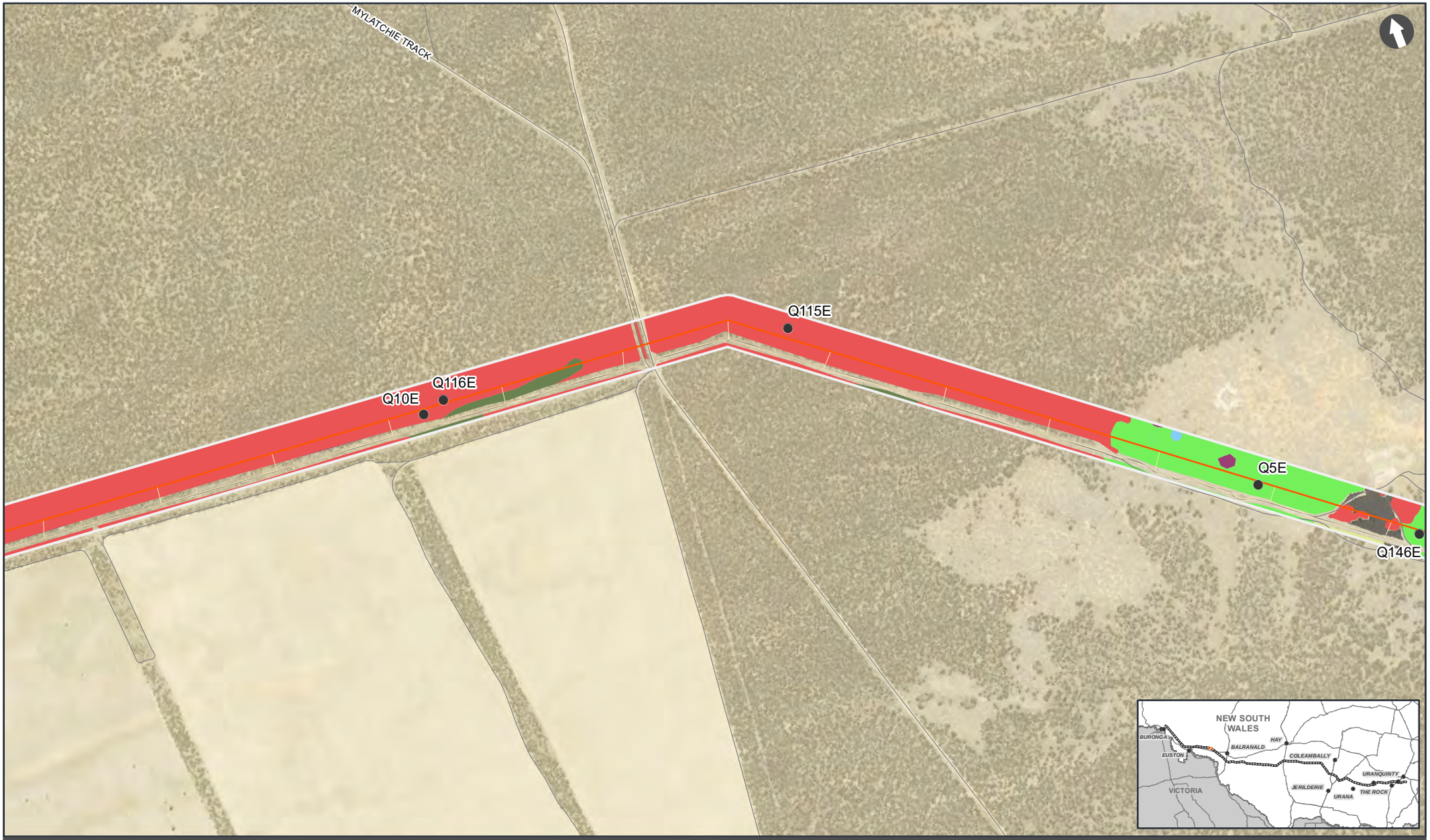
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping

Plant Community Types

- PCT143 - Narrow-leaved Hopbush - Scrub Turpentine - Senna shrubland on semi-arid and arid sandplains and dunes. | Mod-good
- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | Mod-good_bull
- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | Mod-good_whip
- PCT171 - Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion | Mod-good_whip

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping

Plant Community Types

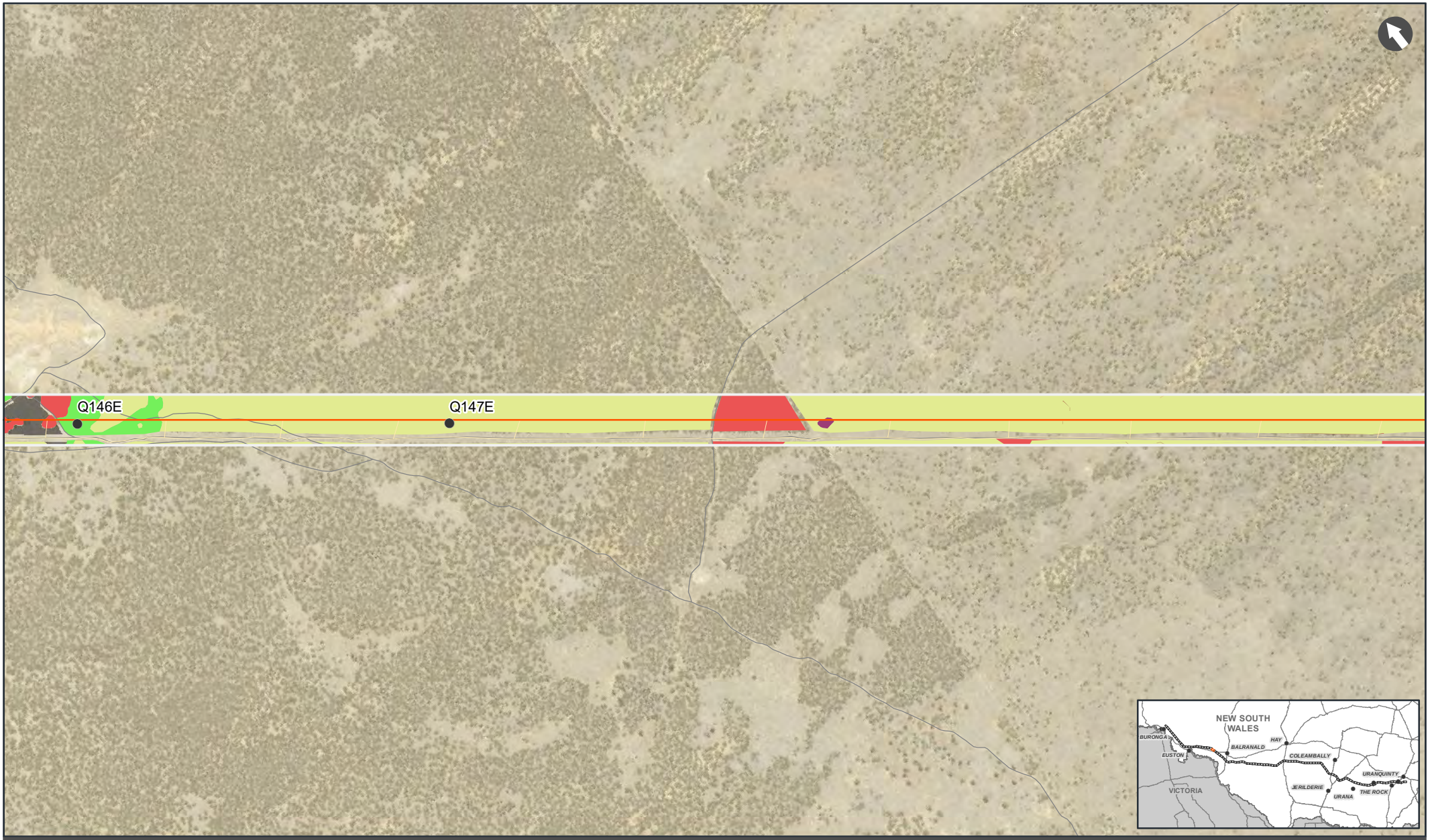
- PCT143 - Narrow-leaved Hopbush - Scrub Turpentine - Senna shrubland on semi-arid and arid sandplains and dunes. | Mod-good
- PCT163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones | Mod-good
- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | Mod-good_bull
- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | Mod-good_whip
- PCT171 - Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion | Mod-good_whip
- PCT23 - Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones | Mod-good
- PCT58 - Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion | Mod-good
- Miscellaneous/exotic

BDAR - Figure B-5u

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-5v

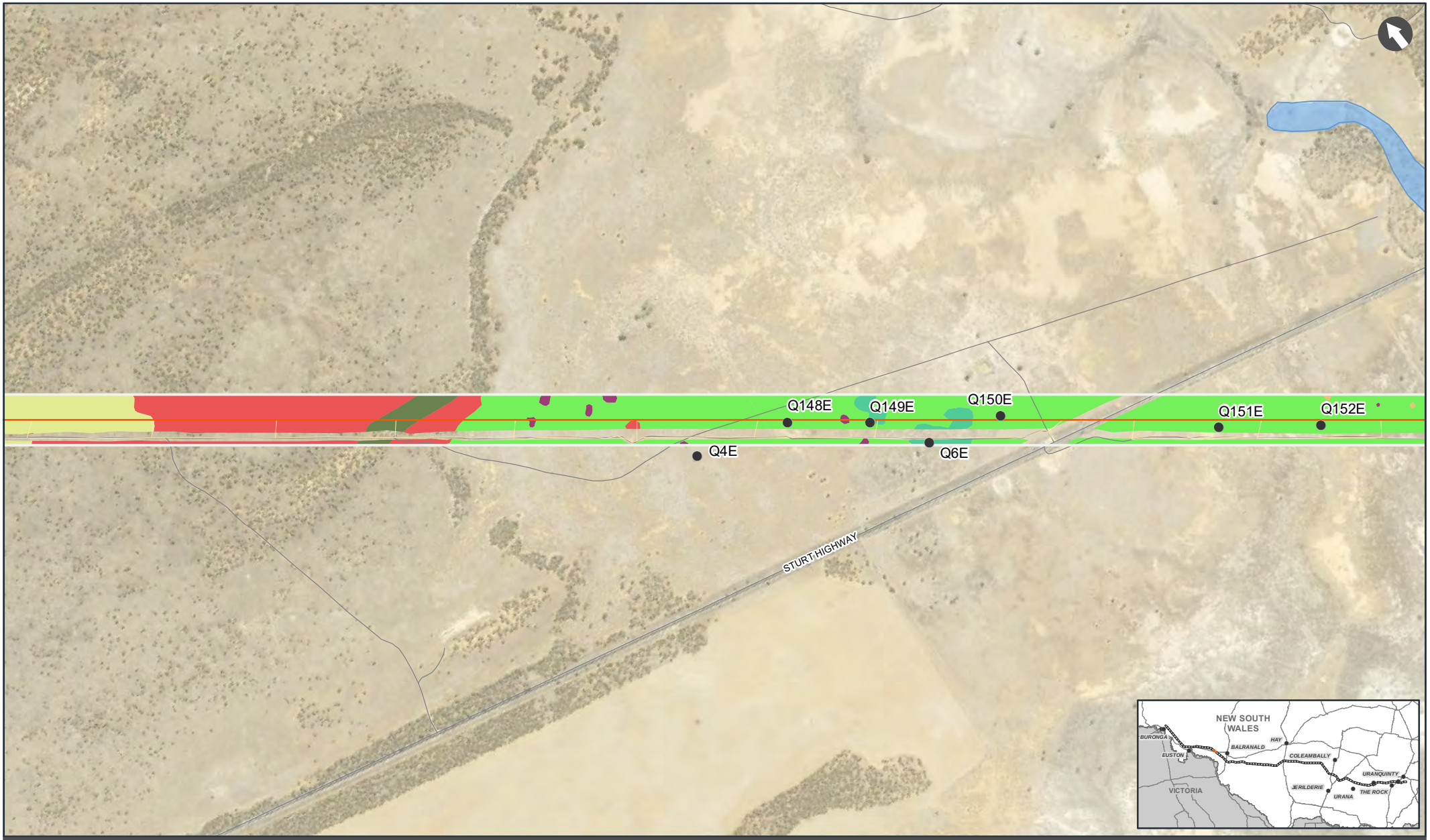
Native Vegetation Mapping of Plant Community Types and Zones

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping

Plant Community Types
- PCT163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones | Mod-good
- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | Derived
- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | Mod-good_bull
- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | Mod-good_whip
- PCT23 - Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones | Mod-good
- Miscellaneous/exotic

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping

Plant Community Types

- PCT15 - Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones | Mod-good
- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | Derived
- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | Mod-good_bull
- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | Mod-good_whip
- PCT171 - Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion | Mod-good_whip
- PCT23 - Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones | Mod-good
- PCT24 - Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains | Mod-good

BDAR - Figure B-5w

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-5x

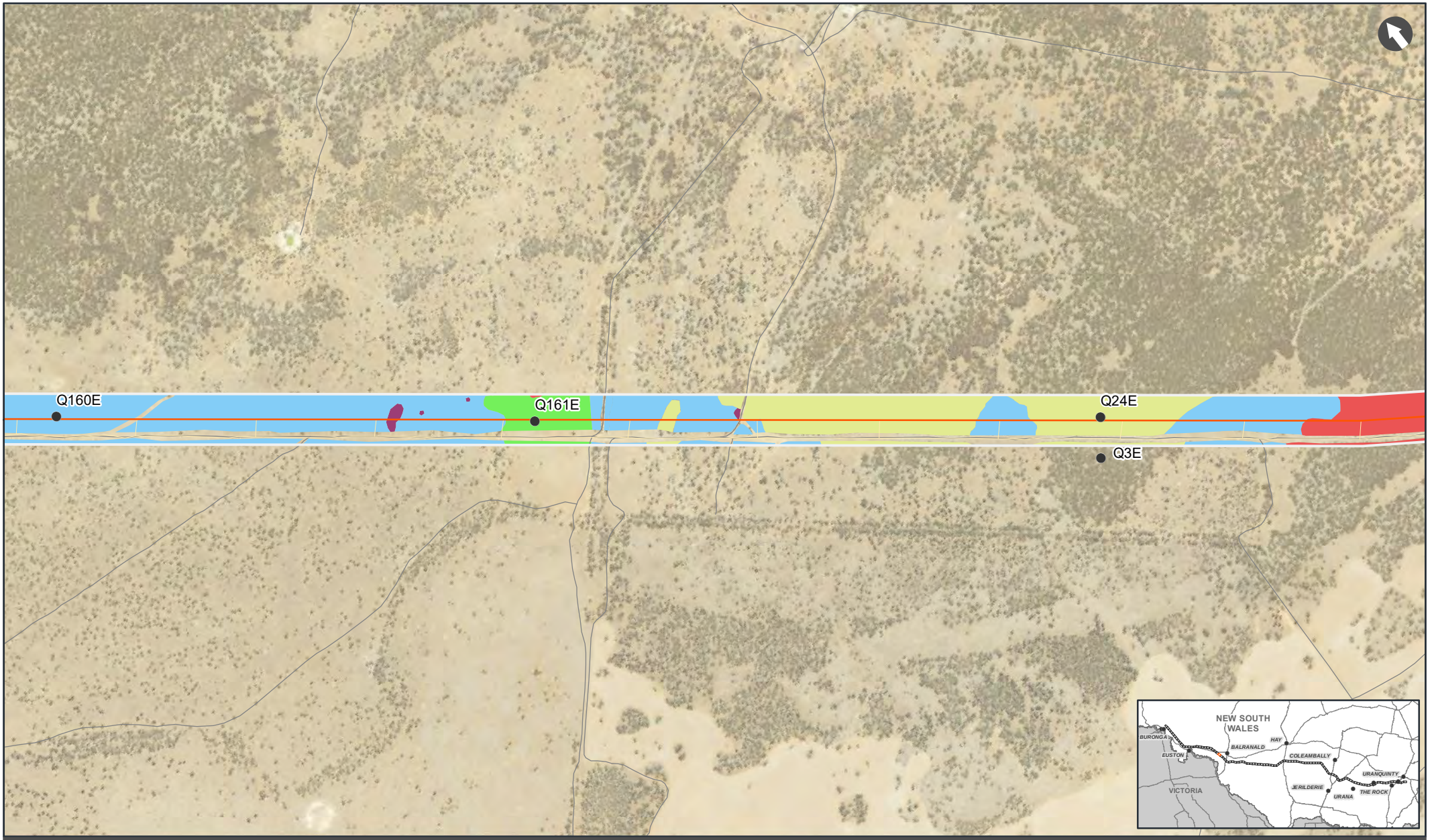
Native Vegetation Mapping of Plant Community Types and Zones

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping
- Category 1 - Exempt Land

Plant Community Types
- PCT15 - Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Derived
- PCT15 - Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones | Mod-good
- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | Mod-good_bull
- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | Mod-good_whip
- PCT216 - Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion | Mod-good
- PCT23 - Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones | Mod-good
- PCT58 - Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion | Mod-good
- Miscellaneous/exotic

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-5y

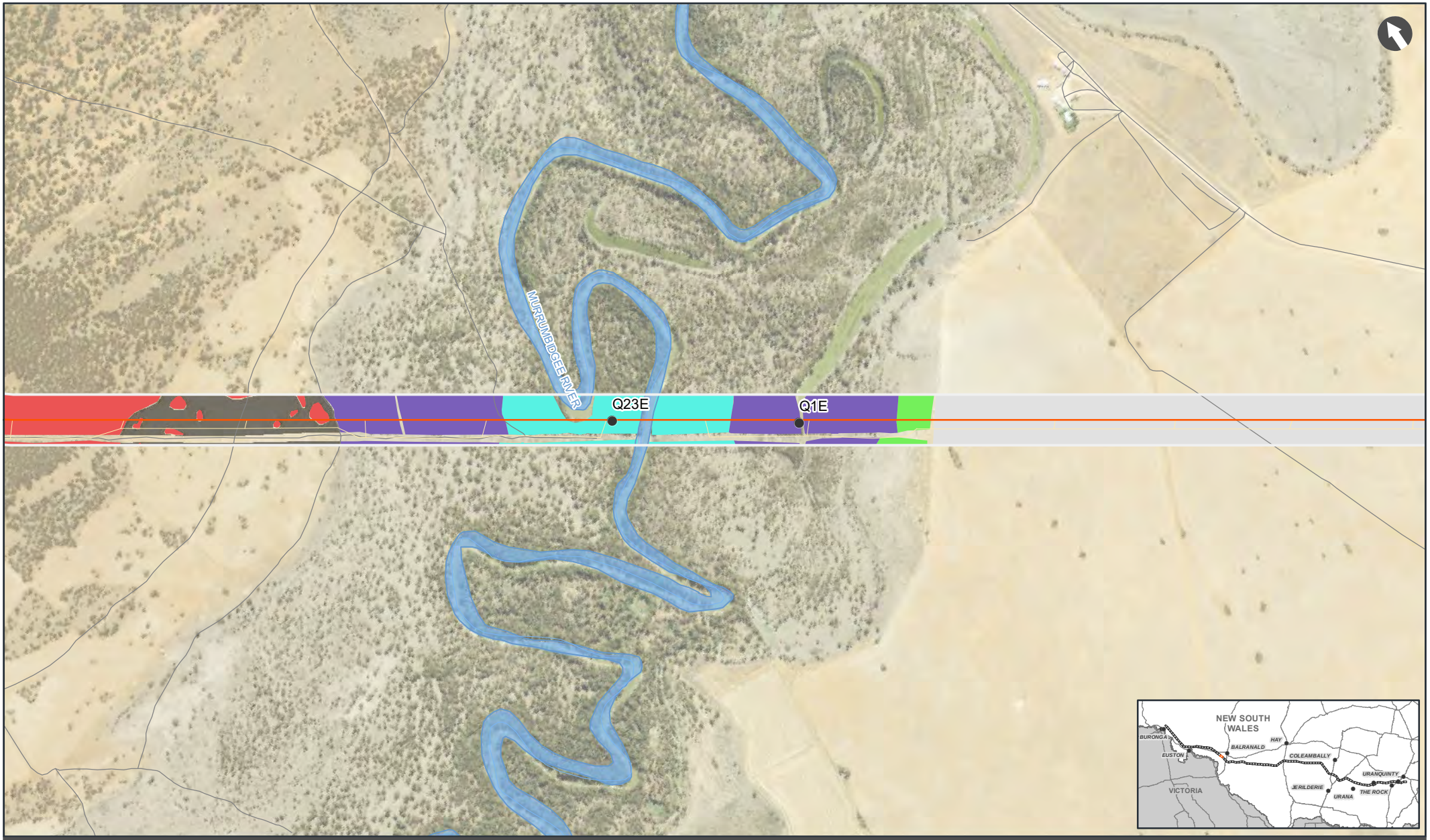
Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping

Plant Community Types
- PCT163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones | Mod-good
- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | Mod-good_bull
- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | Mod-good_whip
- PCT23 - Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones | Mod-good
- PCT58 - Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion | Mod-good

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping
- Category 1 - Exempt Land

Plant Community Types

- PCT11 - River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones | Mod-good
- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | Mod-good_whip
- PCT58 - Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion | Mod-good
- PCT8 - River Red Gum - Warrego Grass - Couch Grass riparian tall woodland wetland of the semi-arid (warm) climate zone (Riverina Bioregion and Murray Darling Depression Bioregion) | Derived
- PCT8 - River Red Gum - Warrego Grass - Couch Grass riparian tall woodland wetland of the semi-arid (warm) climate zone (Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- Miscellaneous/exotic

BDAR - Figure B-5z

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- State Vegetation Mapping
- Category 1 - Exempt Land

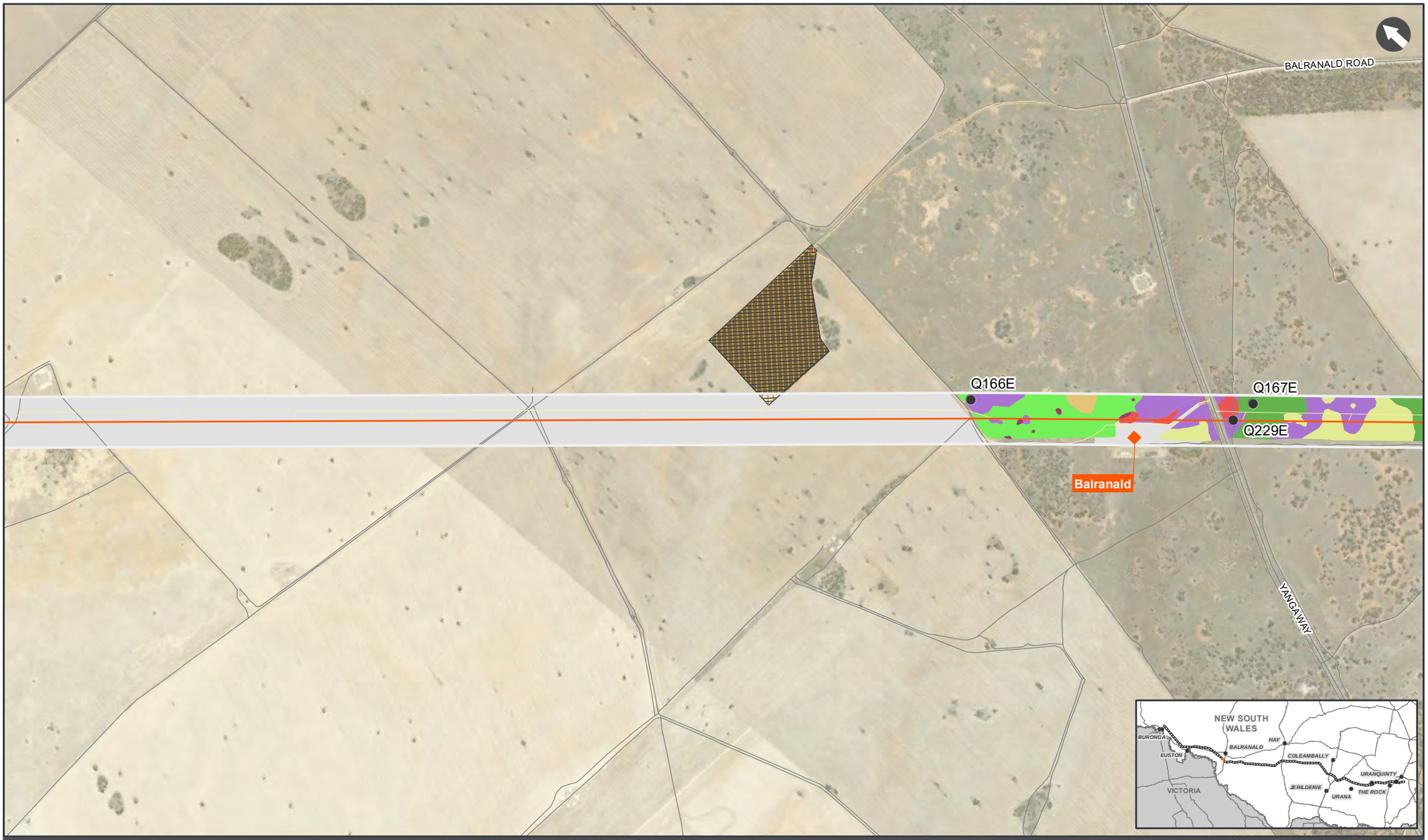
Plant Community Types
- PCT171 - Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion | Mod-good_whip
- Miscellaneous/exotic

BDAR - Figure B-5aa

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping
- Category 1 - Exempt Land

Plant Community Types

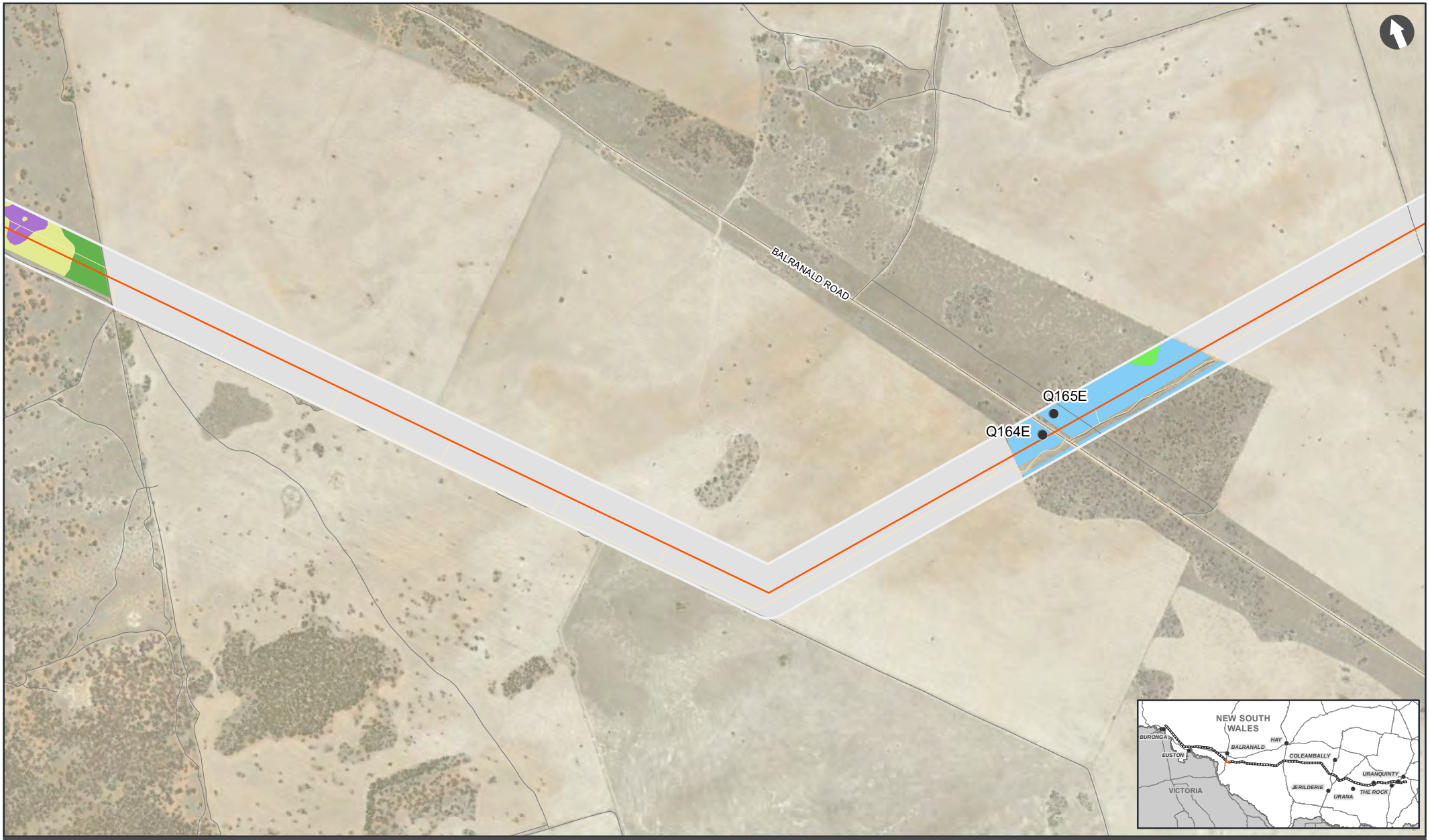
- PCT15 - Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones | Mod-good
- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | Derived
- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | Mod-good_bull
- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | Mod-good_whip
- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | SVM_Bench
- PCT22 - Semi-arid shrubby Buloke - Slender Cypress Pine woodland, far south-western NSW | Mod-good
- PCT23 - Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones | Mod-good
- Miscellaneous/exotic

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Source: NSWSS, ESRI, Transgrid, WSP

BDAR - Figure B-5ab

Native Vegetation Mapping of Plant Community Types and Zones



Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping
- Category 1 - Exempt Land

Plant Community Types

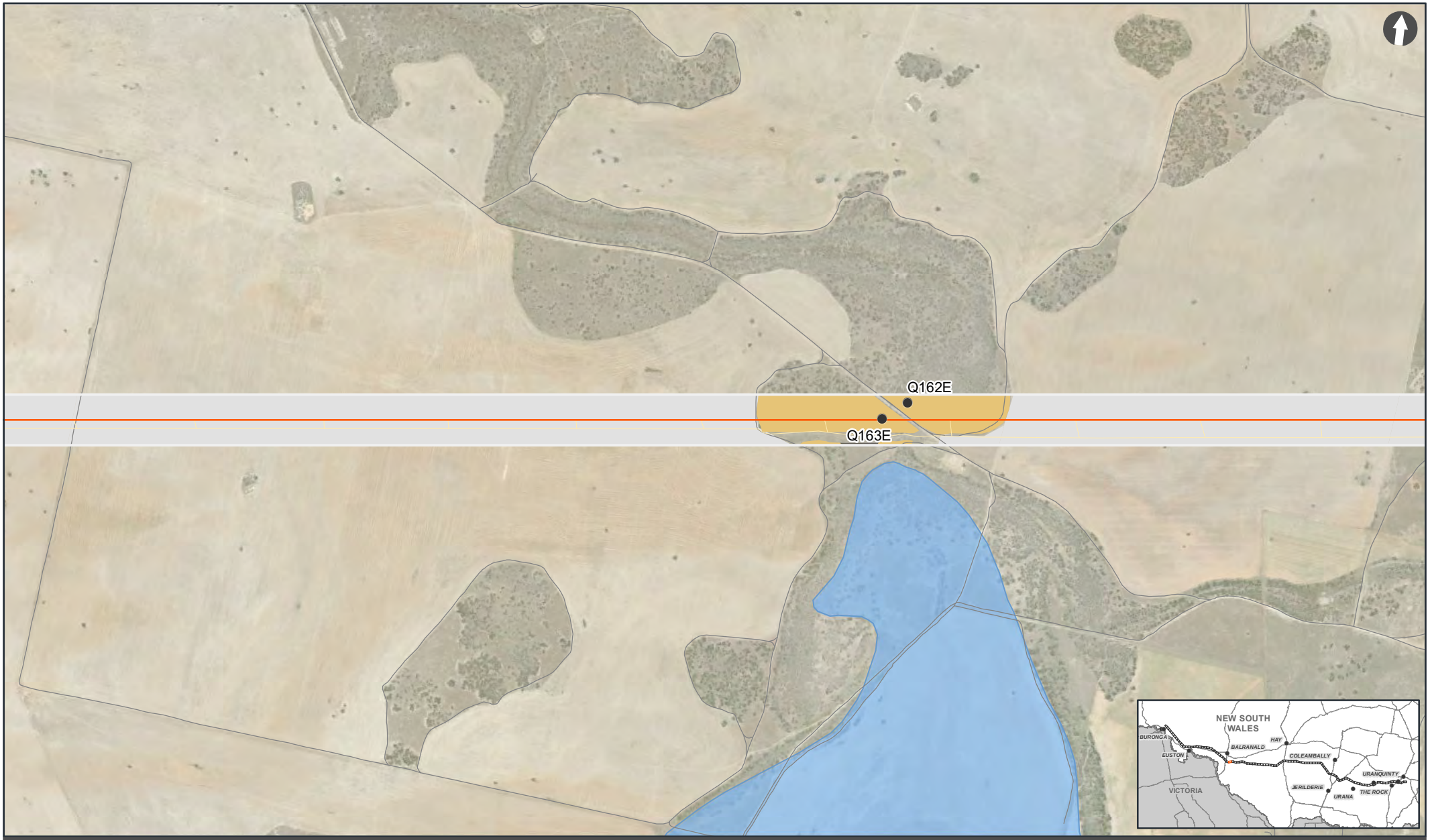
- PCT163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones | Mod-good
- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | Derived
- PCT170 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones | Mod-good_bull
- PCT22 - Semi-arid shrubby Buloke - Slender Cypress Pine woodland, far south-western NSW | Mod-good
- PCT58 - Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion | Mod-good

BDAR - Figure B-5ac

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping
- Category 1 - Exempt Land

Plant Community Types

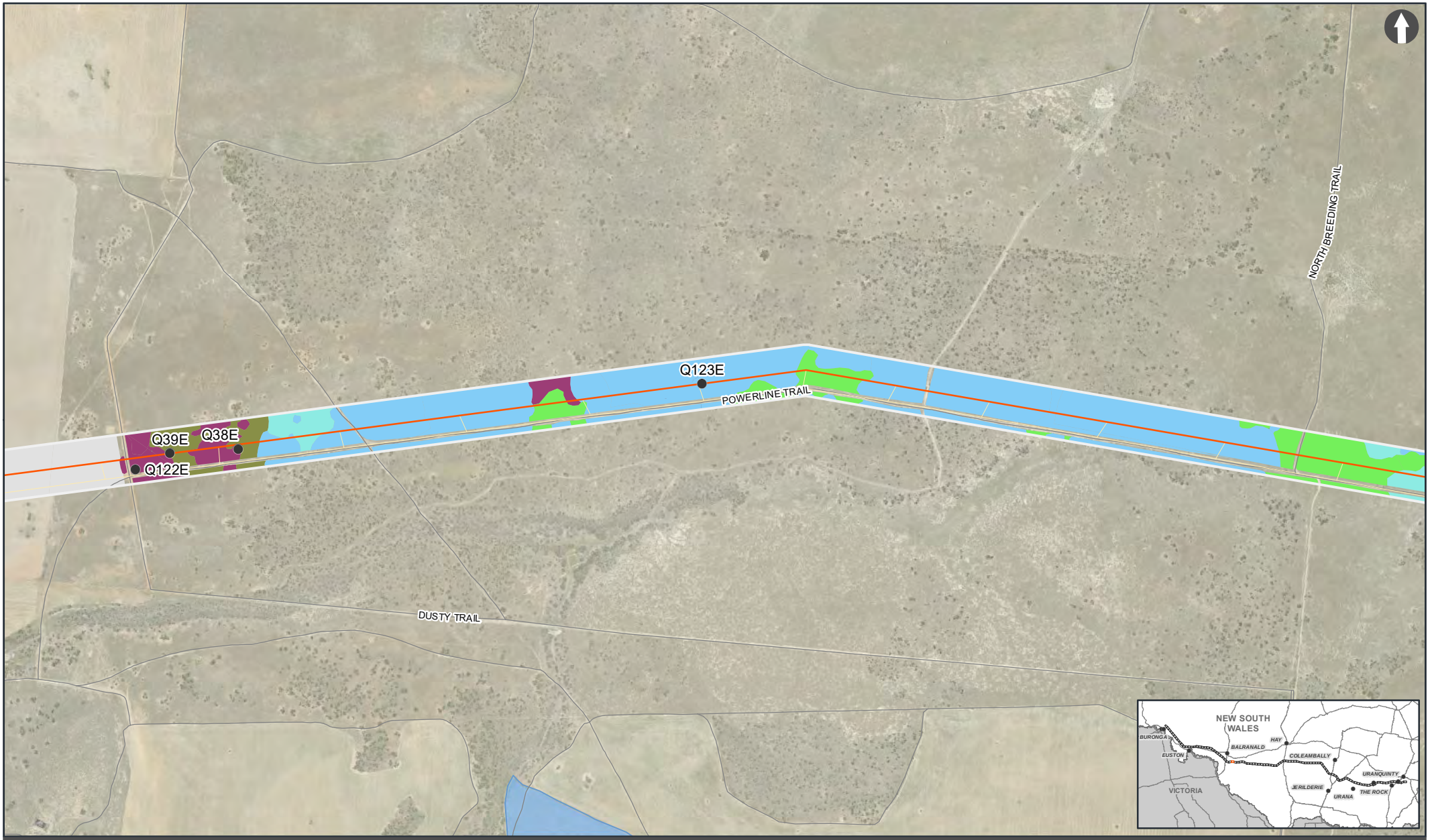
- PCT15 - Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- Miscellaneous/exotic

BDAR - Figure B-5ad

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-5ae

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping
- Category 1 - Exempt Land

Plant Community Types
- PCT163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones | Mod-good
- PCT23 - Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones | Derived
- PCT23 - Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones | Mod-good
- PCT46 - Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion | Mod-good
- PCT58 - Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion | Derived
- PCT58 - Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion | Mod-good

Native Vegetation Mapping of Plant Community Types and Zones

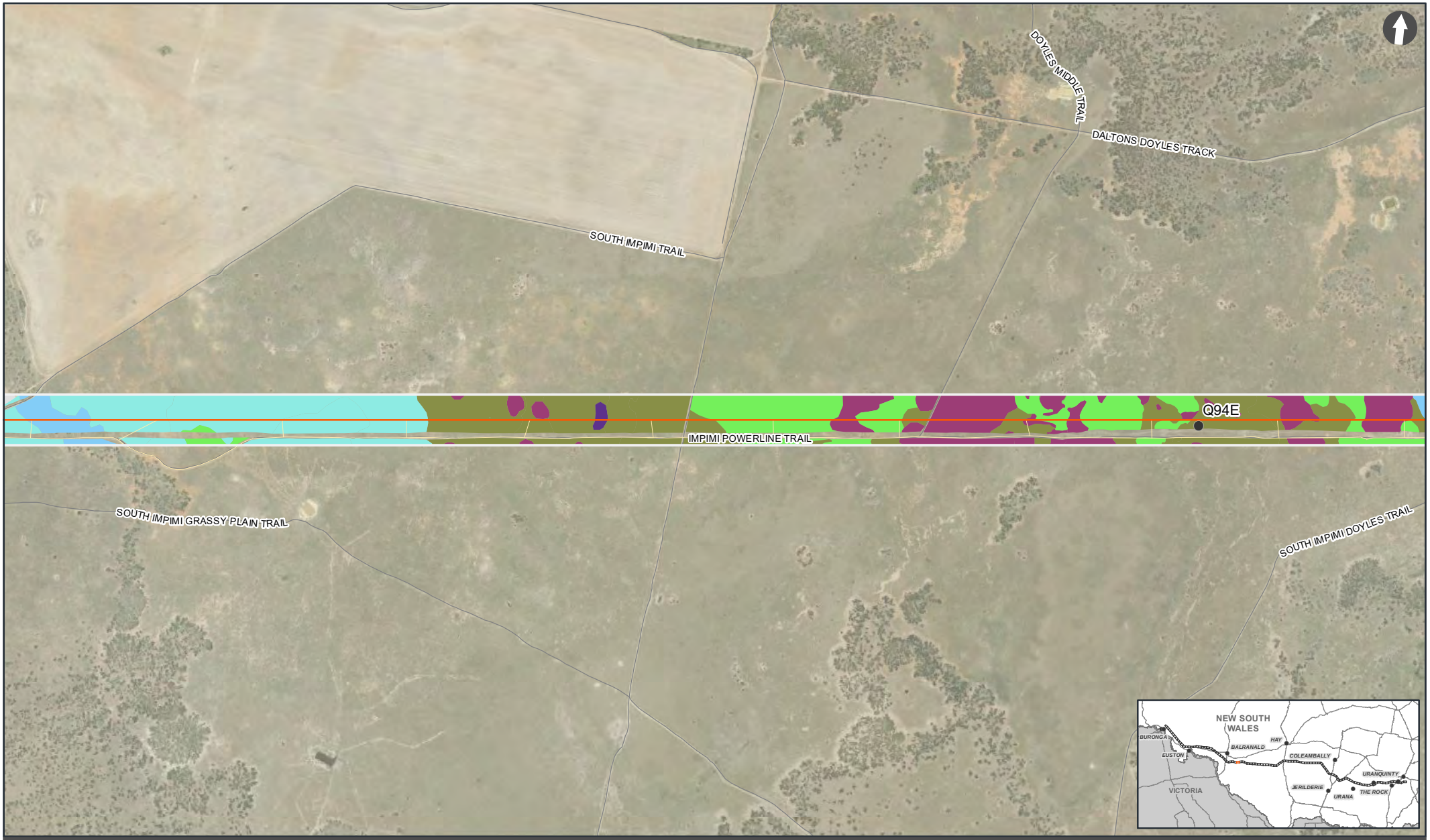
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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure B-5af

Native Vegetation Mapping of Plant Community Types and Zones



BDAR - Figure B-5ag

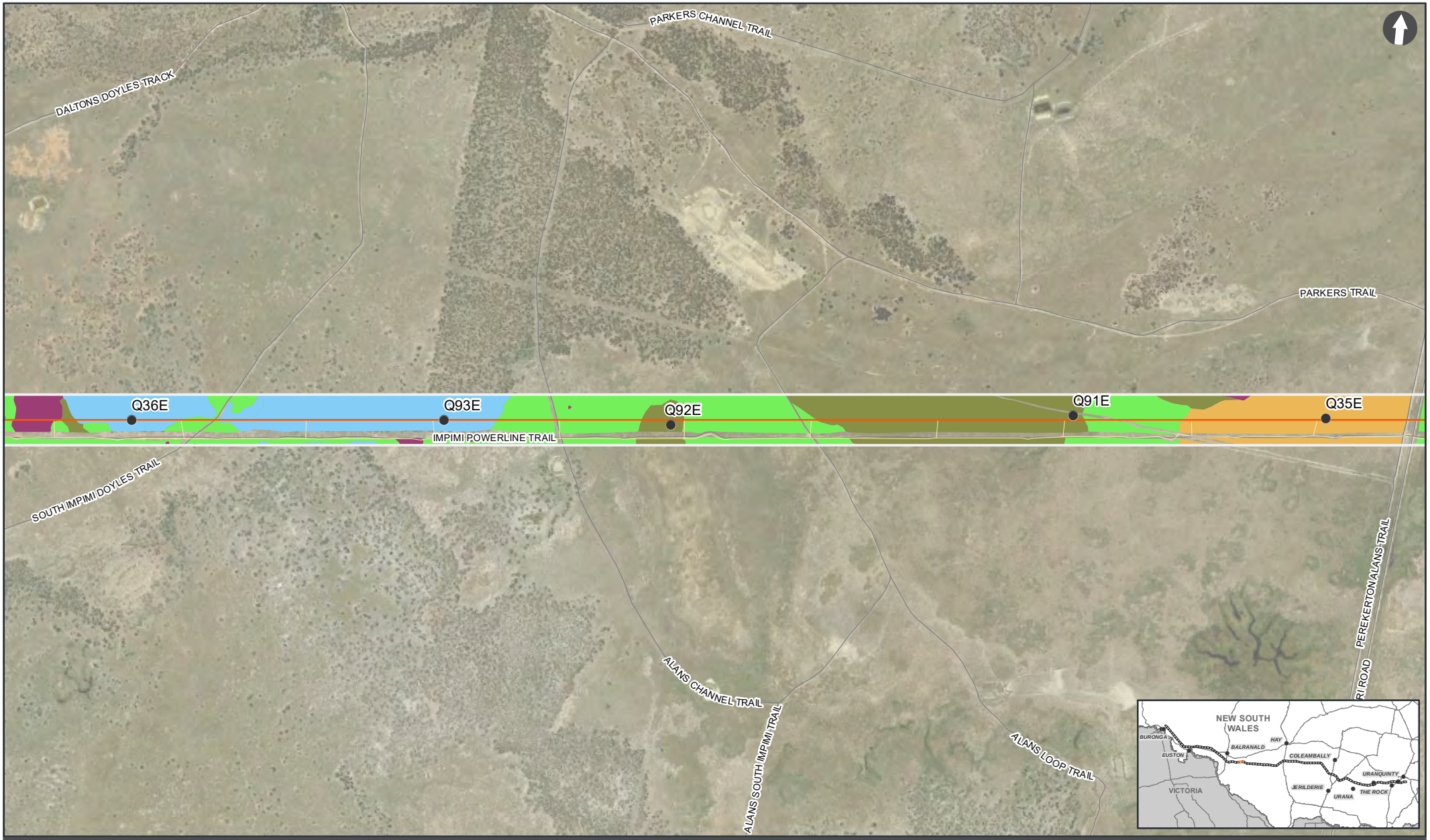
Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping
- Category 1 - Exempt Land

Plant Community Types
- PCT143 - Narrow-leaved Hopbush - Scrub Turpentine - Senna shrubland on semi-arid and arid sandplains and dunes. | Mod-good
- PCT163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones | Mod-good
- PCT23 - Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones | Derived
- PCT23 - Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones | Mod-good
- PCT58 - Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion | Derived
- PCT58 - Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion | Mod-good

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-5ah

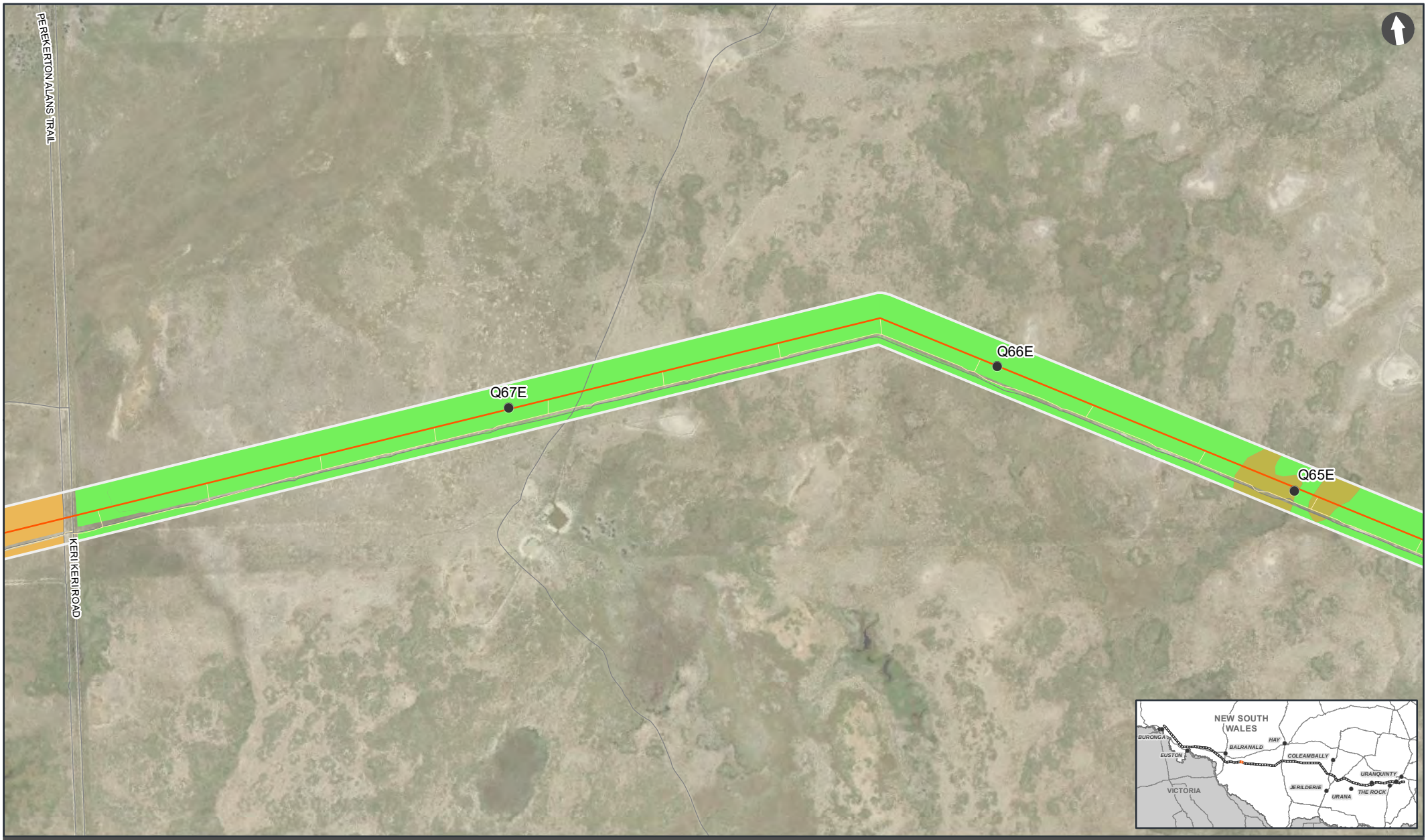
Native Vegetation Mapping of Plant Community Types and Zones

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping

Plant Community Types
- PCT163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones | Mod-good
- PCT164 - Cotton Bush open shrubland of the semi-arid (warm) zone | Mod-good
- PCT23 - Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones | Derived
- PCT23 - Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones | Mod-good
- PCT58 - Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion | Mod-good

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping

Plant Community Types

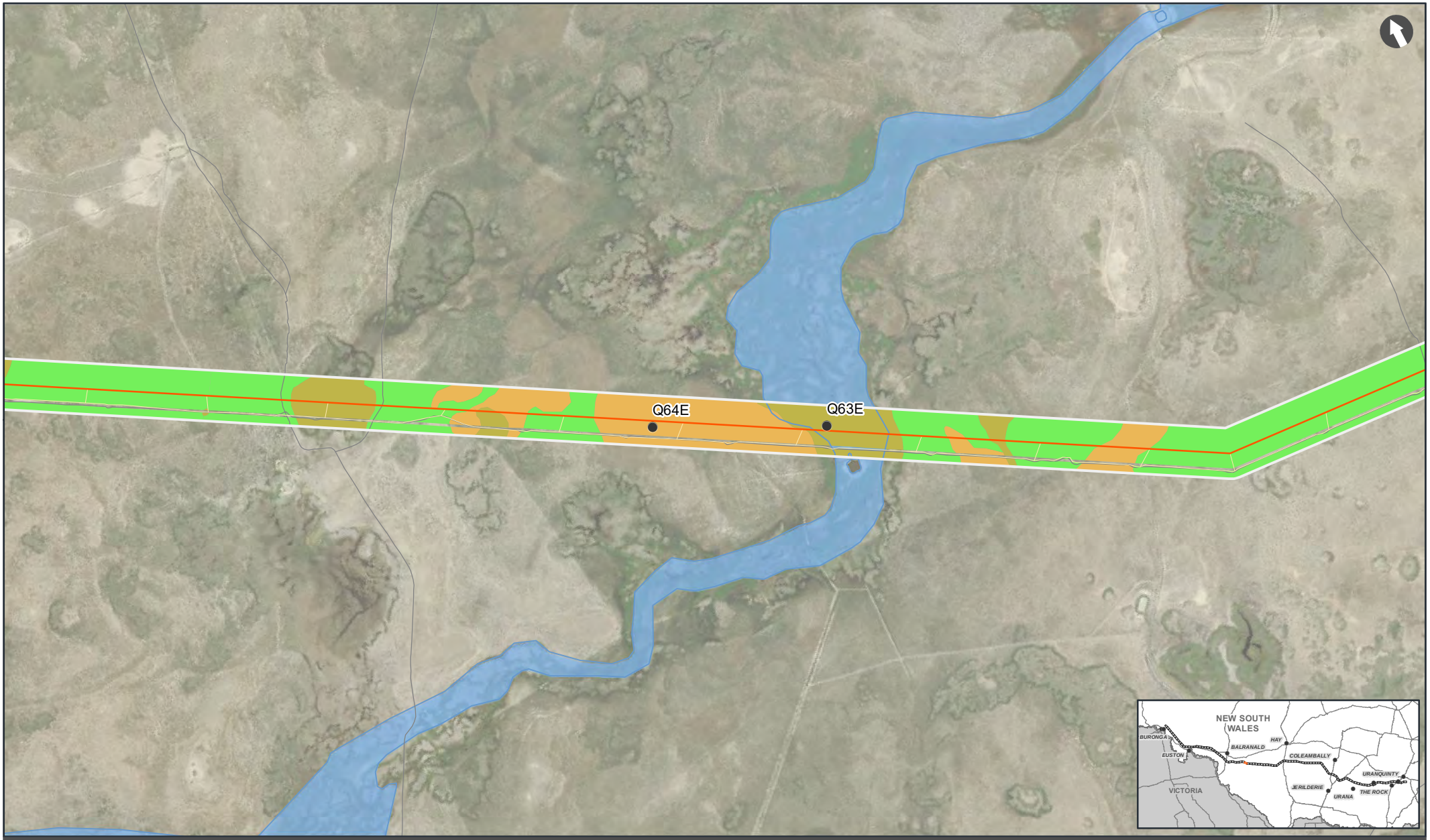
- PCT163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones | Mod-good
- PCT164 - Cotton Bush open shrubland of the semi-arid (warm) zone | Mod-good
- PCT17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good

BDAR - Figure B-5ai

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping

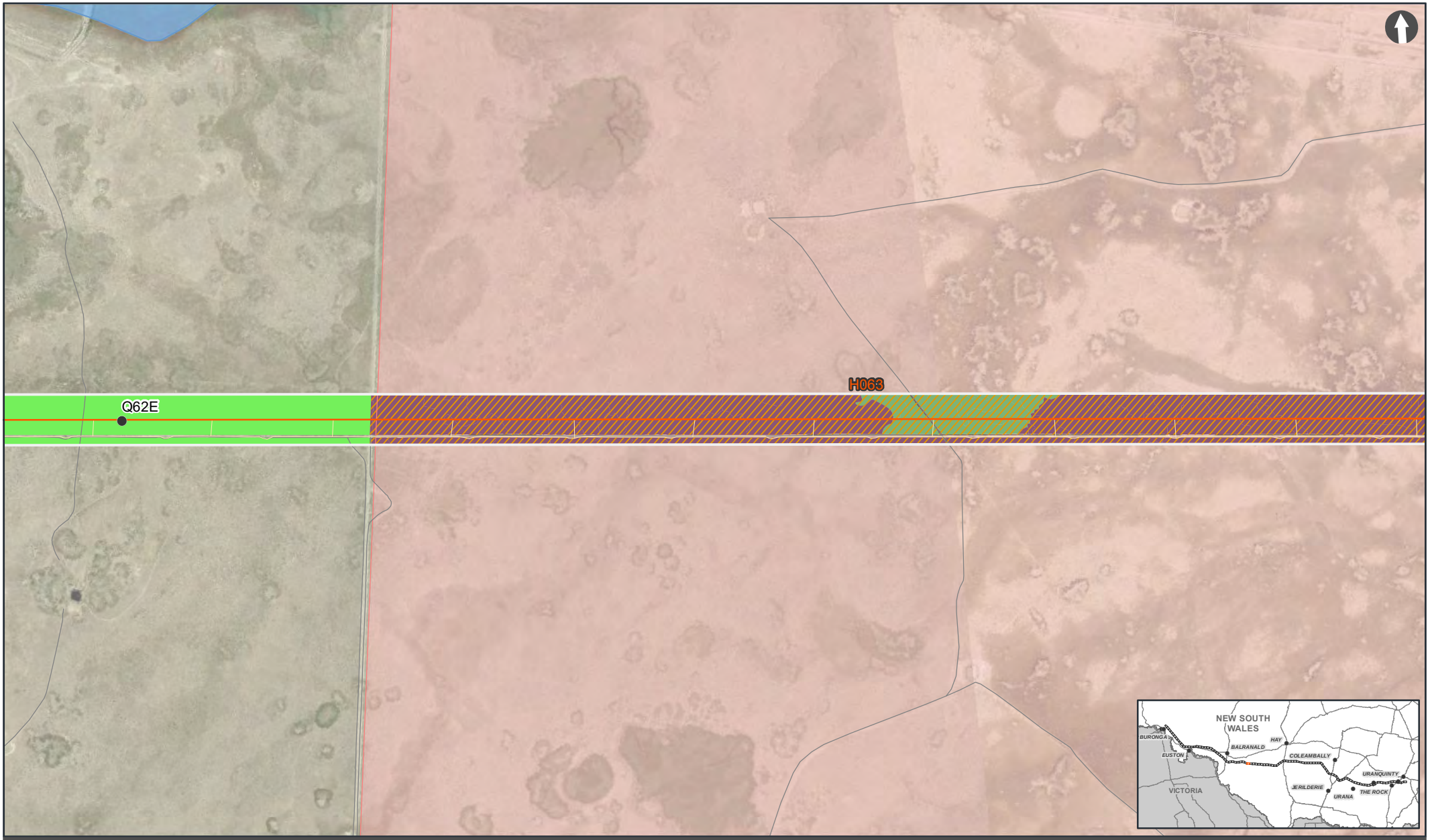
Plant Community Types
- PCT163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones | Mod-good
- PCT164 - Cotton Bush open shrubland of the semi-arid (warm) zone | Mod-good
- PCT17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good

BDAR - Figure B-5aj

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping

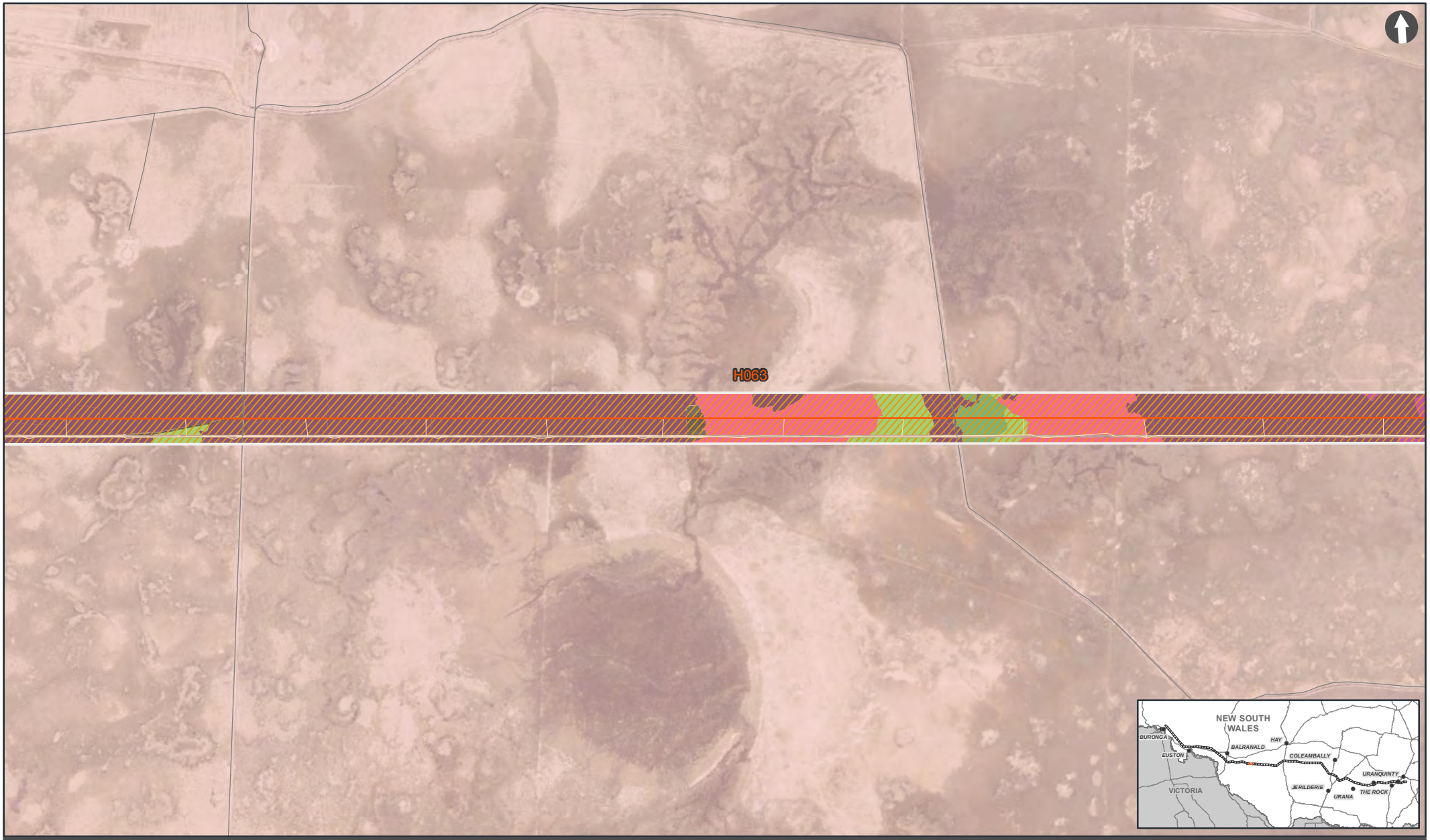
Plant Community Types
- PCT160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains | SVM_Bench
- PCT163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones | Mod-good
- PCT164 - Cotton Bush open shrubland of the semi-arid (warm) zone | SVM_Bench
- Miscellaneous/exotic

BDAR - Figure B-5ak

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-5al

Native Vegetation Mapping of Plant Community Types and Zones

Project Components

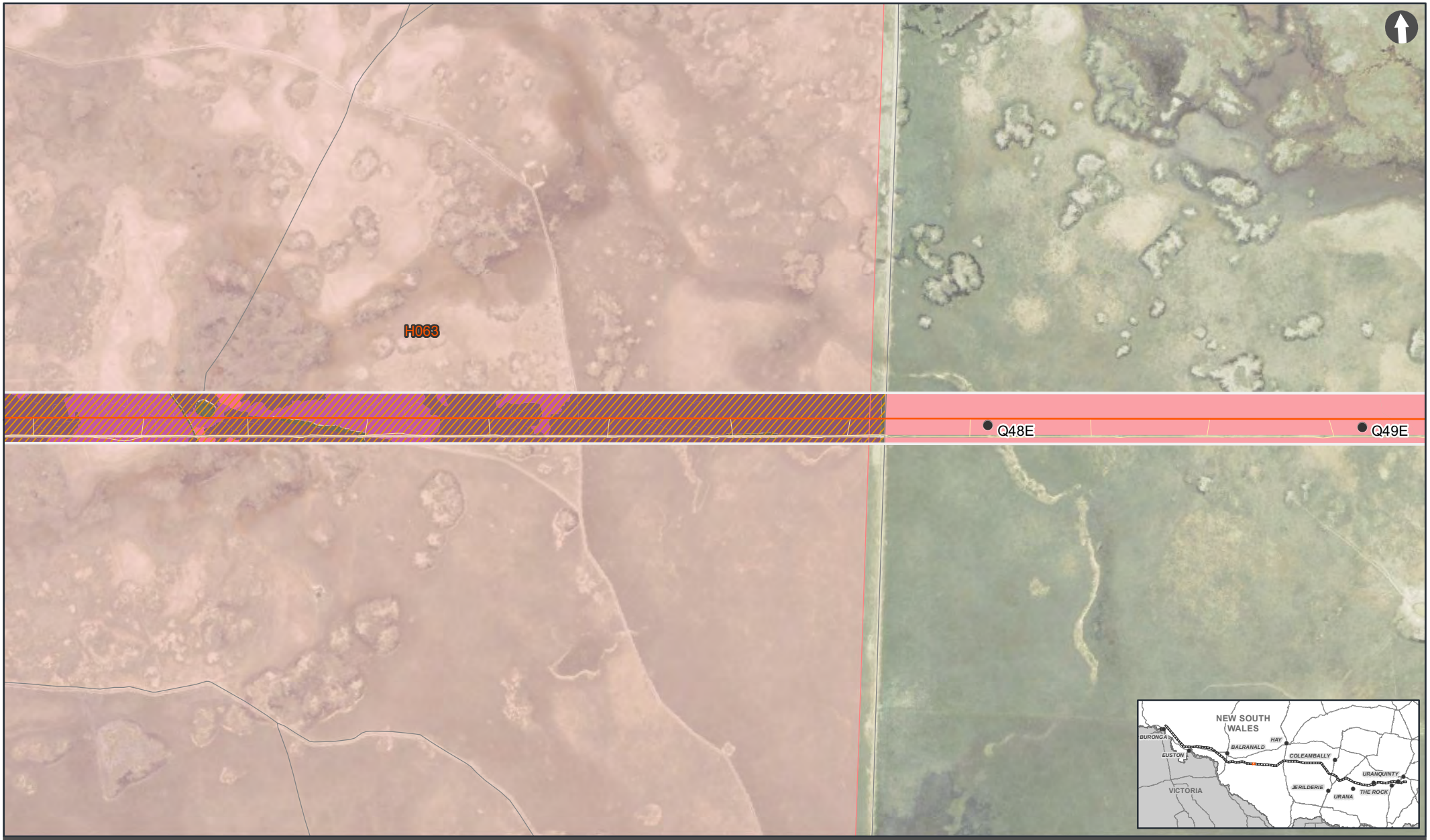
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- State Vegetation Mapping

Plant Community Types

- PCT157 - Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion | SVM_Bench
- PCT160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains | SVM_Bench
- PCT164 - Cotton Bush open shrubland of the semi-arid (warm) zone | SVM_Bench
- PCT17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | SVM_Bench
- PCT46 - Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion | SVM_Bench
- Miscellaneous/exotic

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping

Plant Community Types

- PCT157 - Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion | Mod-good
- PCT164 - Cotton Bush open shrubland of the semi-arid (warm) zone | SVM_Bench
- PCT17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | SVM_Bench
- PCT46 - Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion | SVM_Bench
- Miscellaneous/exotic

BDAR - Figure B-5am

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping

Plant Community Types

- PCT157 - Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion | Mod-good
- PCT163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones | Mod-good
- PCT164 - Cotton Bush open shrubland of the semi-arid (warm) zone | Mod-good
- Miscellaneous/exotic

BDAR - Figure B-5an

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping
- Category 1 - Exempt Land

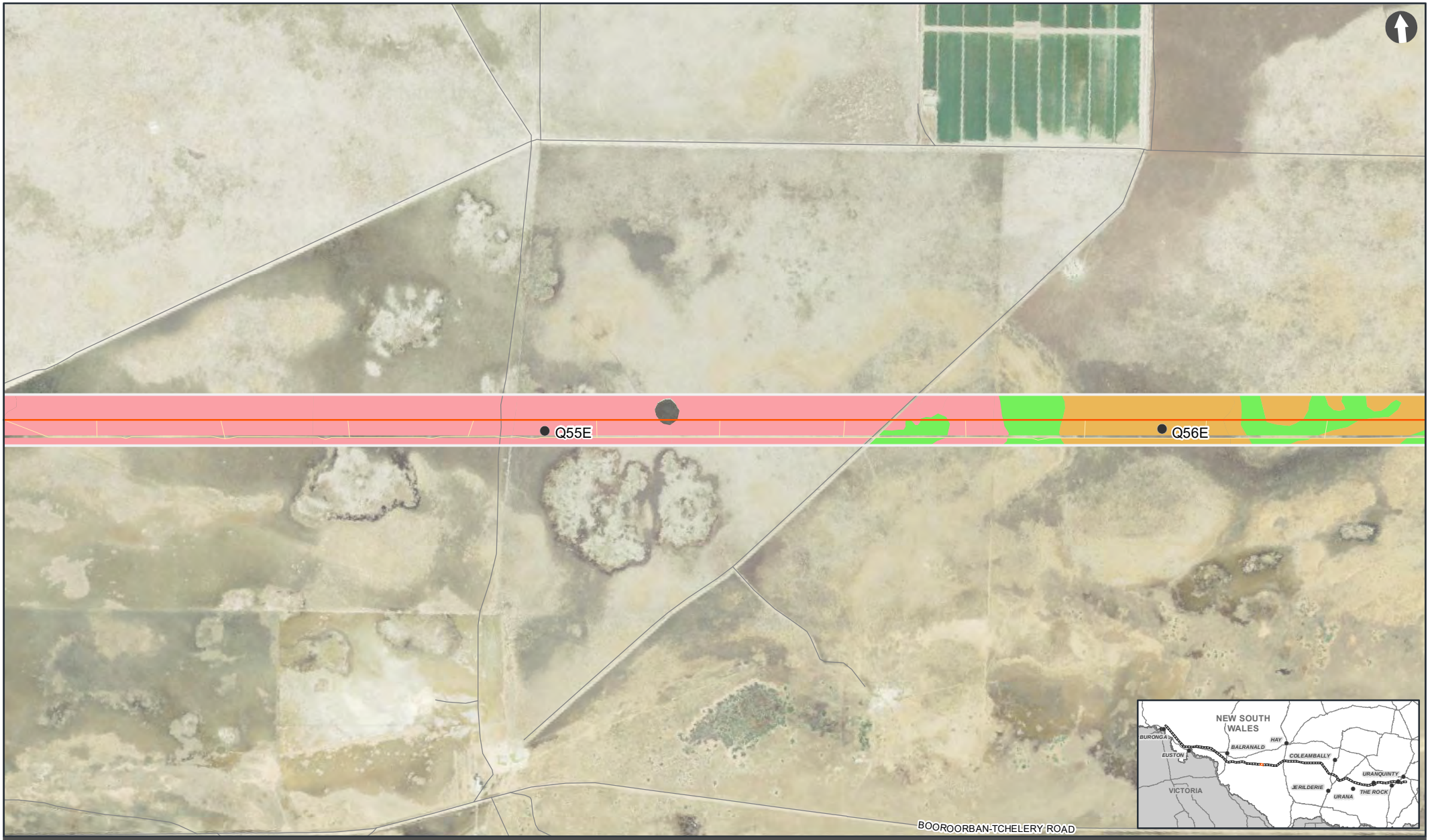
Plant Community Types
- PCT157 - Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion | Mod-good
- PCT163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones | Mod-good
- PCT164 - Cotton Bush open shrubland of the semi-arid (warm) zone | Mod-good
- PCT24 - Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains | Mod-good
- Miscellaneous/exotic

BDAR - Figure B-5ao

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping

Plant Community Types

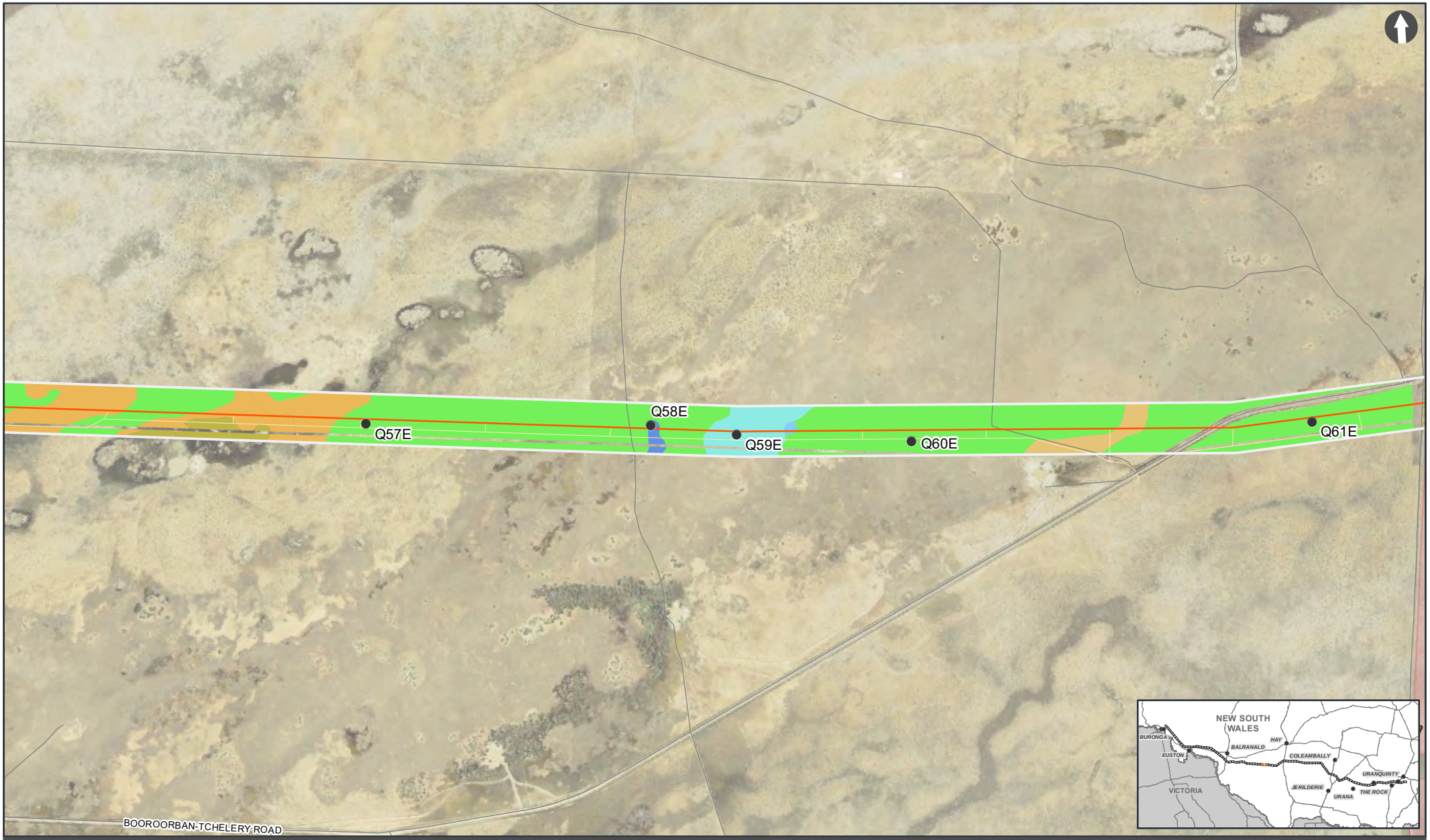
- PCT157 - Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion | Mod-good
- PCT163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones | Mod-good
- PCT164 - Cotton Bush open shrubland of the semi-arid (warm) zone | Mod-good
- Miscellaneous/exotic

BDAR - Figure B-5ap

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-5aq

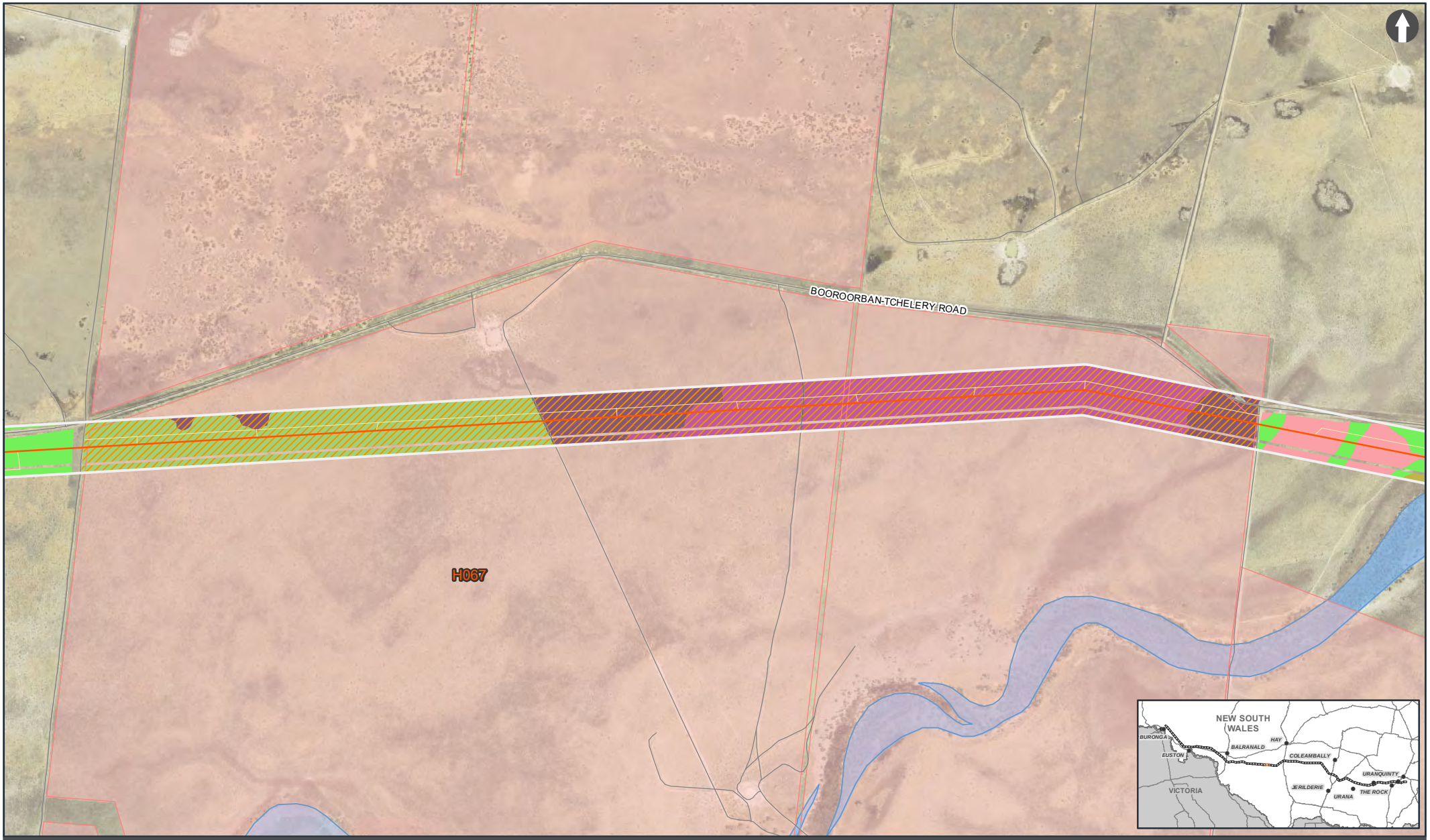
Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping

Plant Community Types
- PCT15 - Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT157 - Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion | SVM_Bench
- PCT163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones | Mod-good
- PCT164 - Cotton Bush open shrubland of the semi-arid (warm) zone | Mod-good
- PCT17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT58 - Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion | Derived
- PCT58 - Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion | Mod-good
- PCT58 - Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion | Moderate

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



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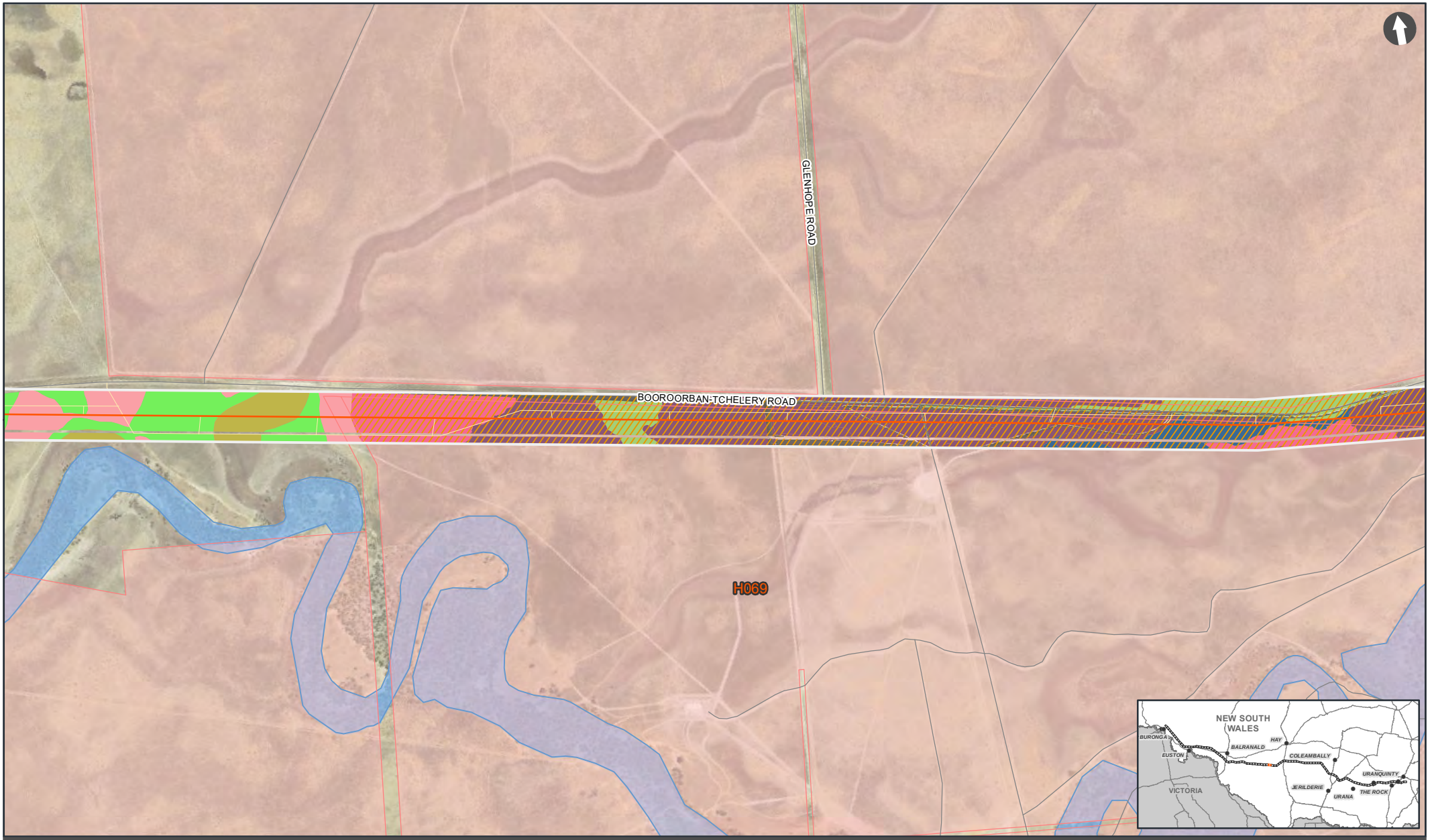
Native Vegetation Mapping of Plant Community Types and Zones

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- State Vegetation Mapping

Plant Community Types
- PCT157 - Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion | Mod-good
- PCT157 - Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion | SVM_Bench
- PCT163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones | Mod-good
- PCT164 - Cotton Bush open shrubland of the semi-arid (warm) zone | SVM_Bench
- PCT17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT46 - Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion | SVM_Bench
- Miscellaneous/exotic

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-5as

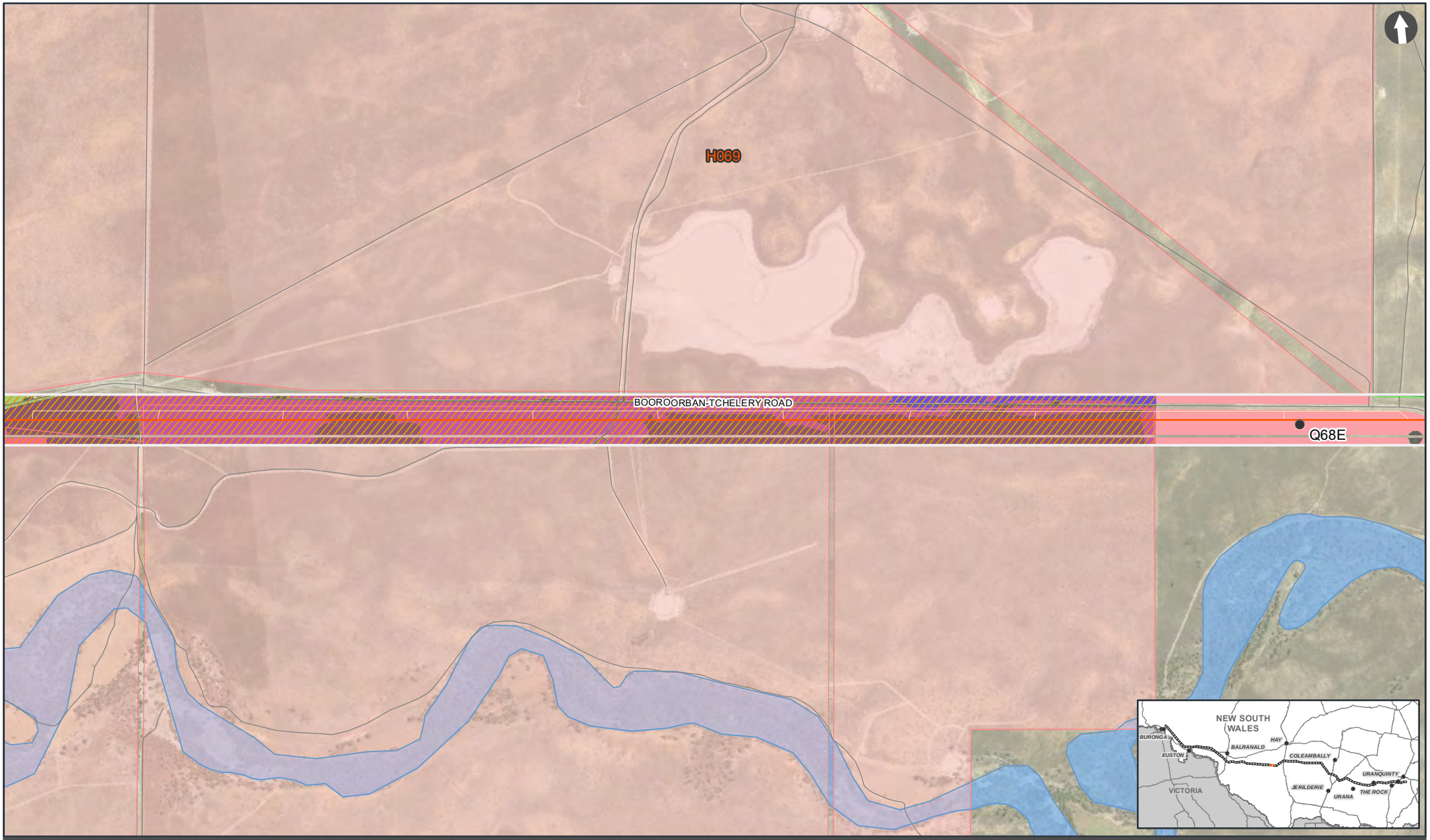
Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- State Vegetation Mapping

Plant Community Types
- PCT157 - Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion | Mod-good
- PCT157 - Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion | SVM_Bench
- PCT163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones | Mod-good
- PCT164 - Cotton Bush open shrubland of the semi-arid (warm) zone | SVM_Bench
- PCT166 - Disturbed annual saltbush forbland on clay plains and inundation zones mainly of south-western NSW | SVM_Bench
- PCT17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | SVM_Bench

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping

Plant Community Types

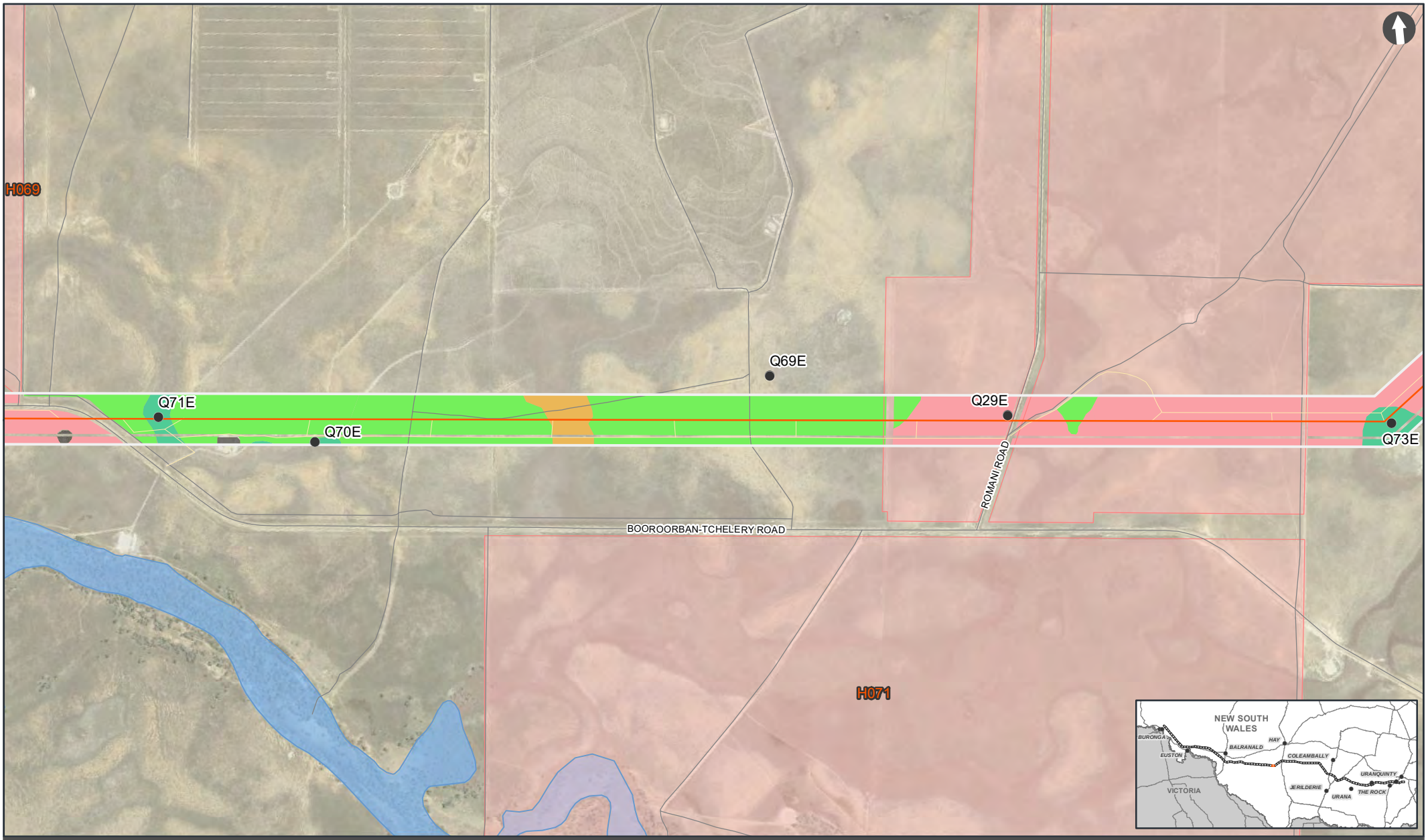
- PCT157 - Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion | Mod-good
- PCT157 - Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion | SVM_Bench
- PCT163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones | Mod-good
- PCT164 - Cotton Bush open shrubland of the semi-arid (warm) zone | SVM_Bench
- PCT17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | SVM_Bench
- PCT24 - Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains | SVM_Bench
- PCT46 - Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion | SVM_Bench

BDAR - Figure B-5at

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping

Plant Community Types

- PCT157 - Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion | Mod-good
- PCT163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones | Mod-good
- PCT164 - Cotton Bush open shrubland of the semi-arid (warm) zone | Mod-good
- PCT24 - Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains | Mod-good
- Miscellaneous/exotic

BDAR - Figure B-5au

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping

Plant Community Types

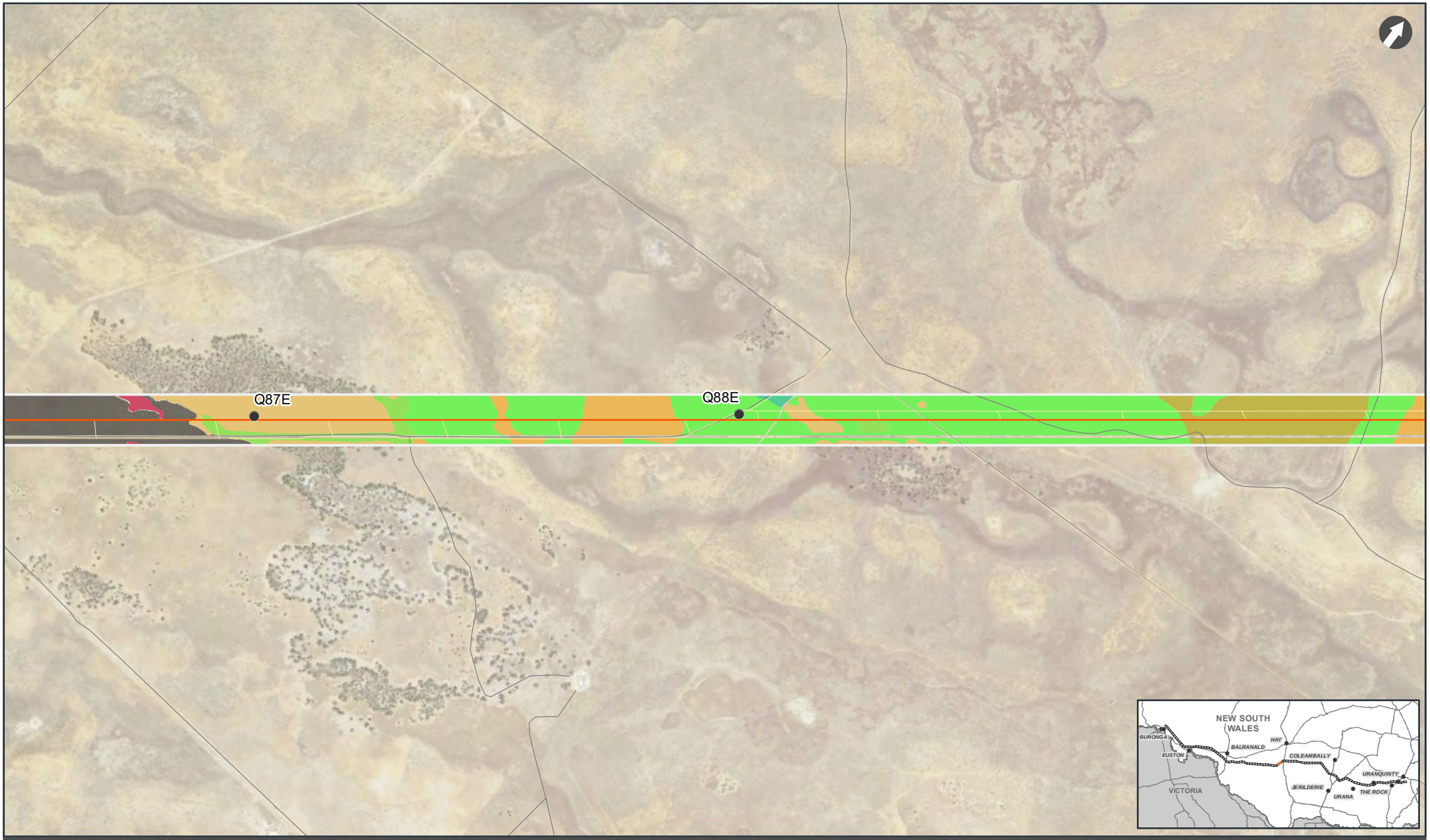
- PCT13 - Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | SVM_Bench
- PCT15 - Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | SVM_Bench
- PCT157 - Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion | Mod-good
- PCT157 - Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion | SVM_Bench
- PCT163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones | Mod-good
- PCT164 - Cotton Bush open shrubland of the semi-arid (warm) zone | SVM_Bench
- PCT24 - Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains | Mod-good
- PCT28 - White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone | SVM_Bench
- Miscellaneous/exotic

BDAR - Figure B-5av

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping

Plant Community Types

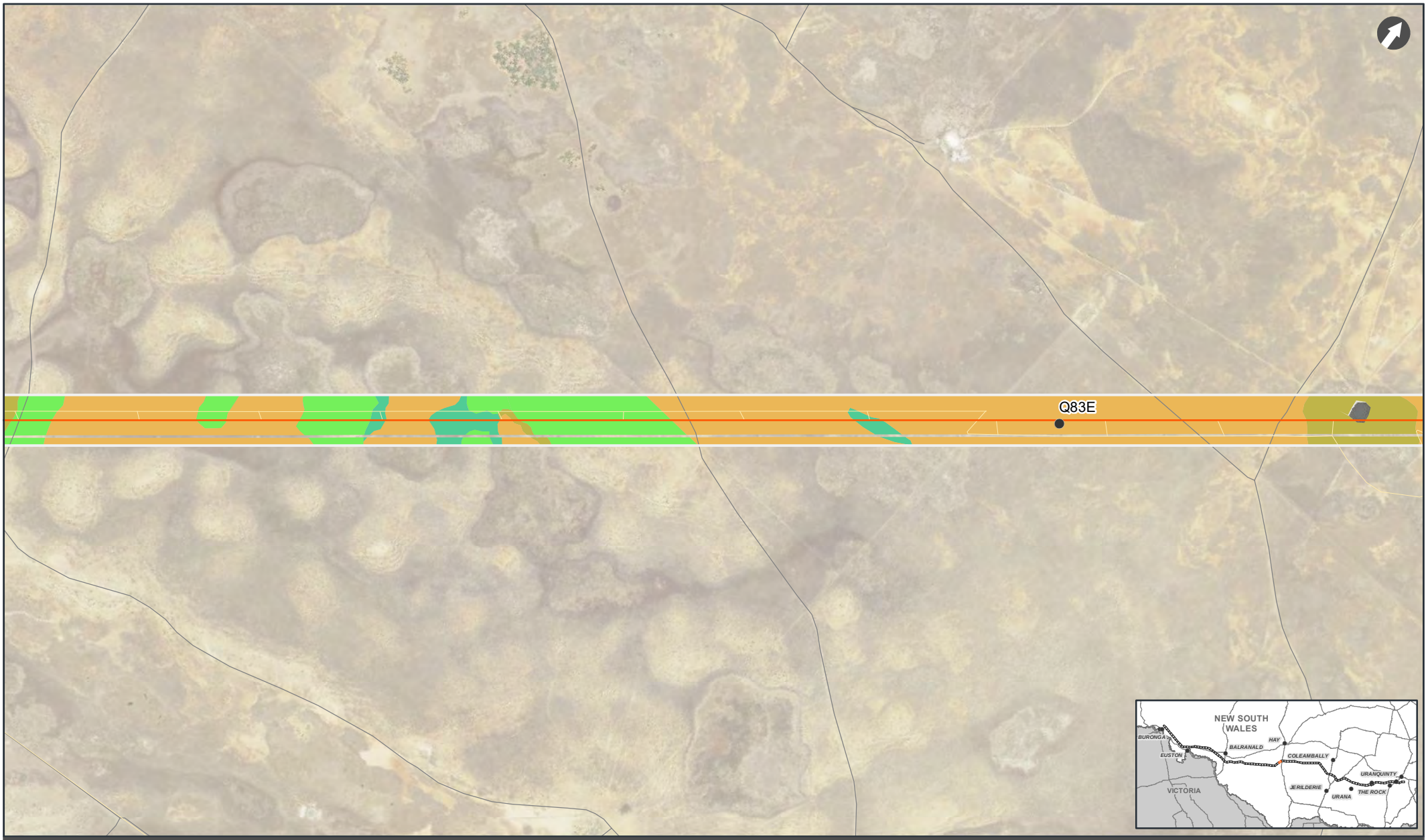
- PCT15 - Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Derived
- PCT15 - Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones | Mod-good
- PCT164 - Cotton Bush open shrubland of the semi-arid (warm) zone | Mod-good
- PCT17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT24 - Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains | Mod-good
- PCT28 - White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone | Mod-good

BDAR - Figure B-5aw

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping

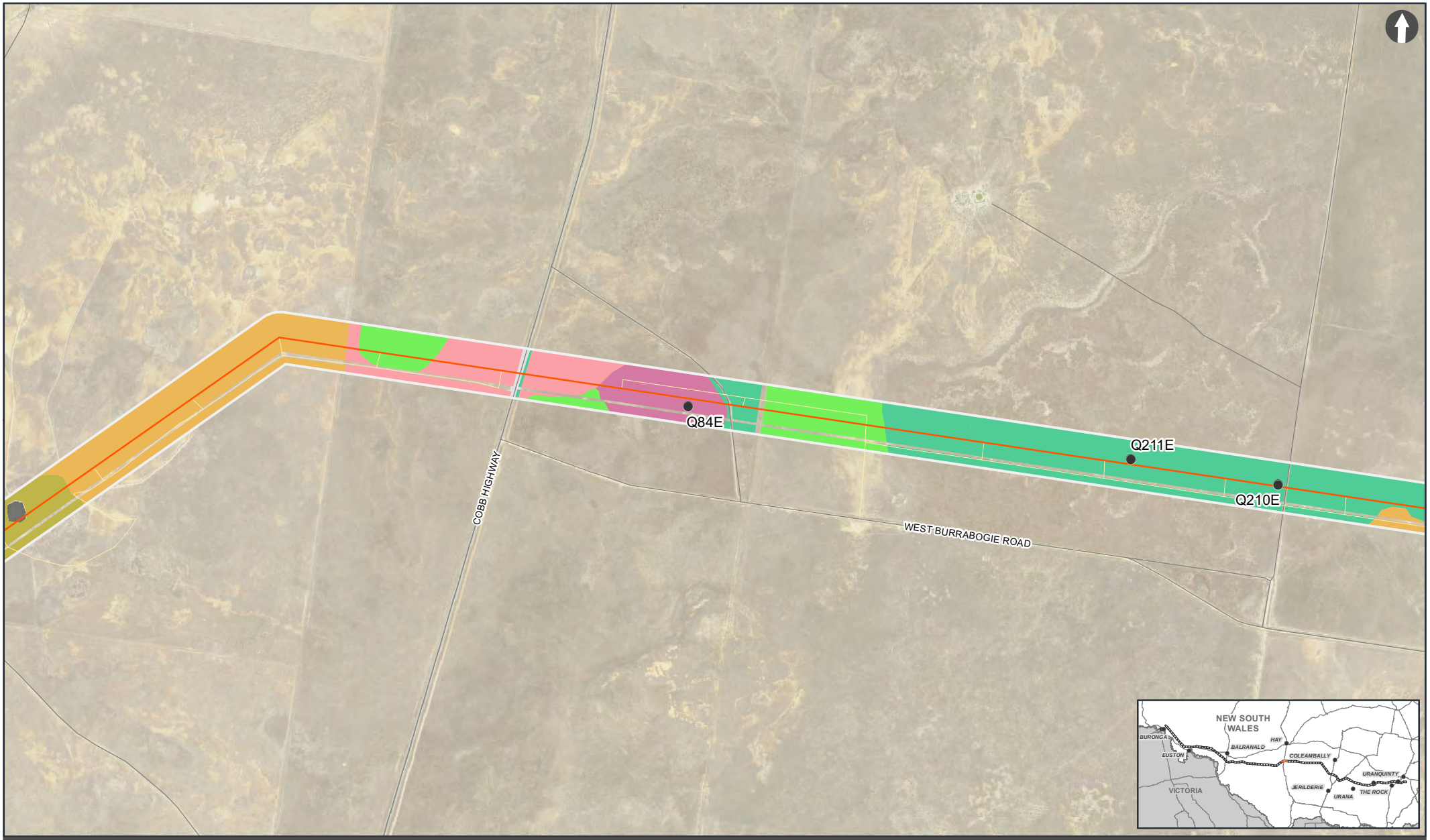
Plant Community Types
- PCT163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones | Mod-good
- PCT164 - Cotton Bush open shrubland of the semi-arid (warm) zone | Mod-good
- PCT17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT24 - Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains | Mod-good
- Miscellaneous/exotic

BDAR - Figure B-5ax

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping
- Category 1 - Exempt Land

Plant Community Types

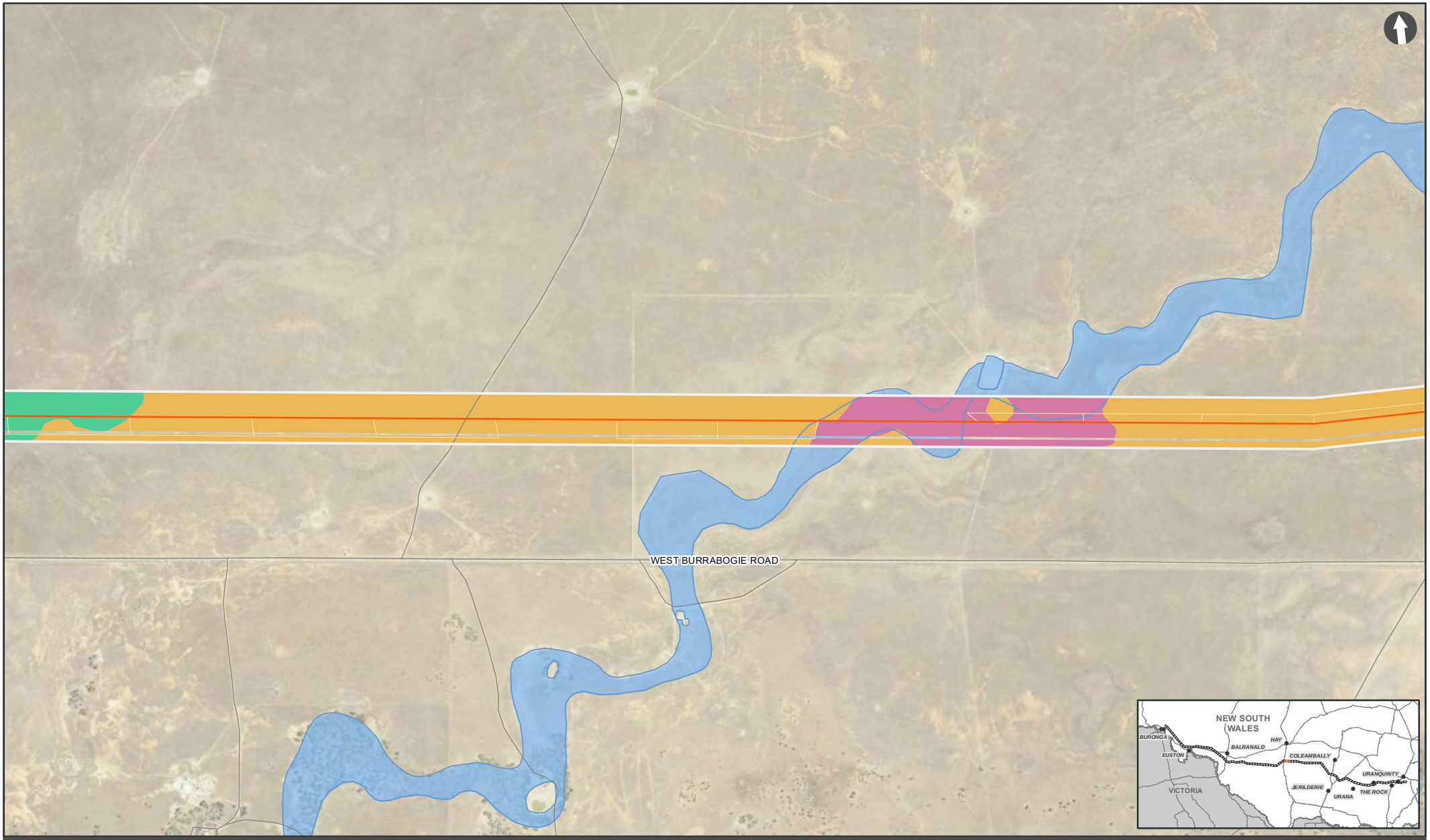
- PCT157 - Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion | Mod-good
- PCT160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains | Mod-good
- PCT163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones | Mod-good
- PCT164 - Cotton Bush open shrubland of the semi-arid (warm) zone | Mod-good
- PCT17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT24 - Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains | Mod-good
- Miscellaneous/exotic

BDAR - Figure B-5ay

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- State Vegetation Mapping

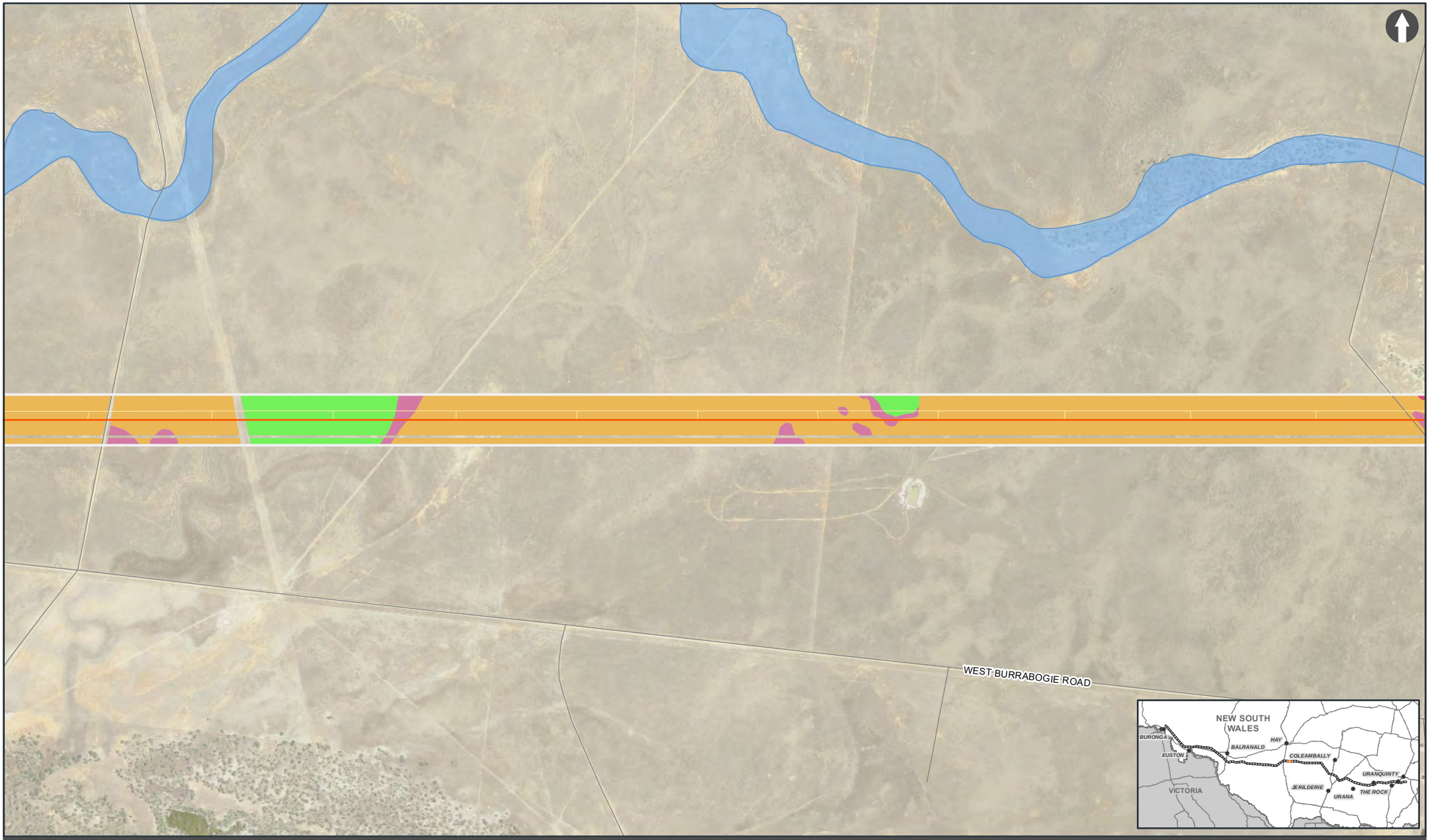
Plant Community Types
- PCT160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains | Mod-good
- PCT164 - Cotton Bush open shrubland of the semi-arid (warm) zone | Mod-good
- PCT24 - Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains | Mod-good

BDAR - Figure B-5az

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- State Vegetation Mapping

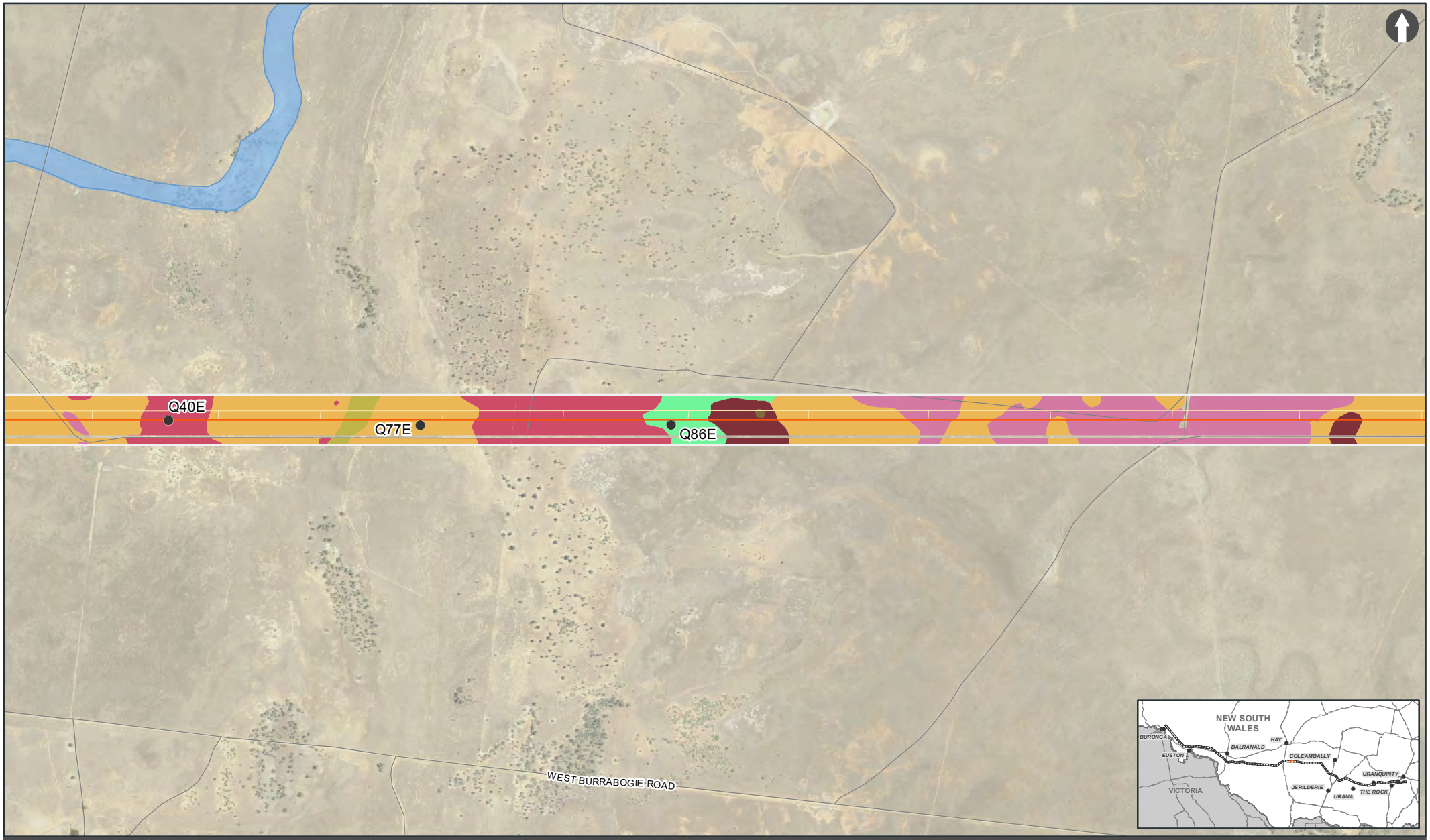
Plant Community Types
- PCT160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains | Mod-good
- PCT163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones | Mod-good
- PCT164 - Cotton Bush open shrubland of the semi-arid (warm) zone | Mod-good
- PCT28 - White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone | Mod-good

BDAR - Figure B-5ba

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-5bb

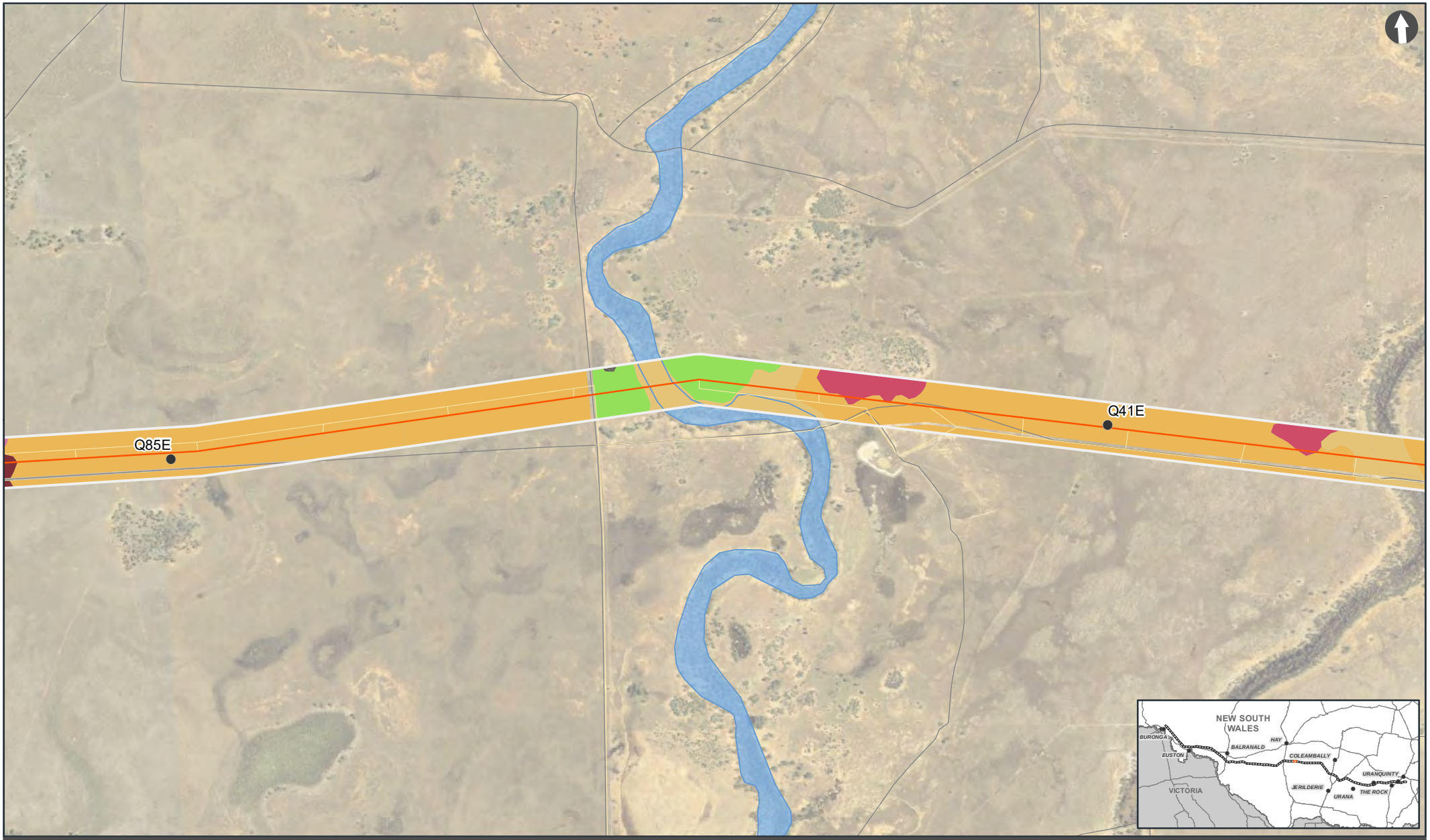
Native Vegetation Mapping of Plant Community Types and Zones

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping

Plant Community Types
- PCT160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains | Mod-good
- PCT164 - Cotton Bush open shrubland of the semi-arid (warm) zone | Mod-good
- PCT17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Mod-good
- PCT28 - White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone | Mod-good
- PCT44 - Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion | Mod-good
- PCT46 - Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion | Mod-good

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-5bc

Native Vegetation Mapping of Plant Community Types and Zones

Project Components

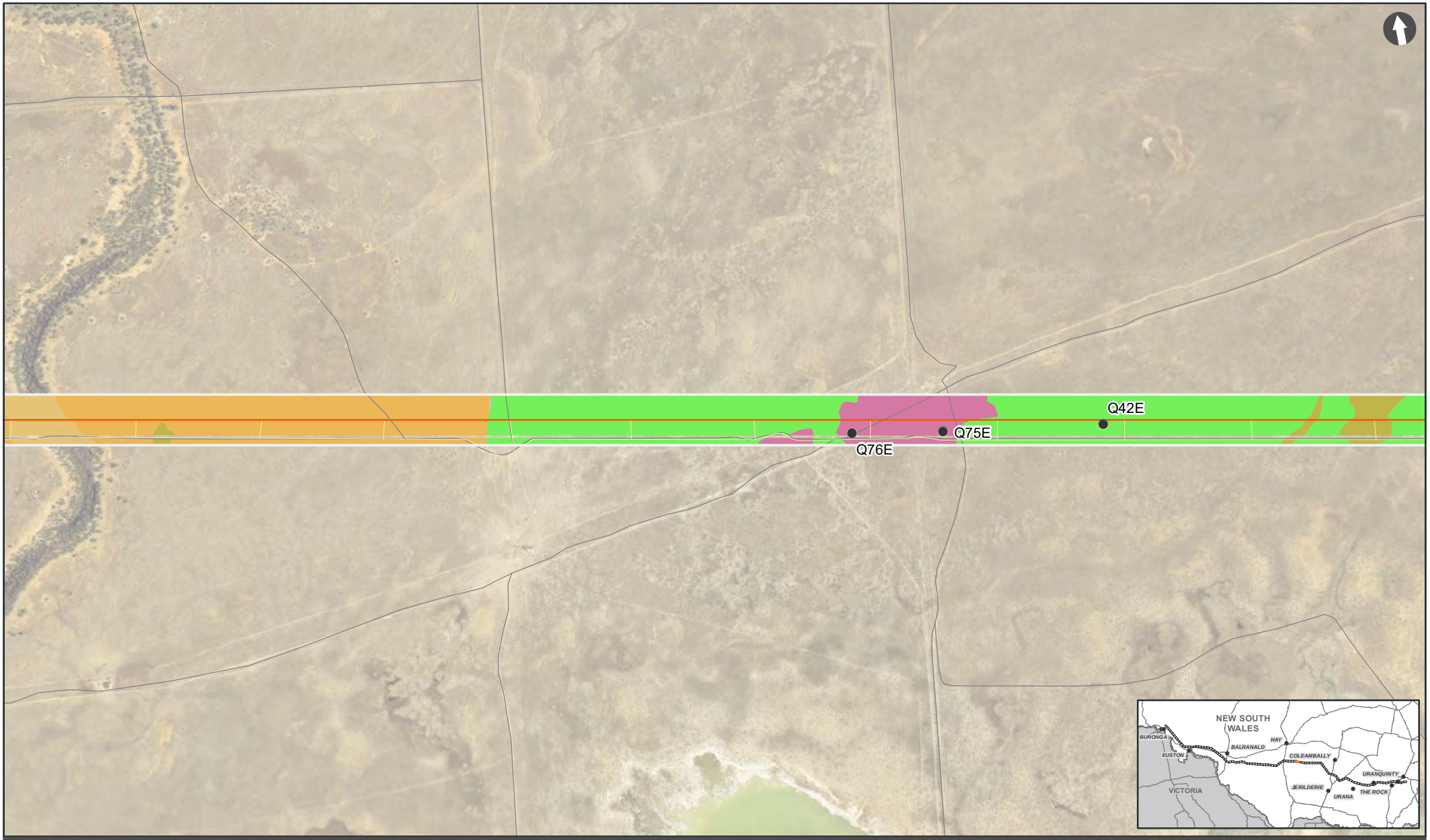
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping

Plant Community Types

- PCT15 - Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Derived
- PCT15 - Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains | Mod-good
- PCT164 - Cotton Bush open shrubland of the semi-arid (warm) zone | Mod-good
- PCT28 - White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone | Mod-good
- PCT46 - Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion | Mod-good
- PCT58 - Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion | Moderate

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping

Plant Community Types

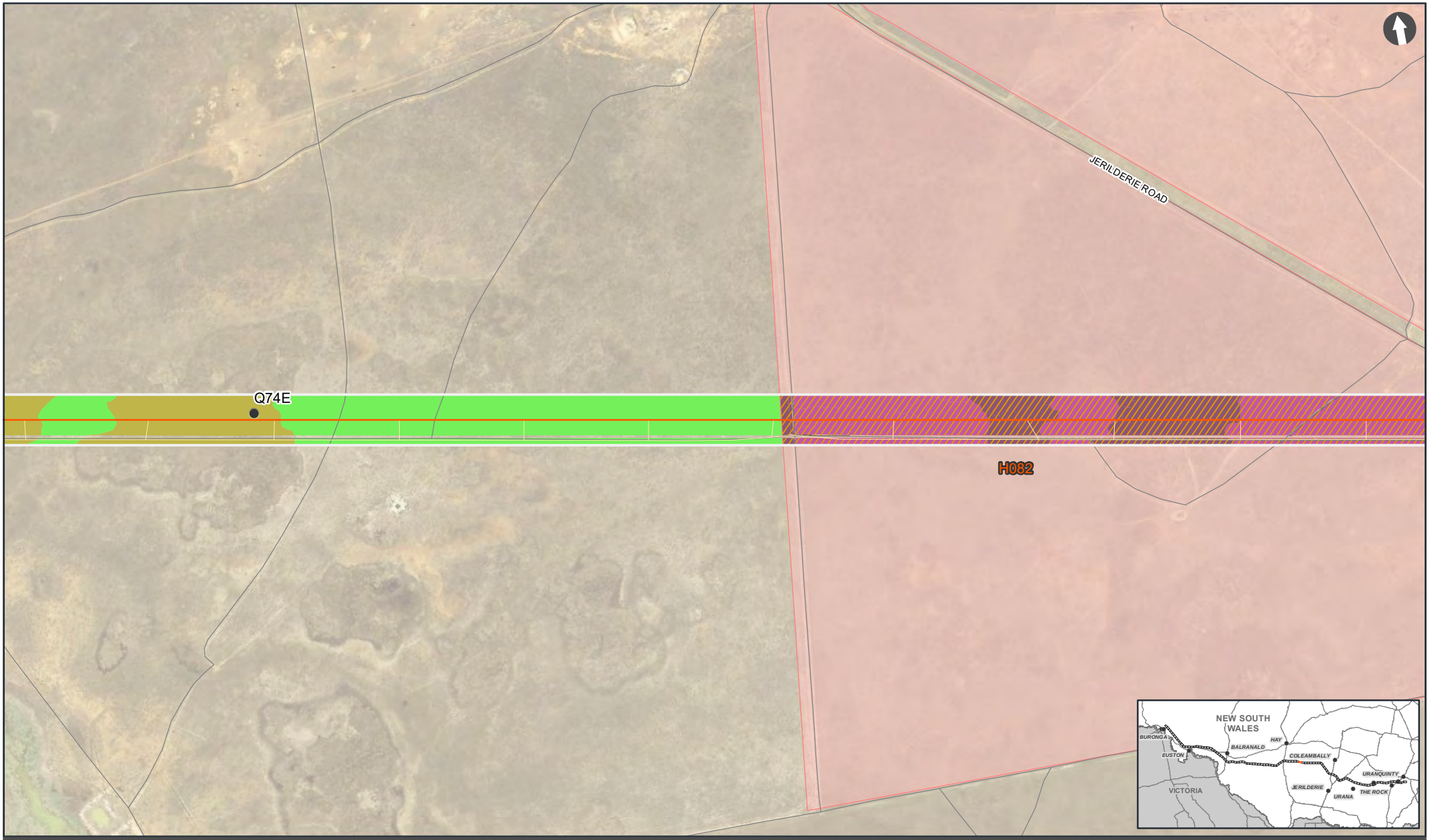
- PCT15 - Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains | Mod-good
- PCT163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones | Mod-good
- PCT164 - Cotton Bush open shrubland of the semi-arid (warm) zone | Mod-good
- PCT17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good

BDAR - Figure B-5bd

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping

Plant Community Types

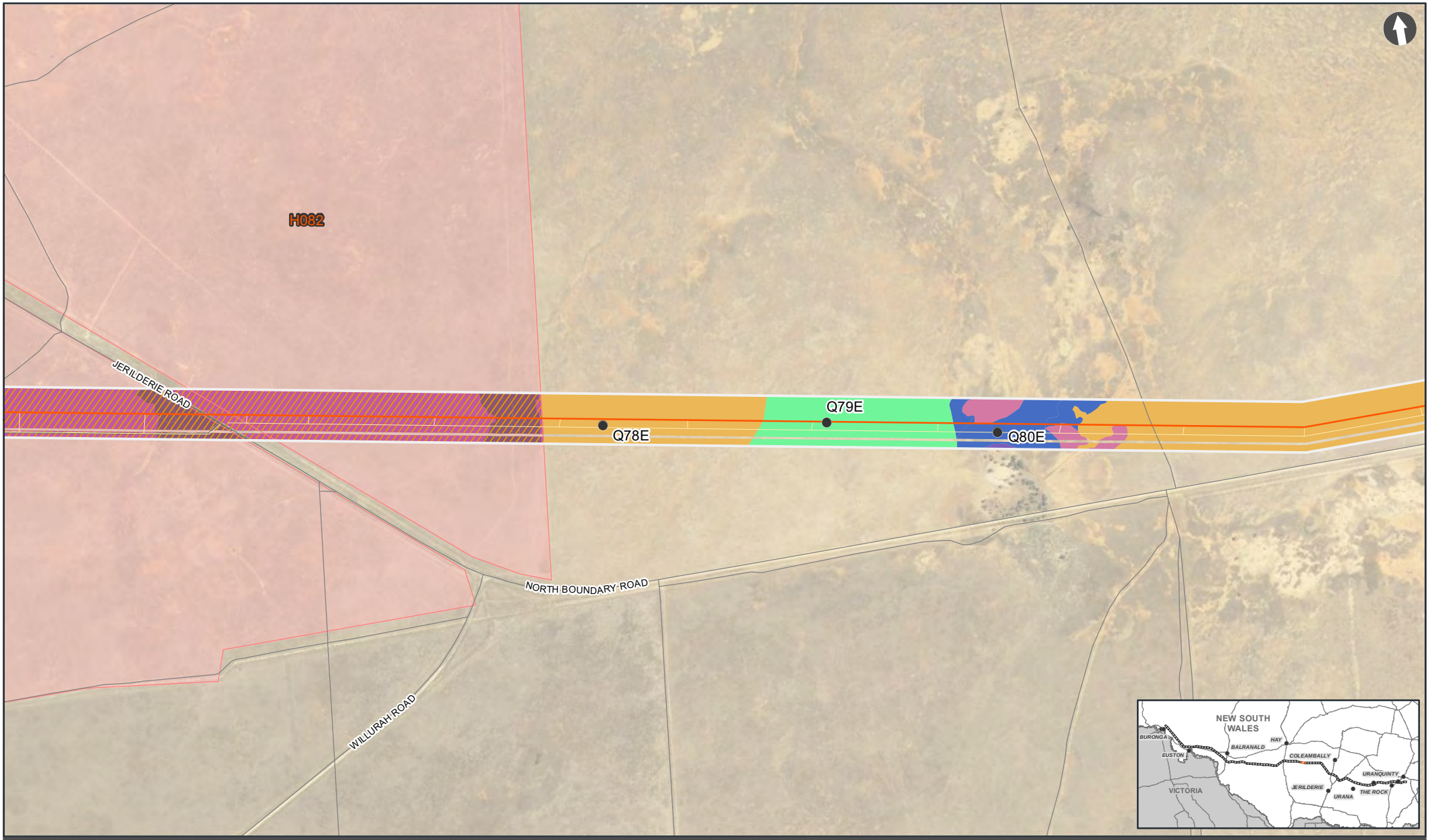
- PCT163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones | Mod-good
- PCT164 - Cotton Bush open shrubland of the semi-arid (warm) zone | SVM_Bench
- PCT17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT46 - Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion | SVM_Bench
- Miscellaneous/exotic

BDAR - Figure B-5be

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping

Plant Community Types

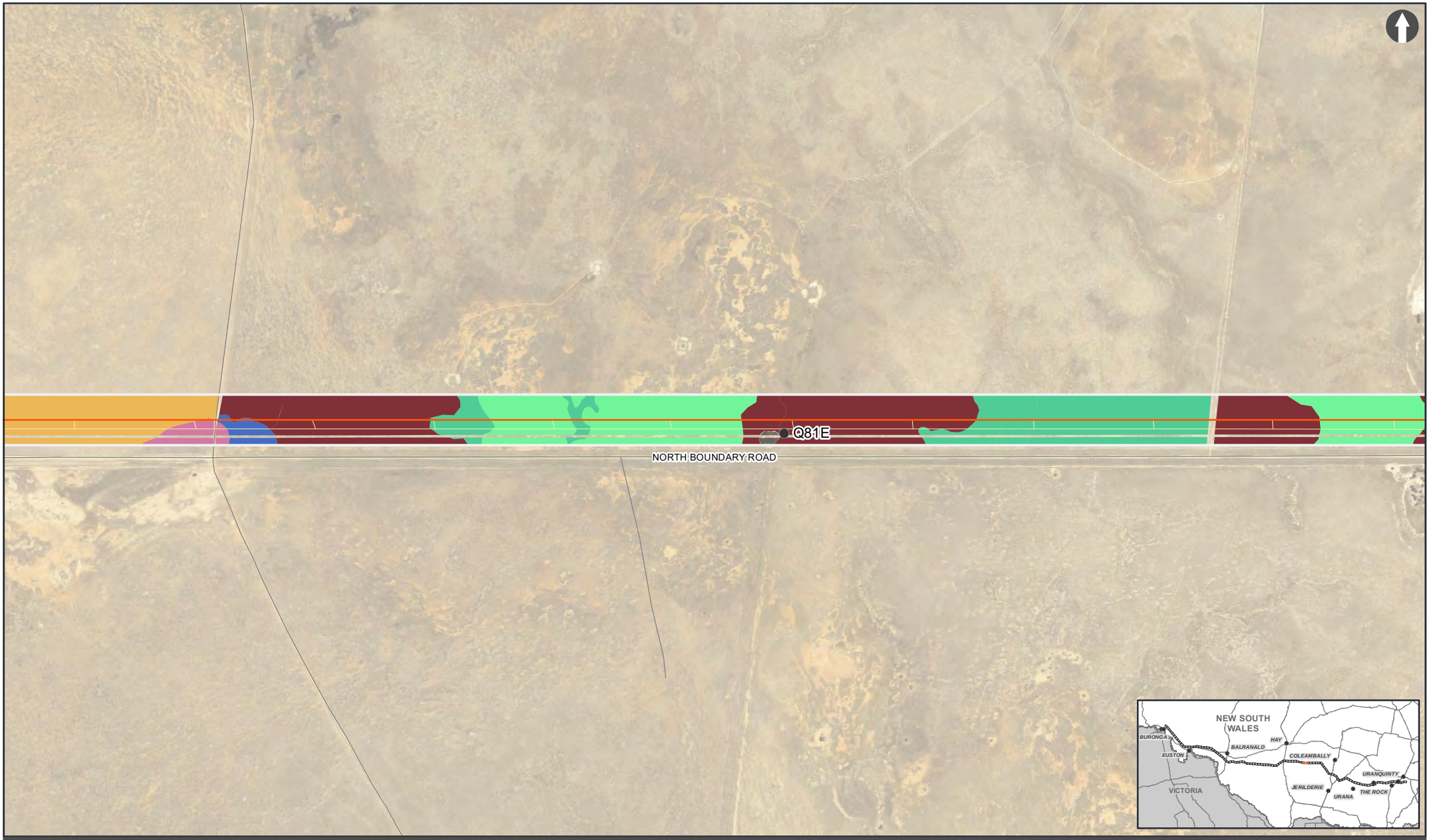
- PCT11 - River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains | Mod-good
- PCT164 - Cotton Bush open shrubland of the semi-arid (warm) zone | Mod-good
- PCT164 - Cotton Bush open shrubland of the semi-arid (warm) zone | SVM_Bench
- PCT216 - Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion | Mod-good
- PCT44 - Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion | Mod-good
- PCT46 - Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion | SVM_Bench

BDAR - Figure B-5bf

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure B-5bg

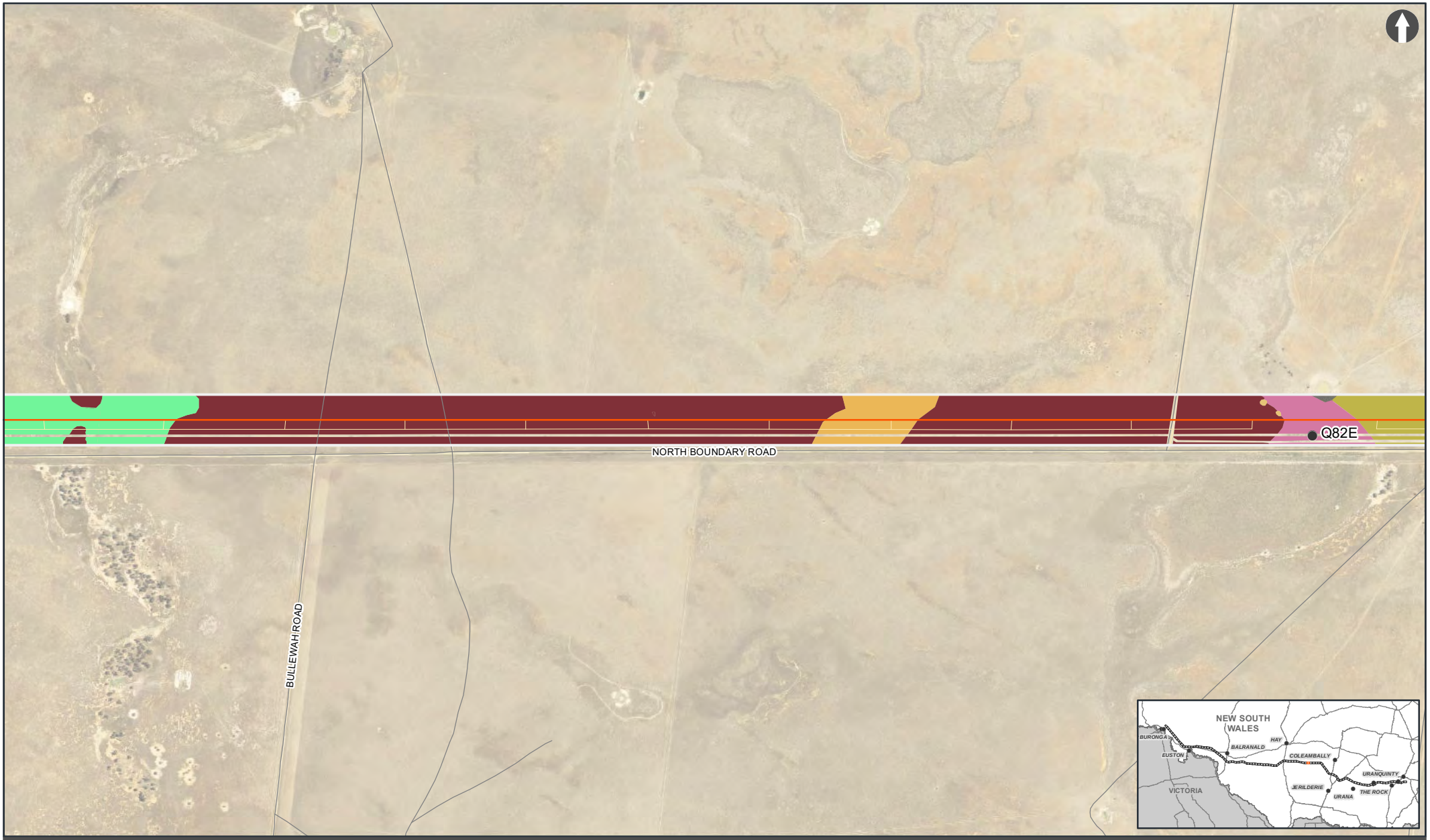
Native Vegetation Mapping of Plant Community Types and Zones

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping

Plant Community Types
- PCT160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains | Mod-good
- PCT164 - Cotton Bush open shrubland of the semi-arid (warm) zone | Mod-good
- PCT216 - Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion | Mod-good
- PCT24 - Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains | Mod-good
- PCT44 - Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion | Mod-good
- PCT46 - Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion | Mod-good
- Miscellaneous/exotic

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-5bh

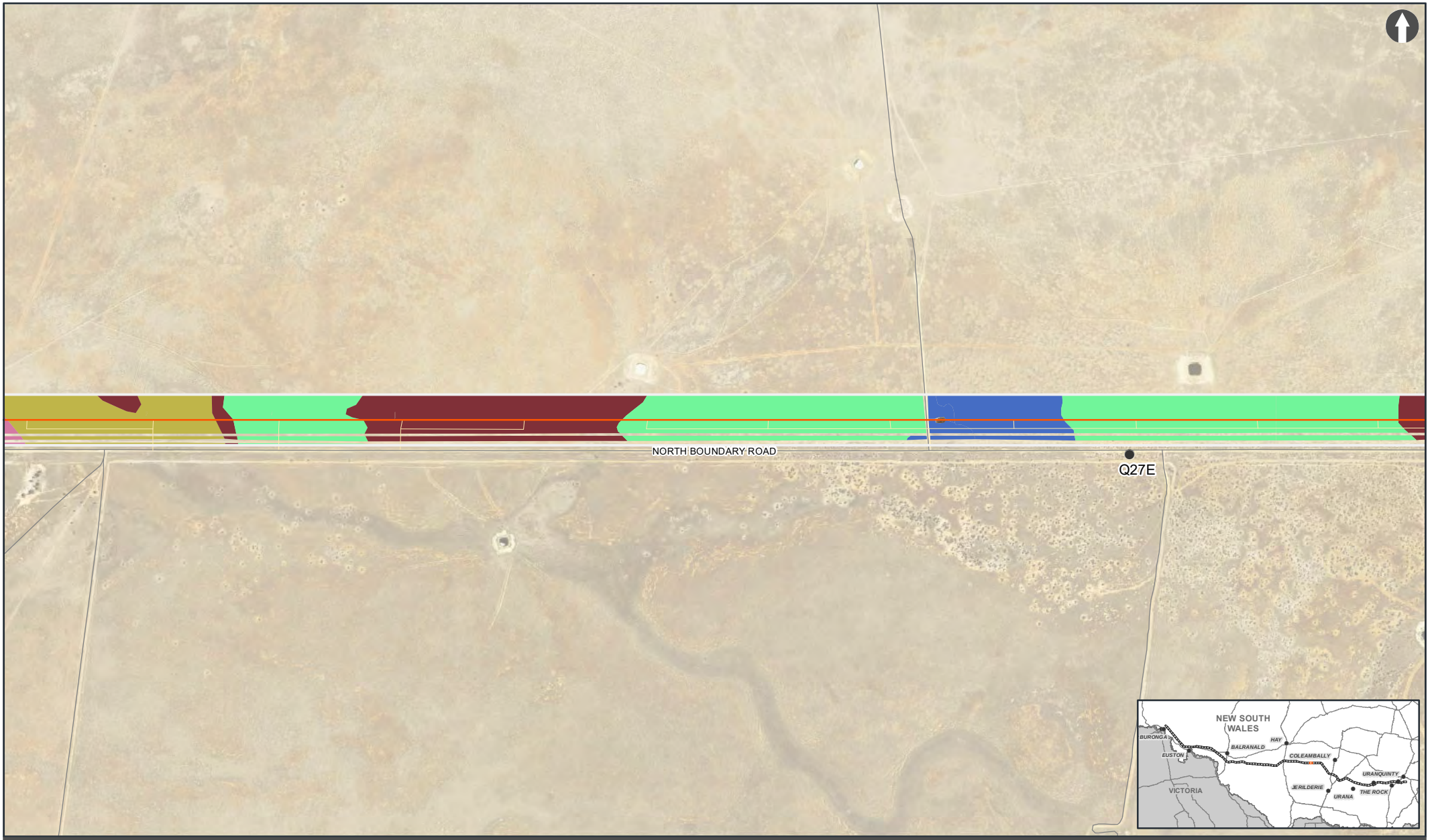
Native Vegetation Mapping of Plant Community Types and Zones

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping

Plant Community Types
- PCT15 - Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains | Mod-good
- PCT164 - Cotton Bush open shrubland of the semi-arid (warm) zone | Mod-good
- PCT17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT44 - Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion | Mod-good
- PCT46 - Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion | Mod-good
- Miscellaneous/exotic

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping

Plant Community Types

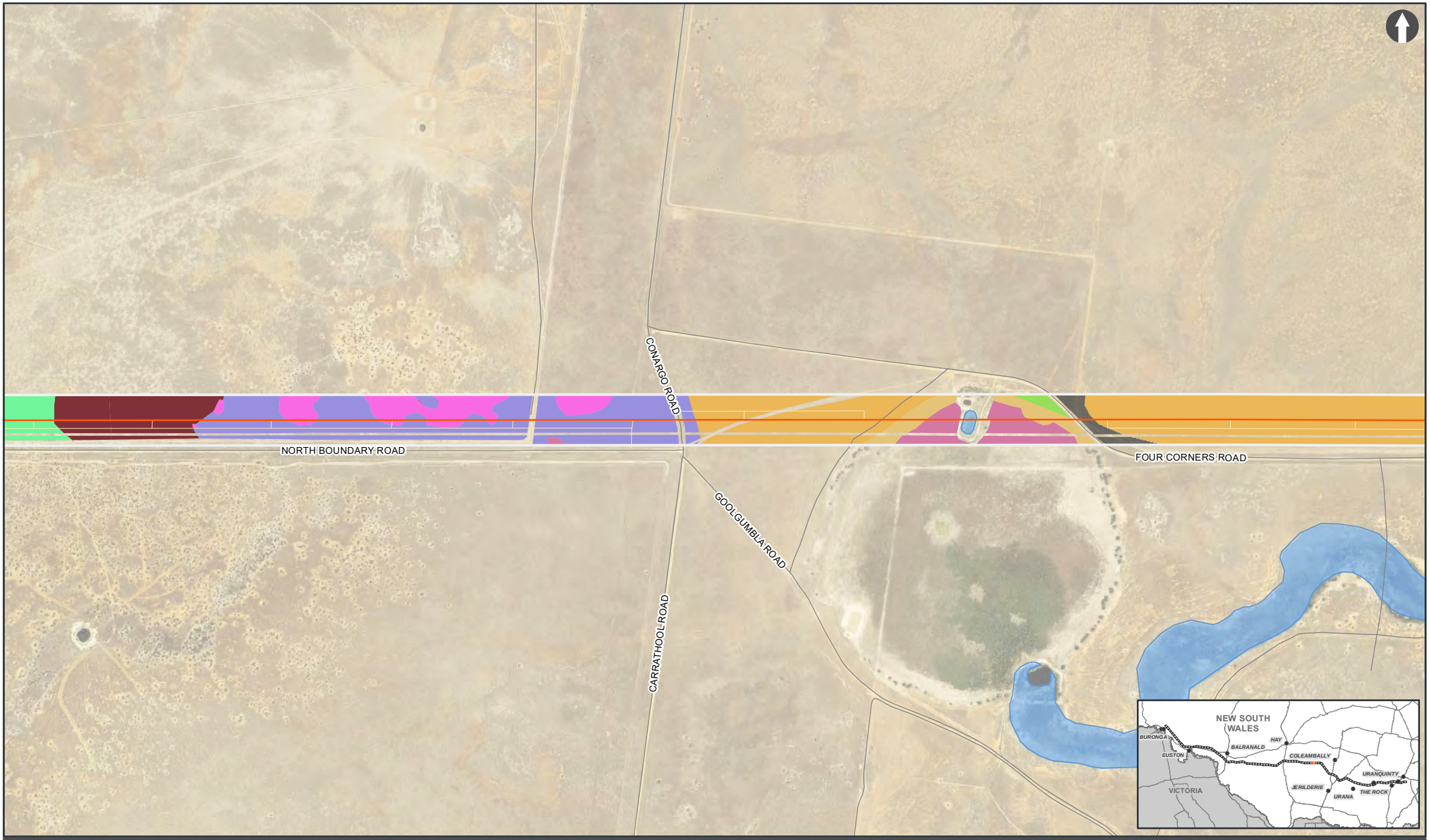
- PCT160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains | Mod-good
- PCT17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT216 - Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion | Mod-good
- PCT44 - Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion | Mod-good
- PCT46 - Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion | Mod-good
- Miscellaneous/exotic

BDAR - Figure B-5bi

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- State Vegetation Mapping

Plant Community Types

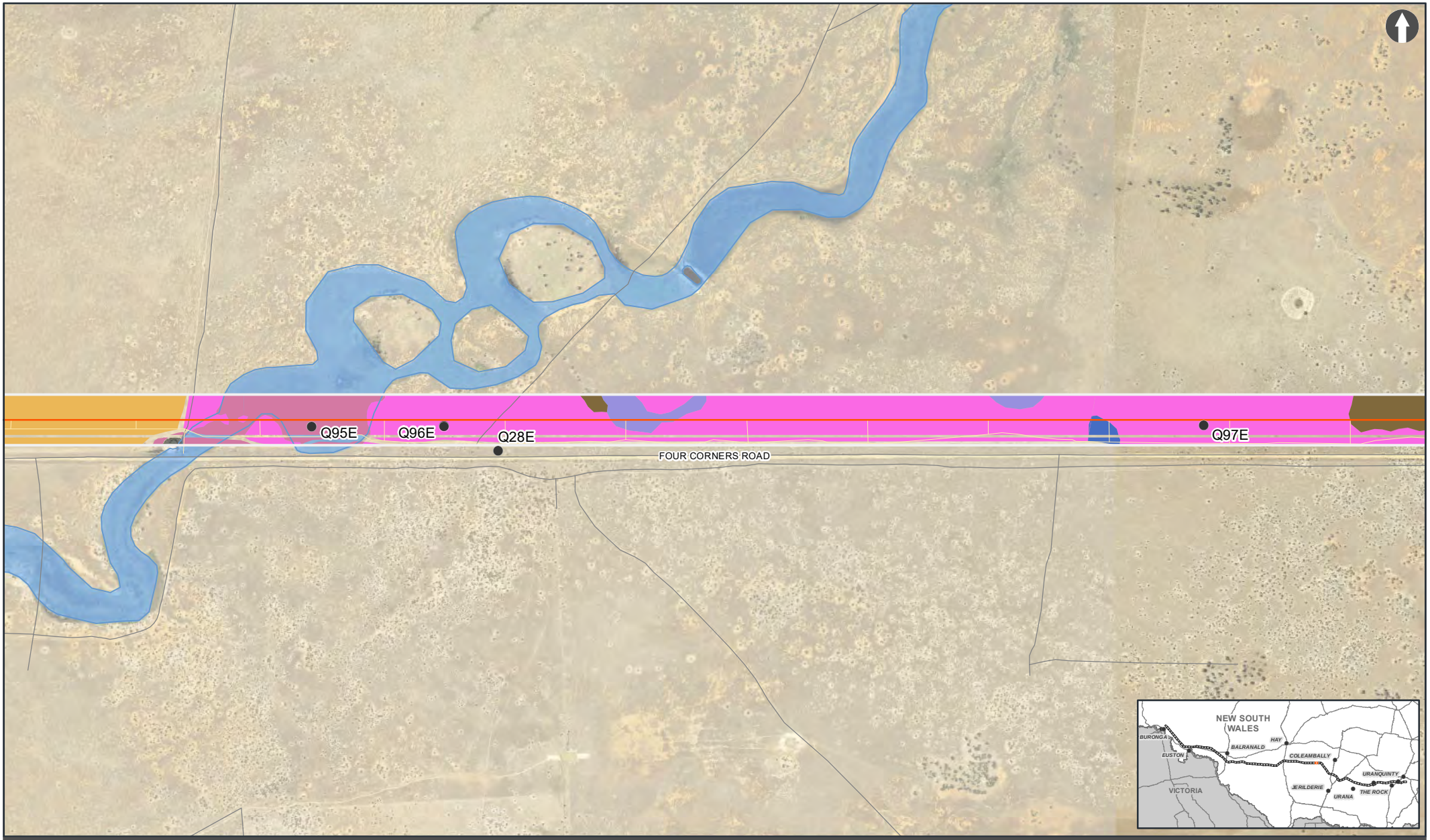
- PCT15 - Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Derived
- PCT15 - Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains | Mod-good
- PCT164 - Cotton Bush open shrubland of the semi-arid (warm) zone | Mod-good
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Derived
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Moderate
- PCT44 - Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion | Mod-good
- PCT46 - Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion | Mod-good
- Miscellaneous/exotic

BDAR - Figure B-5bj

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure B-5bk

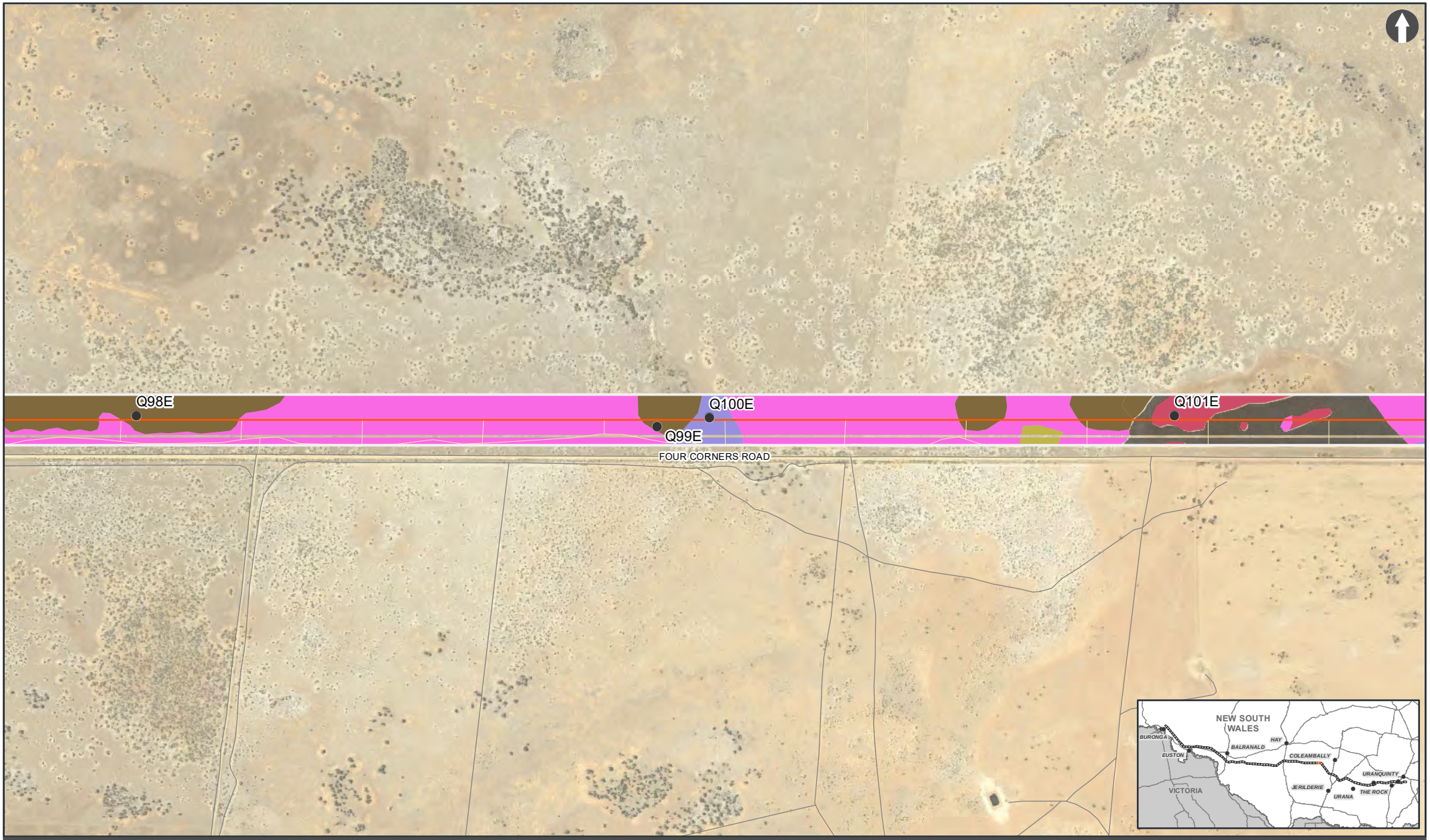
Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping

Plant Community Types
- PCT160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains | Mod-good
- PCT164 - Cotton Bush open shrubland of the semi-arid (warm) zone | Mod-good
- PCT216 - Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion | Mod-good
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Derived
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Mod-good
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Moderate
- Miscellaneous/exotic

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping

Plant Community Types

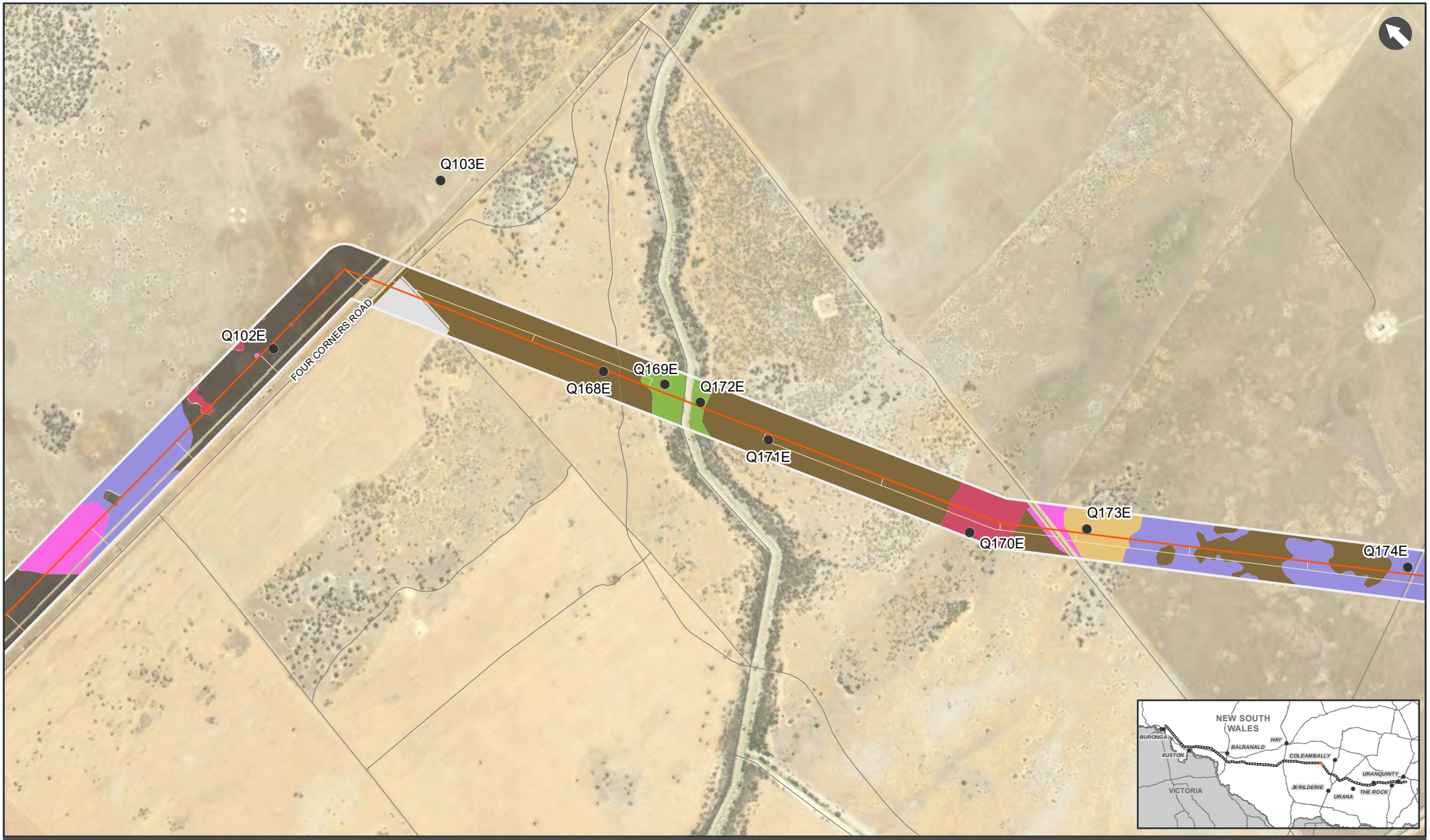
- PCT17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Derived
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Mod-good
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Moderate
- PCT28 - White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone | Mod-good
- Miscellaneous/exotic

BDAR - Figure B-5bl

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping
- Category 1 - Exempt Land

Plant Community Types

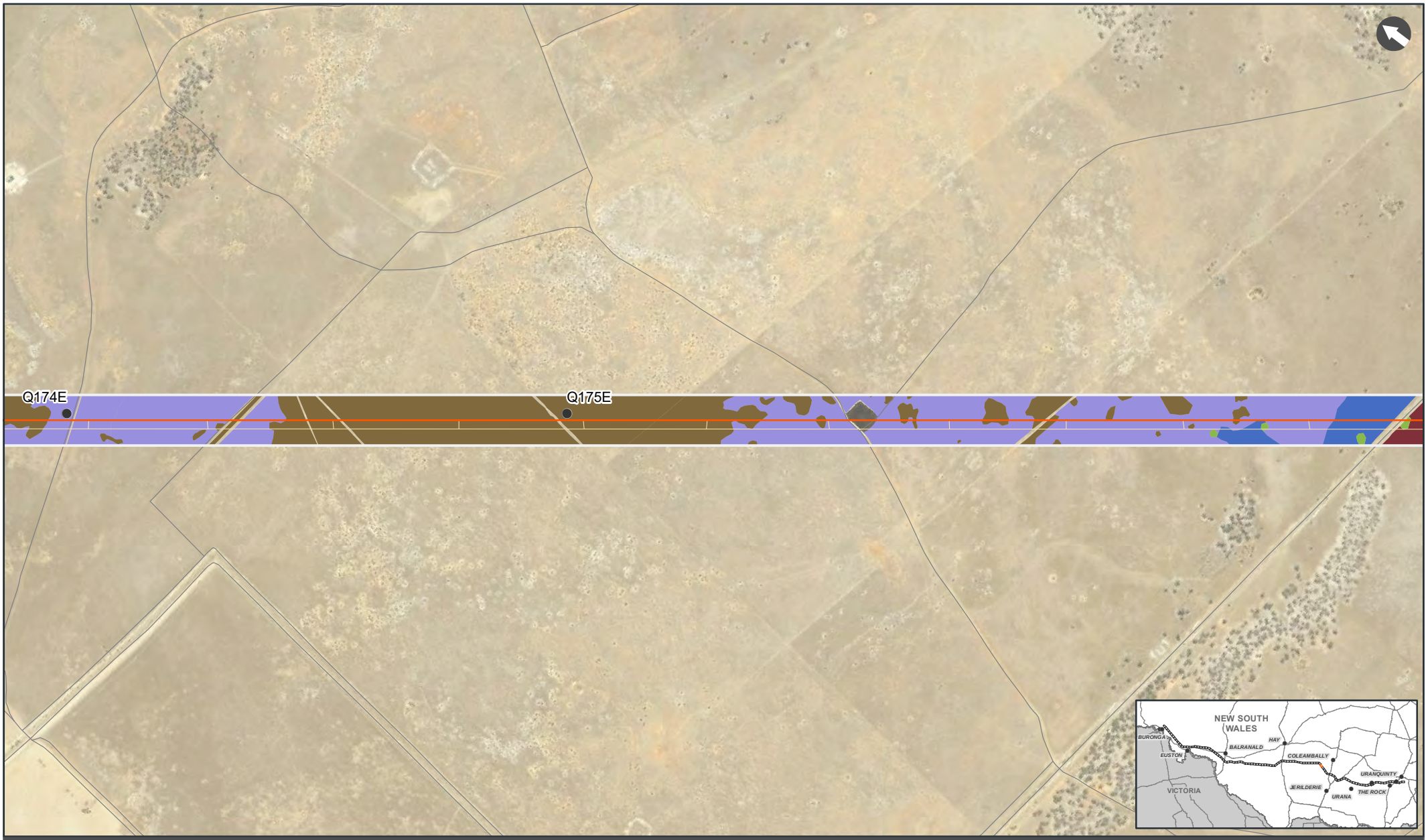
- PCT13 - Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT15 - Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Derived
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Mod-good
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Moderate
- PCT28 - White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone | Mod-good
- Miscellaneous/exotic

BDAR - Figure B-5bm

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping
- Category 1 - Exempt Land

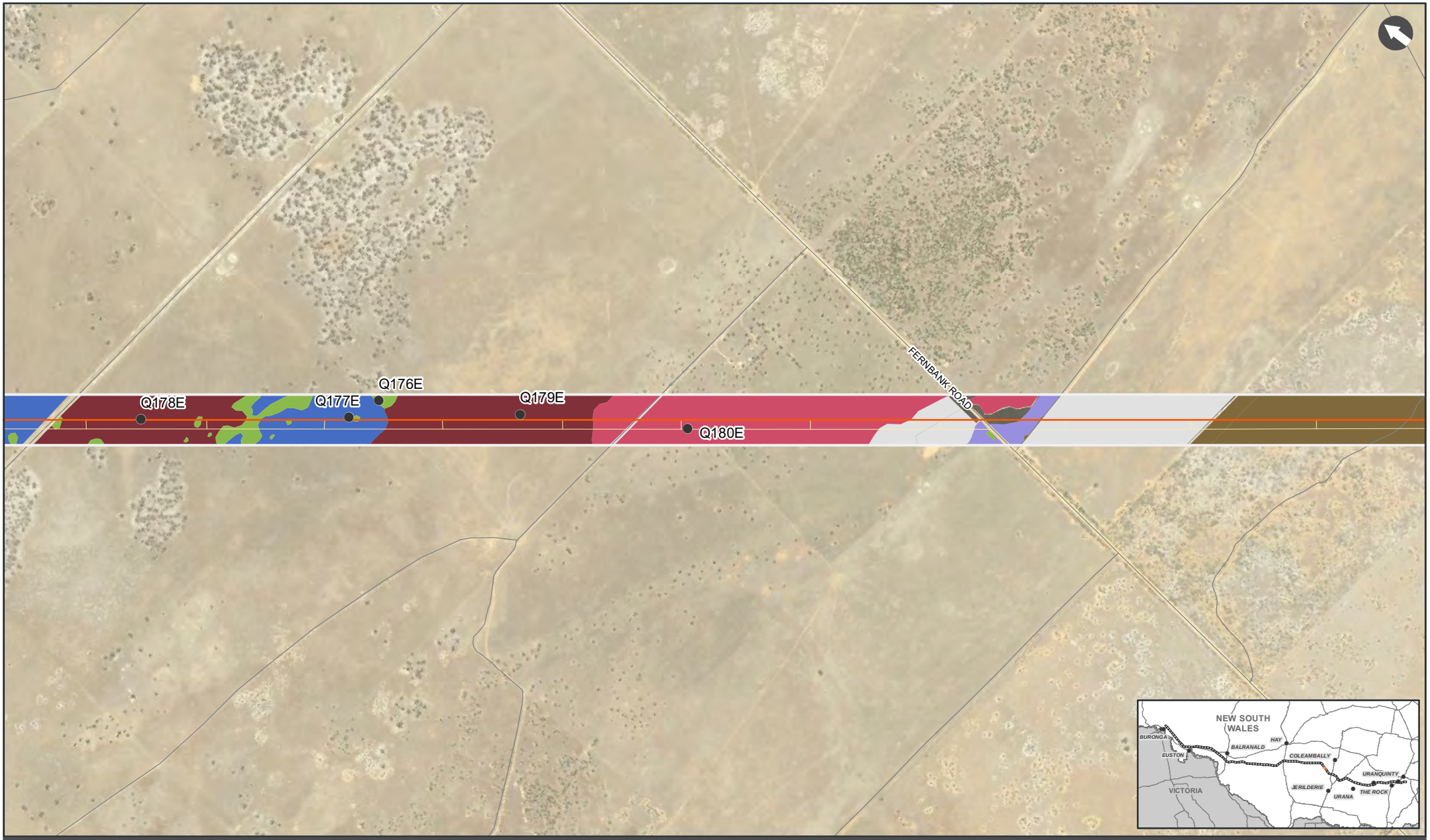
Plant Community Types
- PCT13 - Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT216 - Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion | Mod-good
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Derived
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Mod-good
- PCT46 - Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion | Mod-good
- Miscellaneous/exotic

BDAR - Figure B-5bn

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure B-5bo

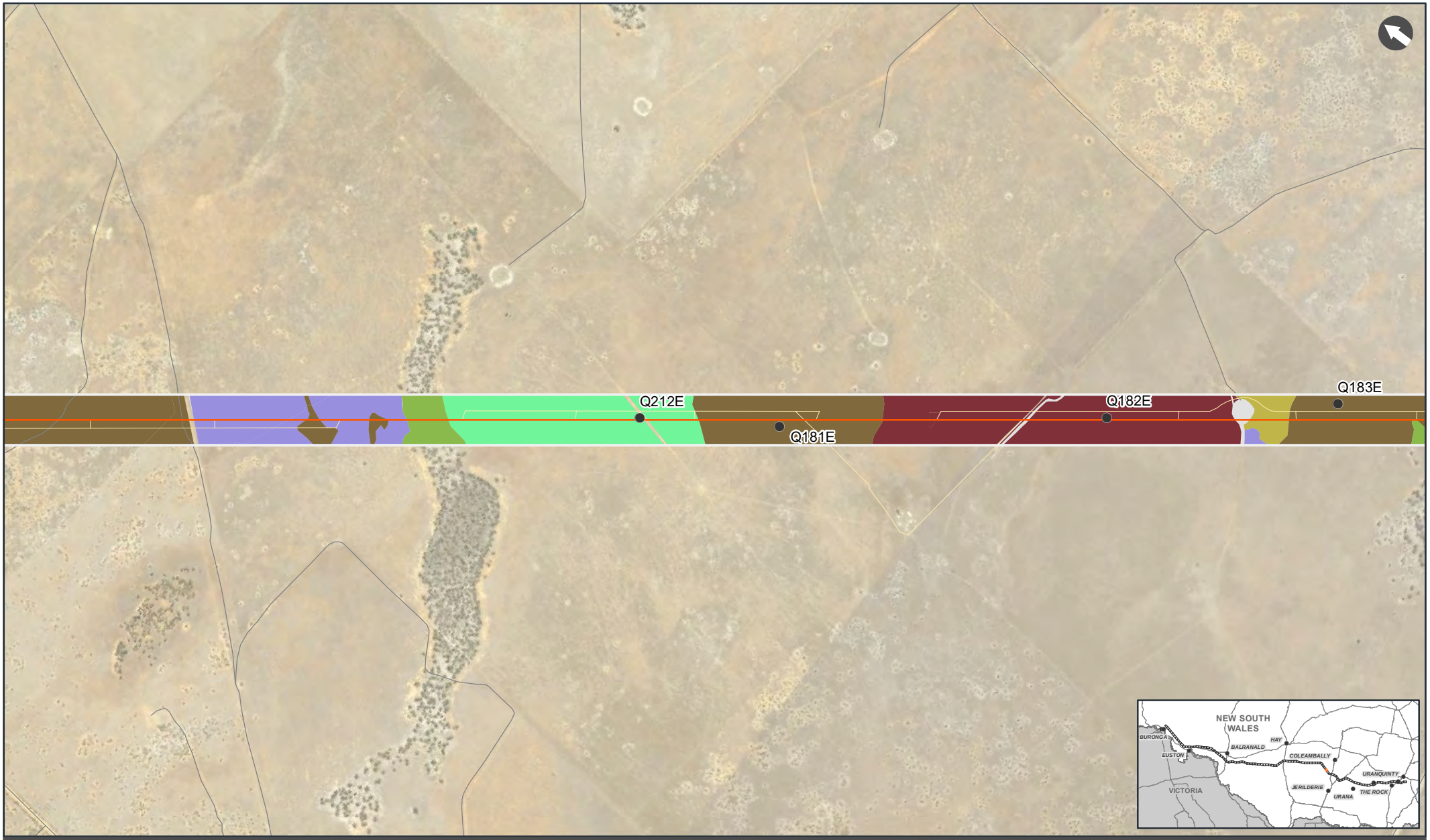
Native Vegetation Mapping of Plant Community Types and Zones

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping
- Category 1 - Exempt Land

Plant Community Types
- PCT13 - Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT216 - Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion | Mod-good
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Derived
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Mod-good
- PCT28 - White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone | Mod-good
- PCT46 - Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion | Mod-good
- Miscellaneous/exotic

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure B-5bp

Native Vegetation Mapping of Plant Community Types and Zones

Project Components

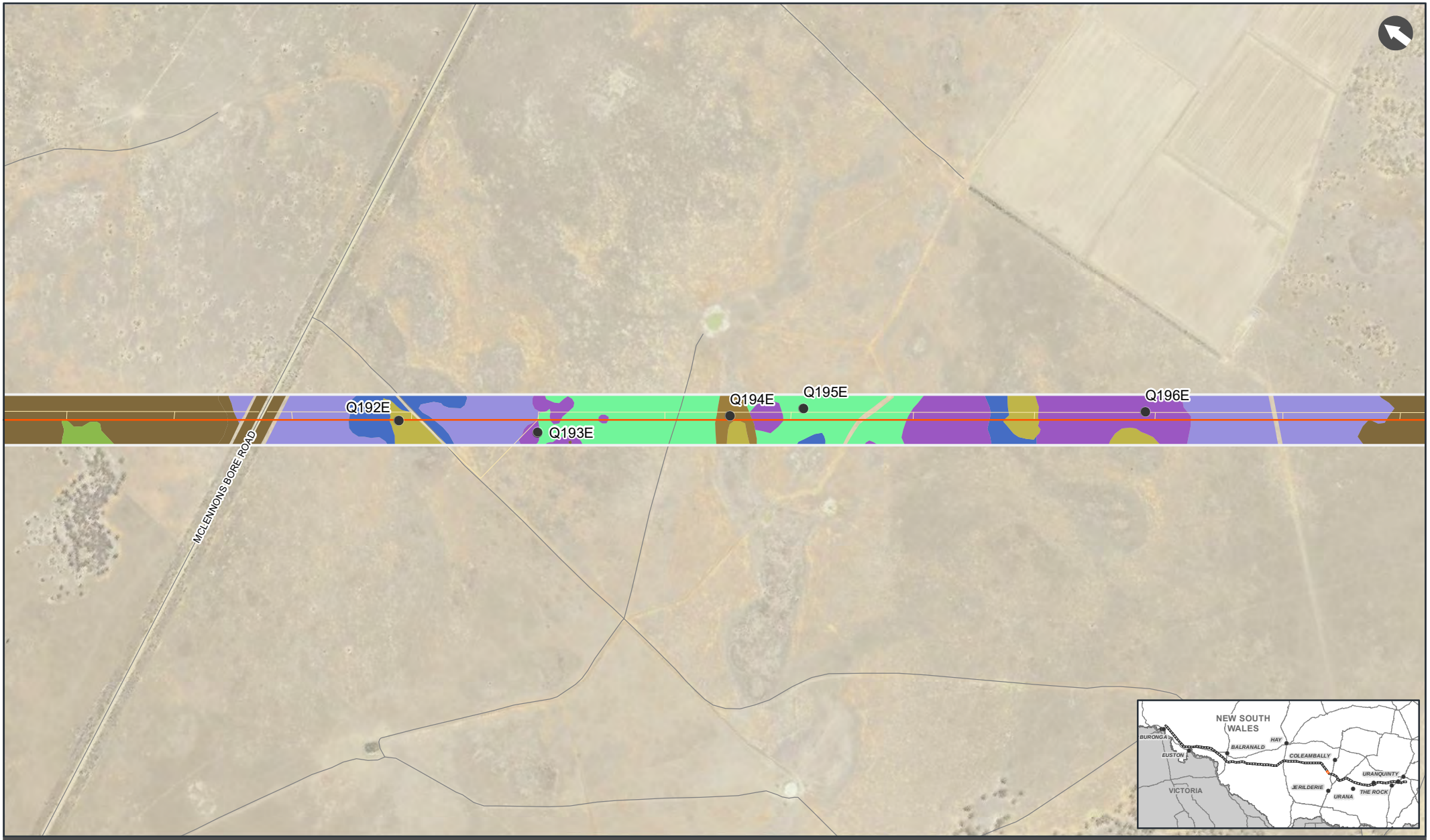
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping
- Category 1 - Exempt Land

Plant Community Types

- PCT13 - Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Derived
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Mod-good
- PCT44 - Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion | Mod-good
- PCT46 - Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion | Mod-good
- Miscellaneous/exotic

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-5bq

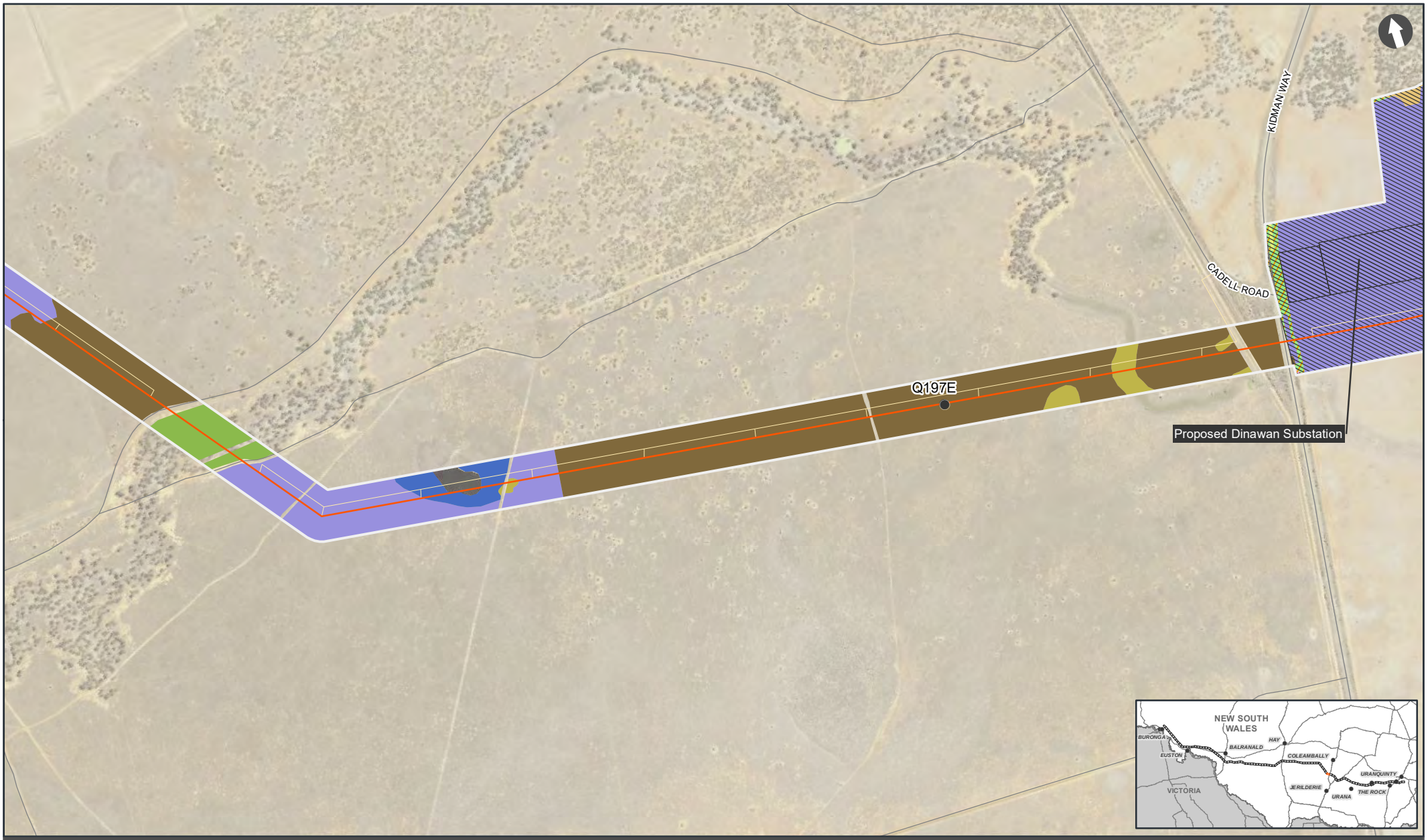
Native Vegetation Mapping of Plant Community Types and Zones

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping
- Category 1 - Exempt Land

Plant Community Types
- PCT13 - Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT216 - Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion | Mod-good
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Derived
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Mod-good
- PCT44 - Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion | Mod-good

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping

Plant Community Types

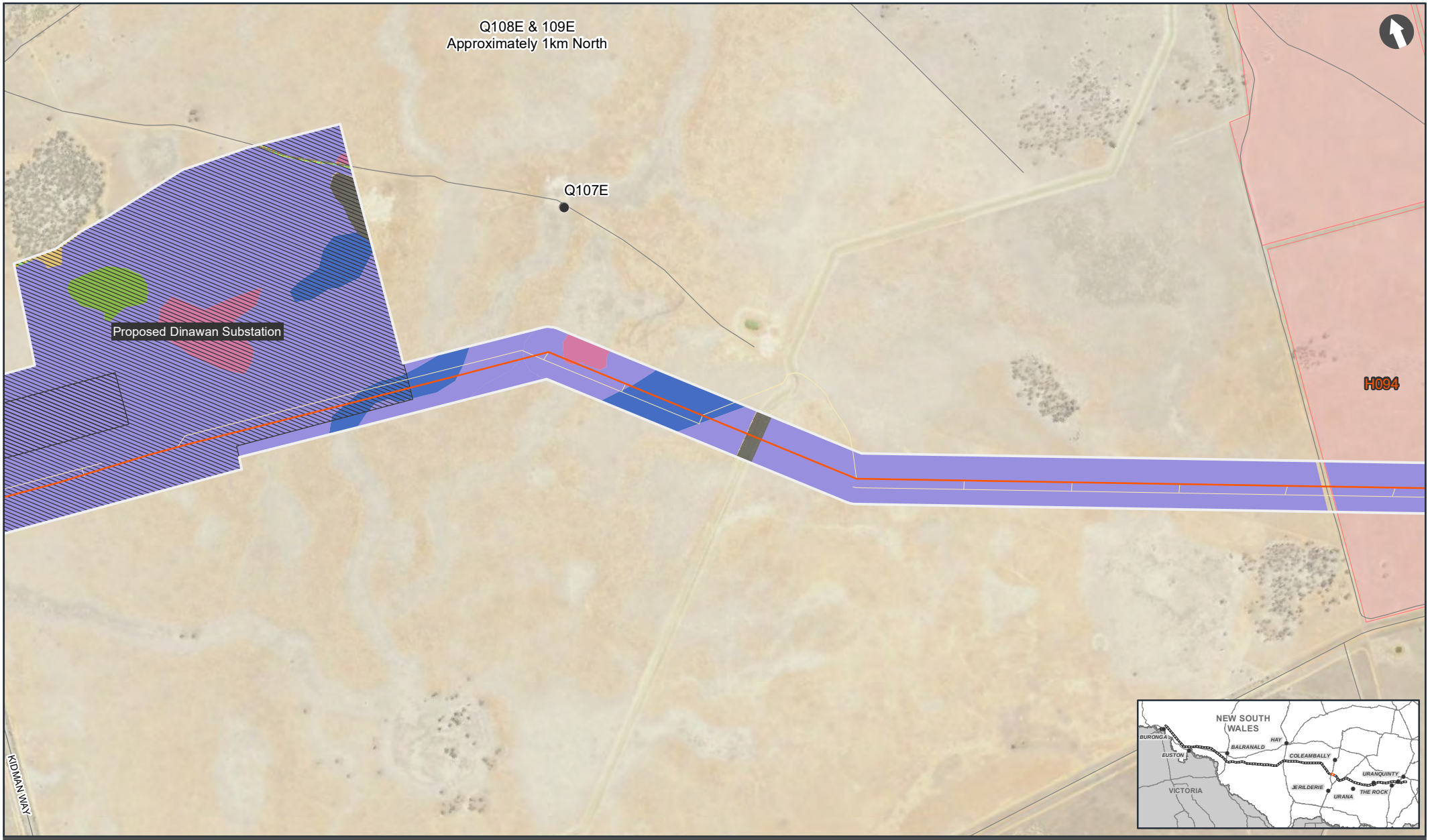
- PCT13 - Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT15 - Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT216 - Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion | Mod-good
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Derived
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Mod-good
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Poor
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | SVM_Bench
- PCT44 - Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion | SVM_Bench
- PCT45 - Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion | SVM_Bench
- PCT47 - Swamp grassland wetland of the Riverine Plain | SVM_Bench
- Miscellaneous/exotic

BDAR - Figure B-5br

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP

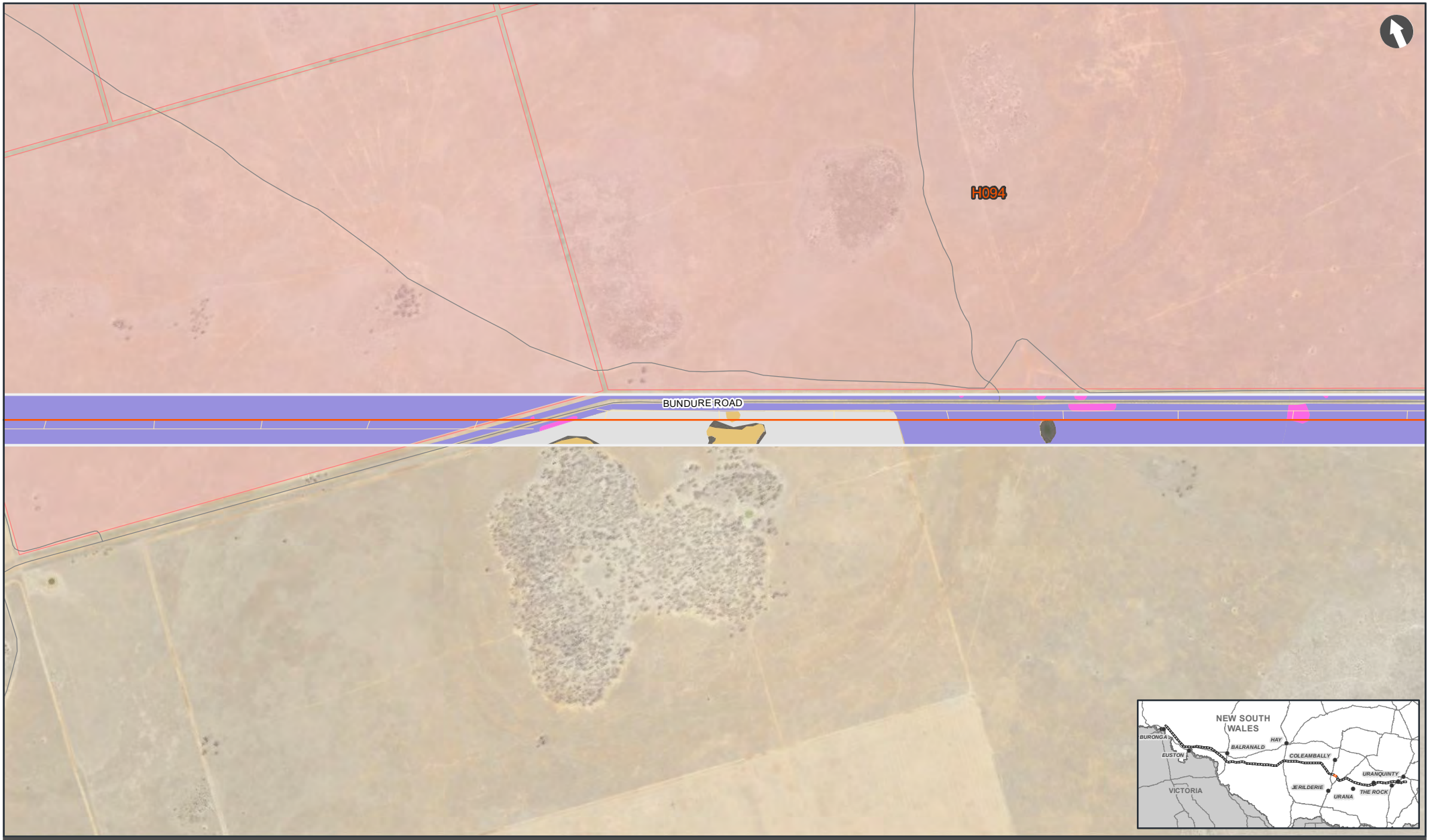


BDAR - Figure B-5bs

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- State Vegetation Mapping
- Category 1 - Exempt Land

Plant Community Types

- PCT15 - Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Derived
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Moderate
- Miscellaneous/exotic

BDAR - Figure B-5bt

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

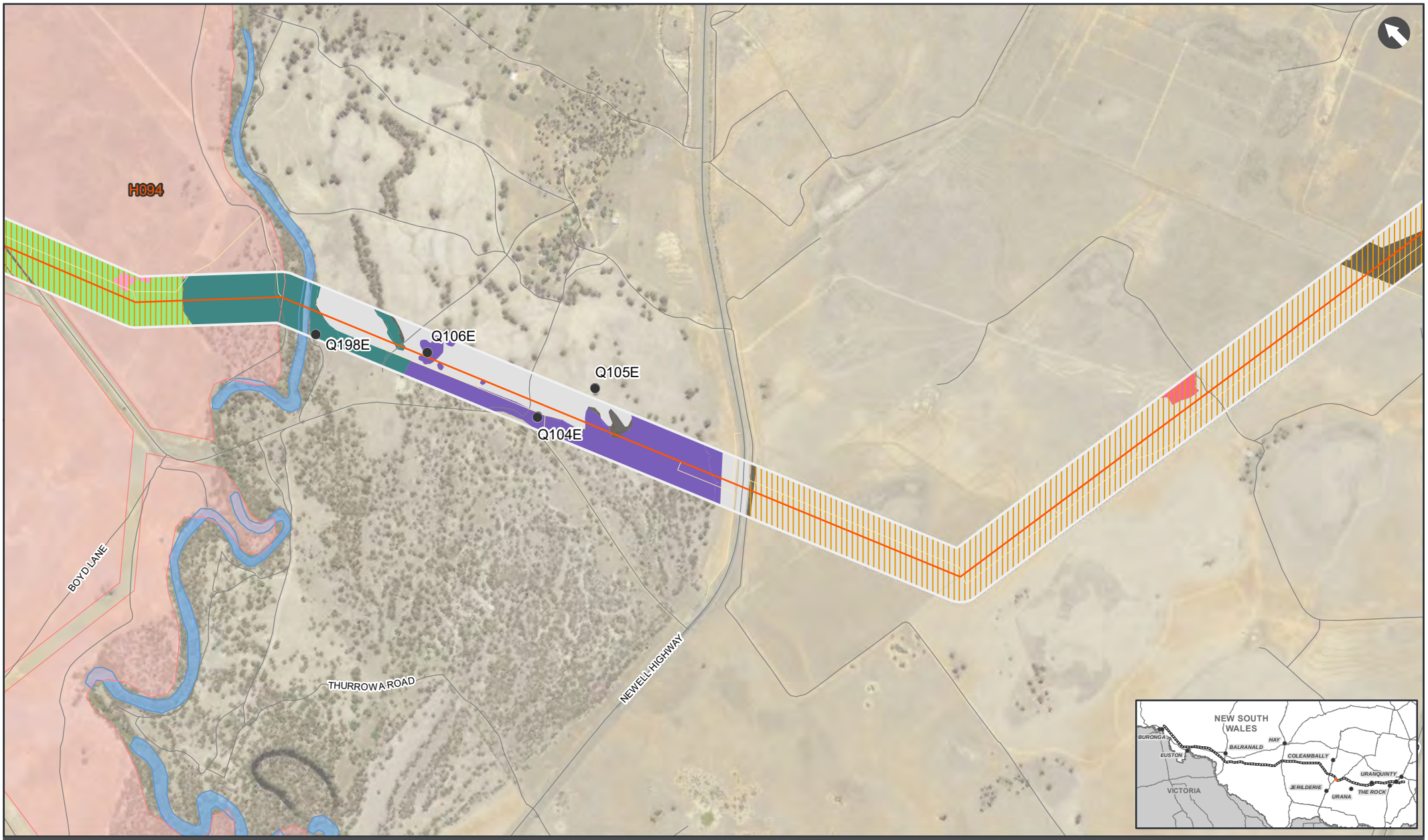
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- State Vegetation Mapping

BDAR - Figure B-5bu

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-5bv

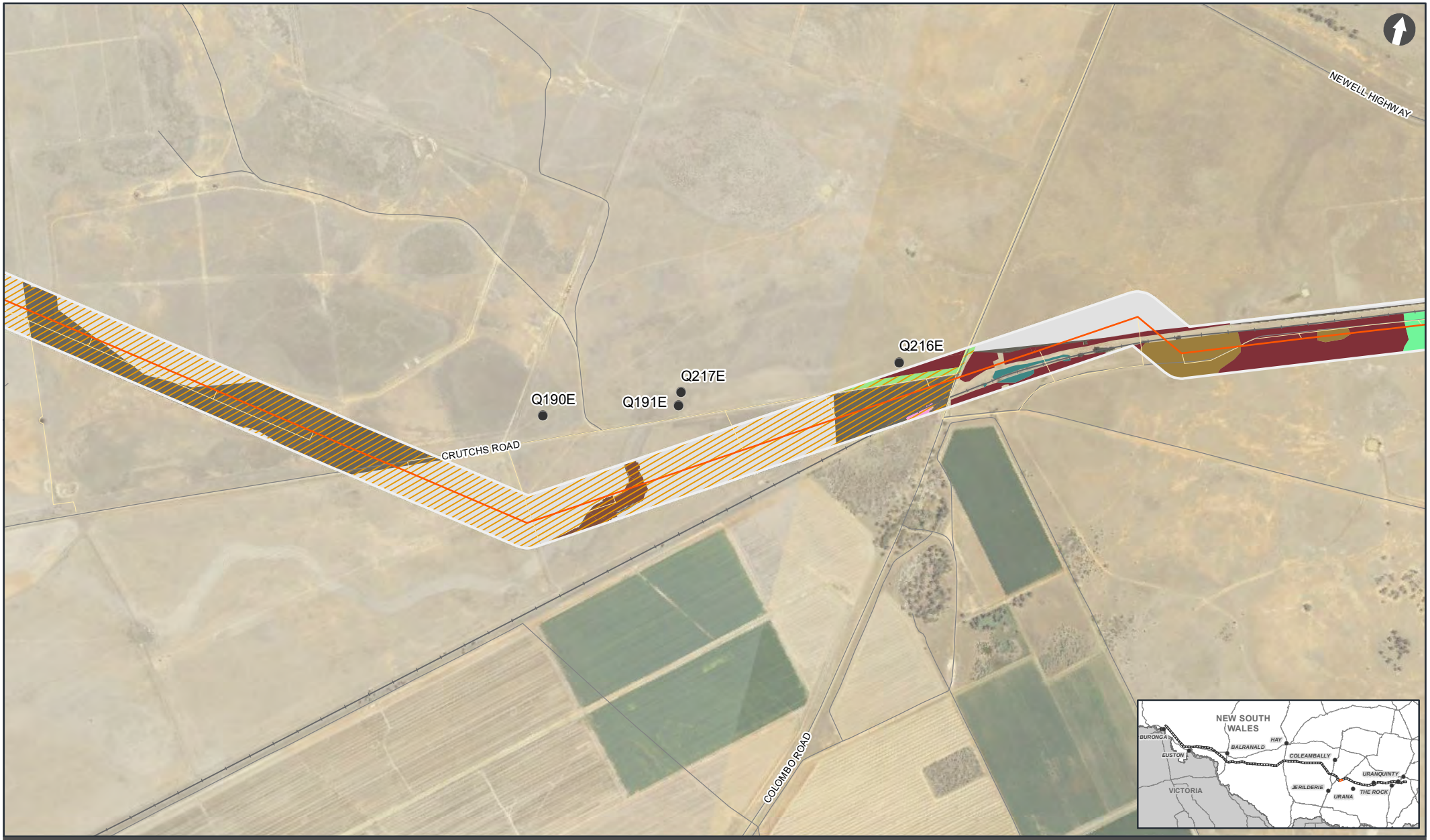
Native Vegetation Mapping of Plant Community Types and Zones

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping
- Category 1 - Exempt Land

Plant Community Types
- PCT 7 - River Red Gum – Warrego Grass – herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion | SVM_Bench
- PCT11 - River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | SVM_Bench
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | SVM_Bench
- PCT44 - Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion | SVM_Bench
- PCT5 - River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion. | Mod-good
- Miscellaneous/exotic

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping
- Category 1 - Exempt Land

Plant Community Types

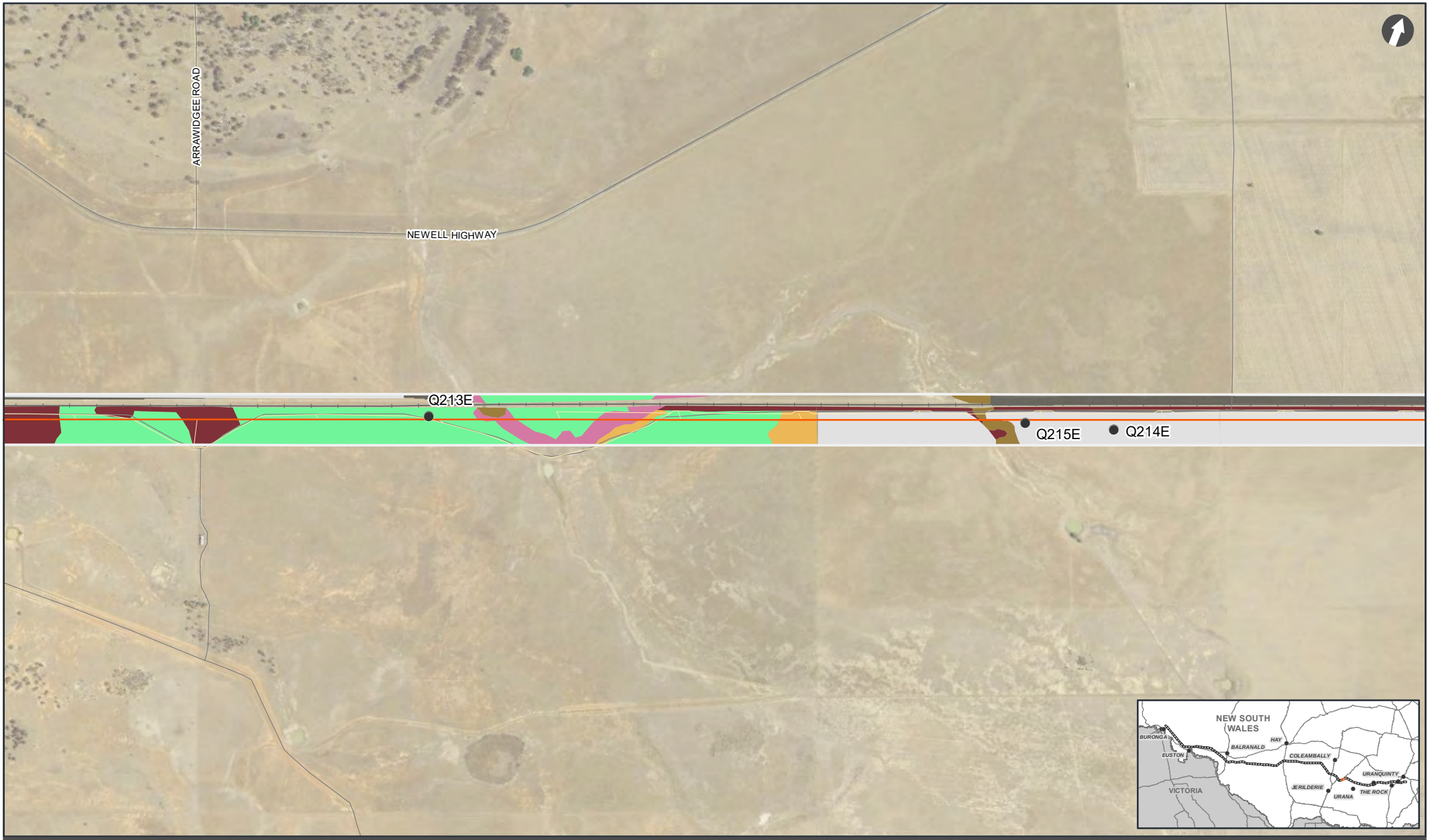
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | SVM_Bench
- PCT44 - Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion | Mod-good
- PCT44 - Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion | SVM_Bench
- PCT46 - Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion | Mod-good
- PCT47 - Swamp grassland wetland of the Riverine Plain | Mod-good
- PCT47 - Swamp grassland wetland of the Riverine Plain | SVM_Bench
- PCT5 - River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion. | Mod-good
- PCT53 - Shallow freshwater wetland sedgeland in depressions on floodplains on inland alluvial plains and floodplains | SVM_Bench
- Miscellaneous/exotic

BDAR - Figure B-5bw

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping
- Category 1 - Exempt Land

Plant Community Types

- PCT160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains | Mod-good
- PCT164 - Cotton Bush open shrubland of the semi-arid (warm) zone | Mod-good
- PCT44 - Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion | Mod-good
- PCT46 - Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion | Mod-good
- PCT47 - Swamp grassland wetland of the Riverine Plain | Mod-good
- Miscellaneous/exotic

BDAR - Figure B-5bx

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping
- Category 1 - Exempt Land

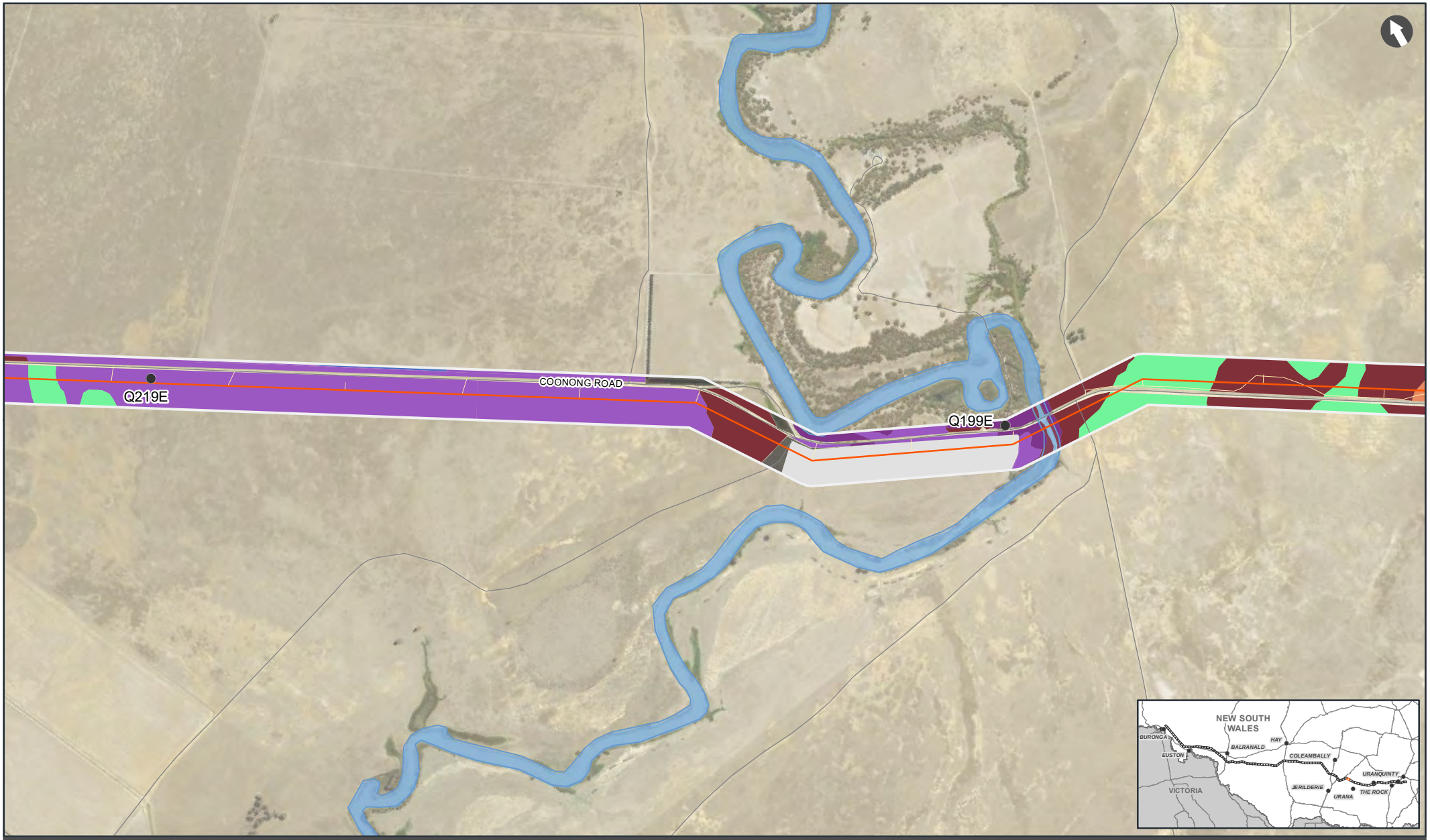
Plant Community Types
- PCT160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains | Mod-good
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Moderate
- PCT44 - Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion | Mod-good
- PCT45 - Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion | Mod-good
- PCT46 - Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion | Mod-good
- Miscellaneous/exotic

BDAR - Figure B-5by

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure B-5bz

Native Vegetation Mapping of Plant Community Types and Zones

Project Components

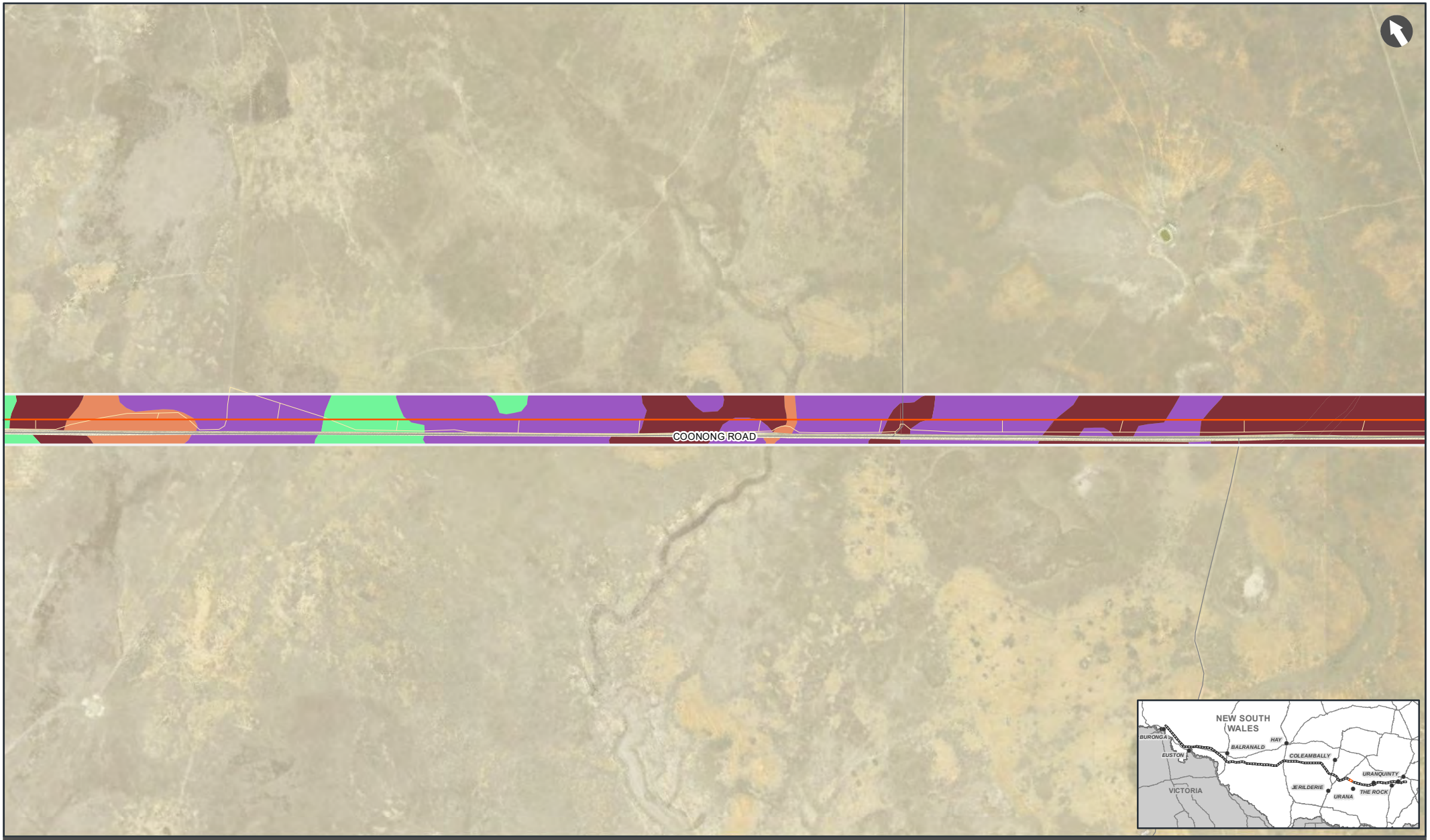
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping
- Category 1 - Exempt Land

Plant Community Types

- PCT 7 - River Red Gum – Warrego Grass – herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion | Mod-good
- PCT182 - Cumbungi rushland wetland of shallow semi-permanent water bodies and inland watercourses | Mod-good
- PCT216 - Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion | Mod-good
- PCT44 - Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion | Mod-good
- PCT45 - Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion | Mod-good
- PCT46 - Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion | Mod-good
- PCT53 - Shallow freshwater wetland sedgeland in depressions on floodplains on inland alluvial plains and floodplains | Mod-good

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- State Vegetation Mapping
- Category 1 - Exempt Land

Plant Community Types

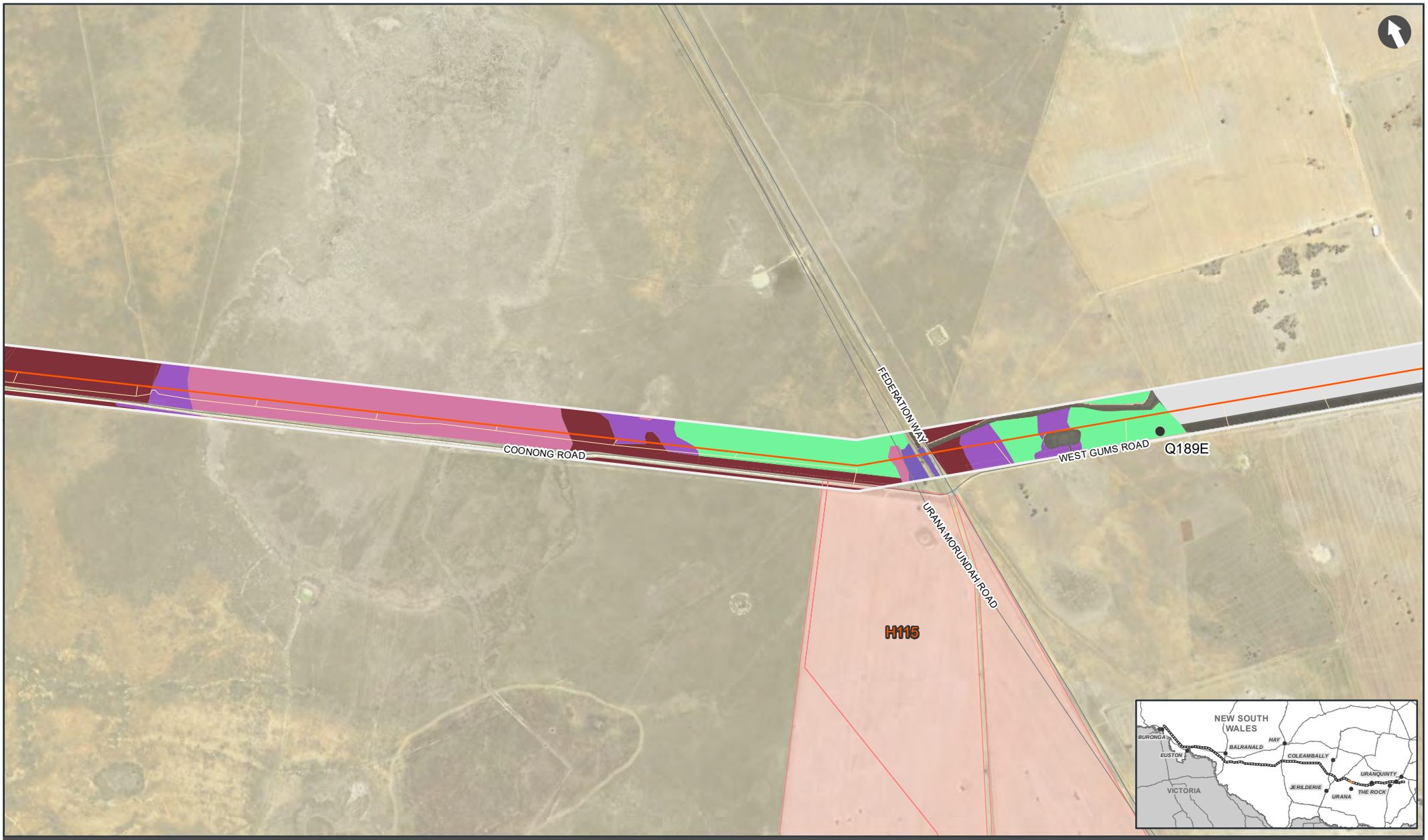
- PCT44 - Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion | Mod-good
- PCT45 - Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion | Mod-good
- PCT46 - Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion | Mod-good
- PCT53 - Shallow freshwater wetland sedgeland in depressions on floodplains on inland alluvial plains and floodplains | Mod-good

BDAR - Figure B-5ca

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping
- Category 1 - Exempt Land

Plant Community Types

- PCT11 - River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains | Mod-good
- PCT44 - Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion | Mod-good
- PCT45 - Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion | Mod-good
- PCT46 - Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion | Mod-good
- Miscellaneous/exotic

BDAR - Figure B-5cb

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping
- Category 1 - Exempt Land

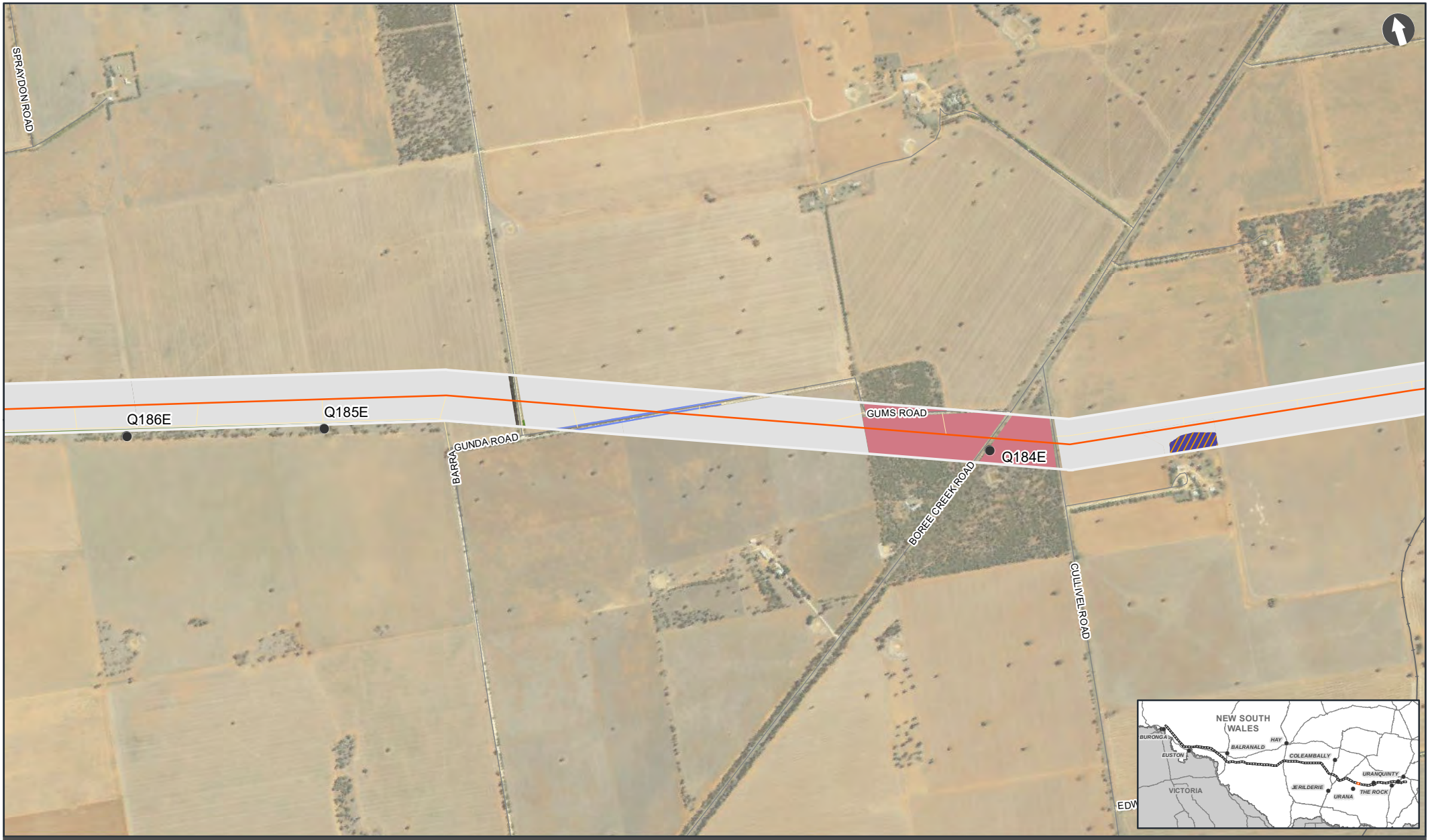
Plant Community Types
- PCT45 - Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion | Mod-good
- PCT75 - Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion | Mod-good
- Miscellaneous/exotic

BDAR - Figure B-5cc

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping
- Category 1 - Exempt Land

Plant Community Types

- PCT75 - Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion | Mod-good
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | Mod-good
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | Moderate
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | SVM_Bench
- Miscellaneous/exotic

BDAR - Figure B-5cd

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping
- Category 1 - Exempt Land

Plant Community Types

- PCT249 - River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW | Moderate
- PCT28 - White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone | SVM_Bench
- PCT75 - Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion | Mod-good
- PCT75 - Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion | SVM_Bench
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | Derived
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | Moderate
- Miscellaneous/exotic

BDAR - Figure B-5ce

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping
- Category 1 - Exempt Land

Plant Community Types

- PCT249 - River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW | Derived
- PCT249 - River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW | Moderate
- PCT249 - River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW | Poor
- Miscellaneous/exotic

BDAR - Figure B-5cf

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



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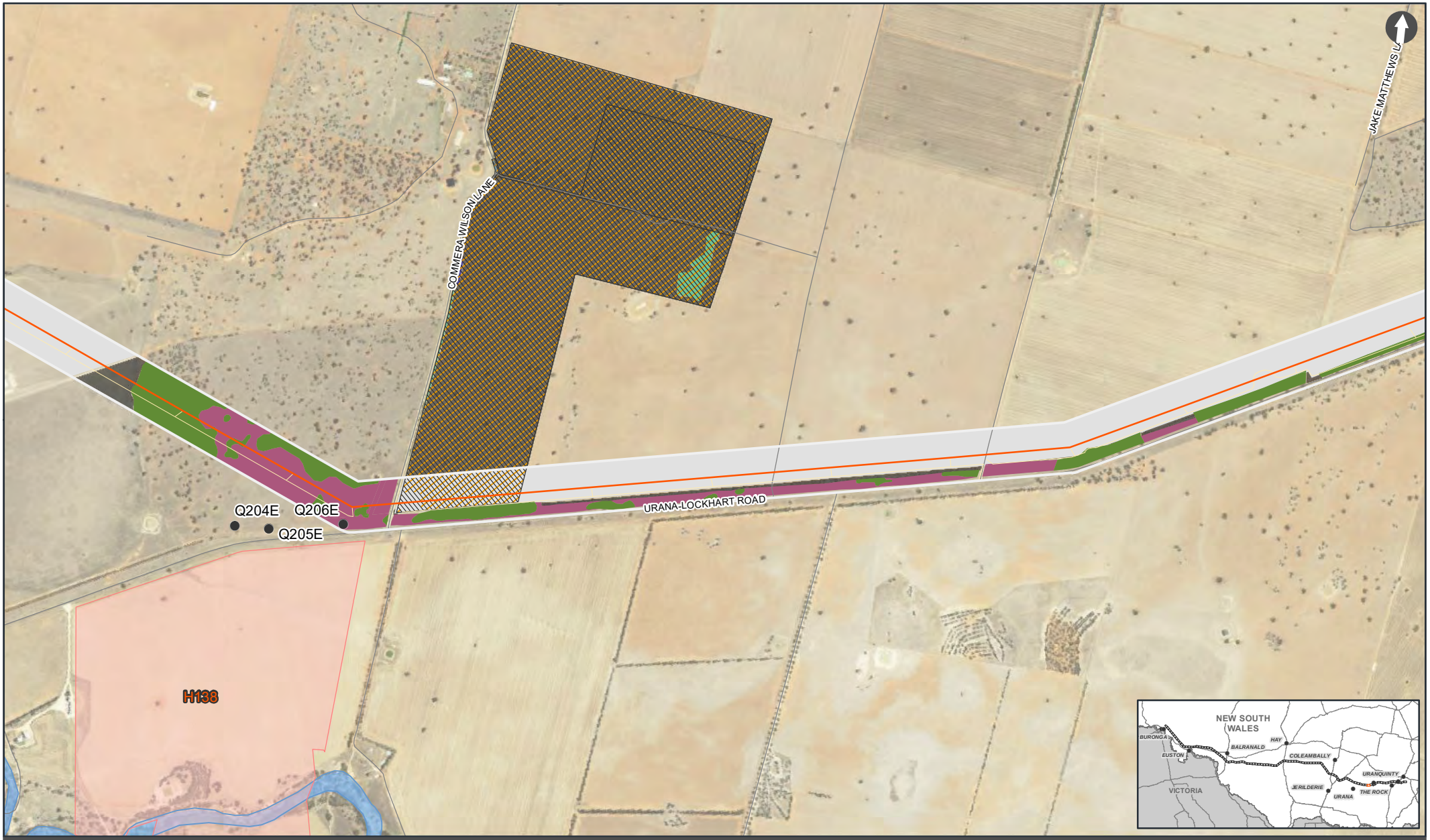
Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- State Vegetation Mapping
- Category 1 - Exempt Land
- Miscellaneous/exotic

BDAR - Figure B-5cg

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping
- Category 1 - Exempt Land

Plant Community Types

- PCT28 - White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone | SVM_Bench
- PCT75 - Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion | Derived
- PCT75 - Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion | Mod-good
- PCT75 - Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion | SVM_Bench
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | SVM_Bench
- Miscellaneous/exotic

BDAR - Figure B-5ch

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping
- Category 1 - Exempt Land

Plant Community Types

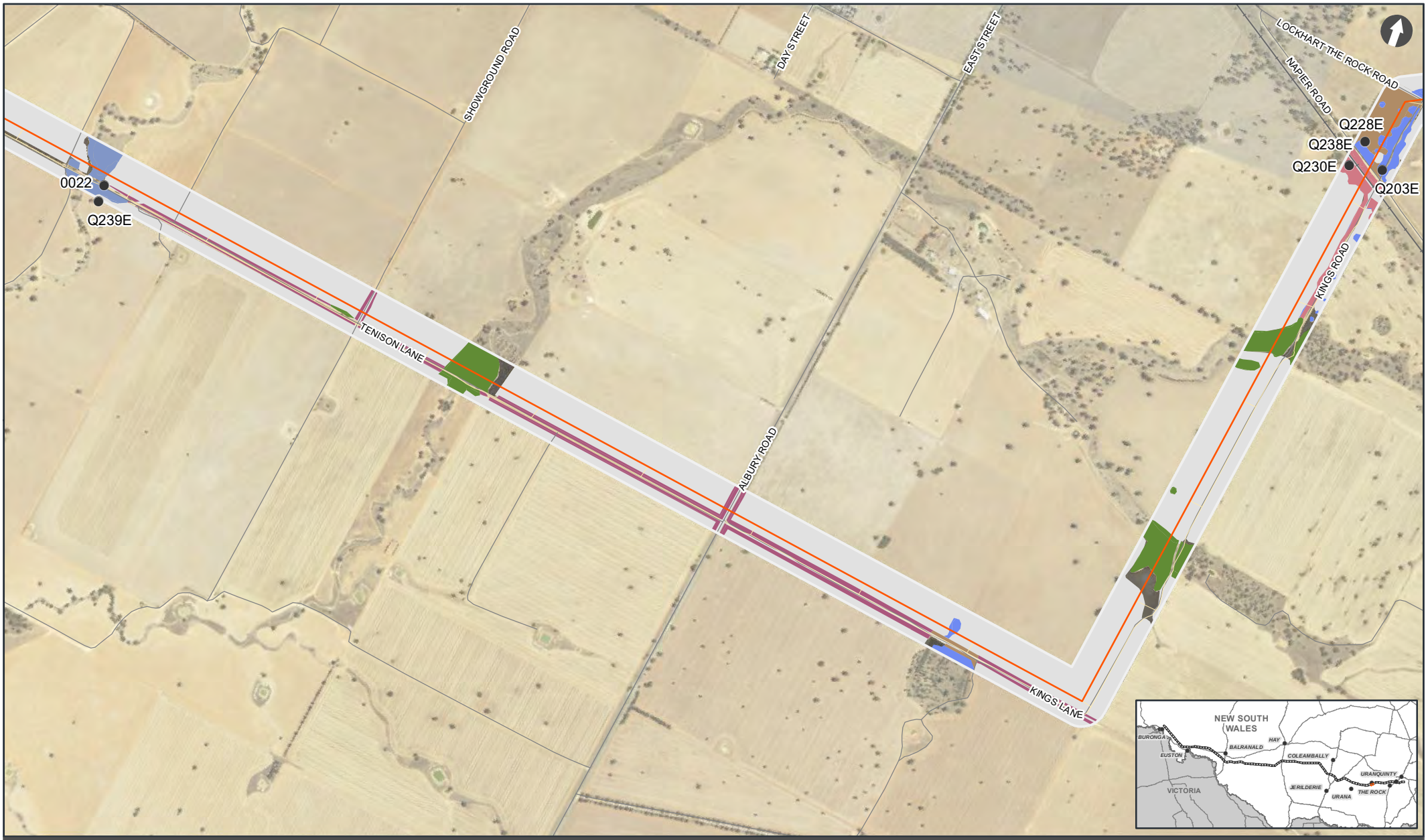
- PCT74 - Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion | Mod-good
- PCT75 - Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion | Derived
- PCT75 - Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion | Mod-good
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | Derived
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | Mod-good
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | Moderate
- Miscellaneous/exotic

BDAR - Figure B-5ci

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure B-5cj

Native Vegetation Mapping of Plant Community Types and Zones

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping
- Category 1 - Exempt Land

Plant Community Types
- PCT74 - Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion | Mod-good
- PCT75 - Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion | Derived
- PCT75 - Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion | Mod-good
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | Derived
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | Mod-good
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | Moderate
- Miscellaneous/exotic

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure B-5ck

Native Vegetation Mapping of Plant Community Types and Zones

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping
- Category 1 - Exempt Land

Plant Community Types
- PCT75 - Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion | Derived
- PCT75 - Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion | Mod-good
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | Derived
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | Mod-good
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | Moderate
- Miscellaneous/exotic

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping
- Category 1 - Exempt Land

Plant Community Types

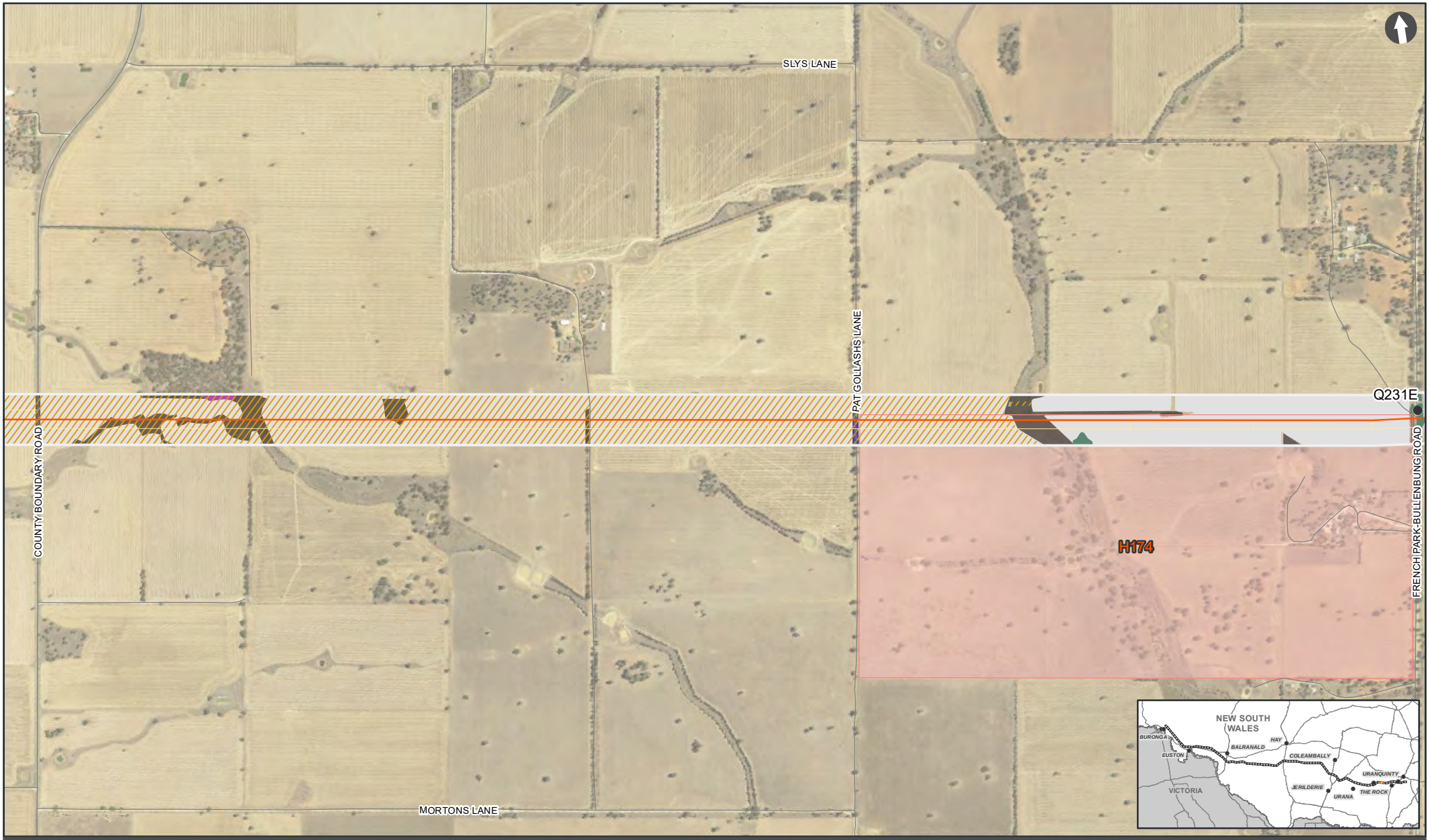
- PCT75 - Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion | Mod-good
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | Derived
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | Moderate
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | SVM_Bench
- Miscellaneous/exotic

BDAR - Figure B-5cm

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping
- Category 1 - Exempt Land

Plant Community Types

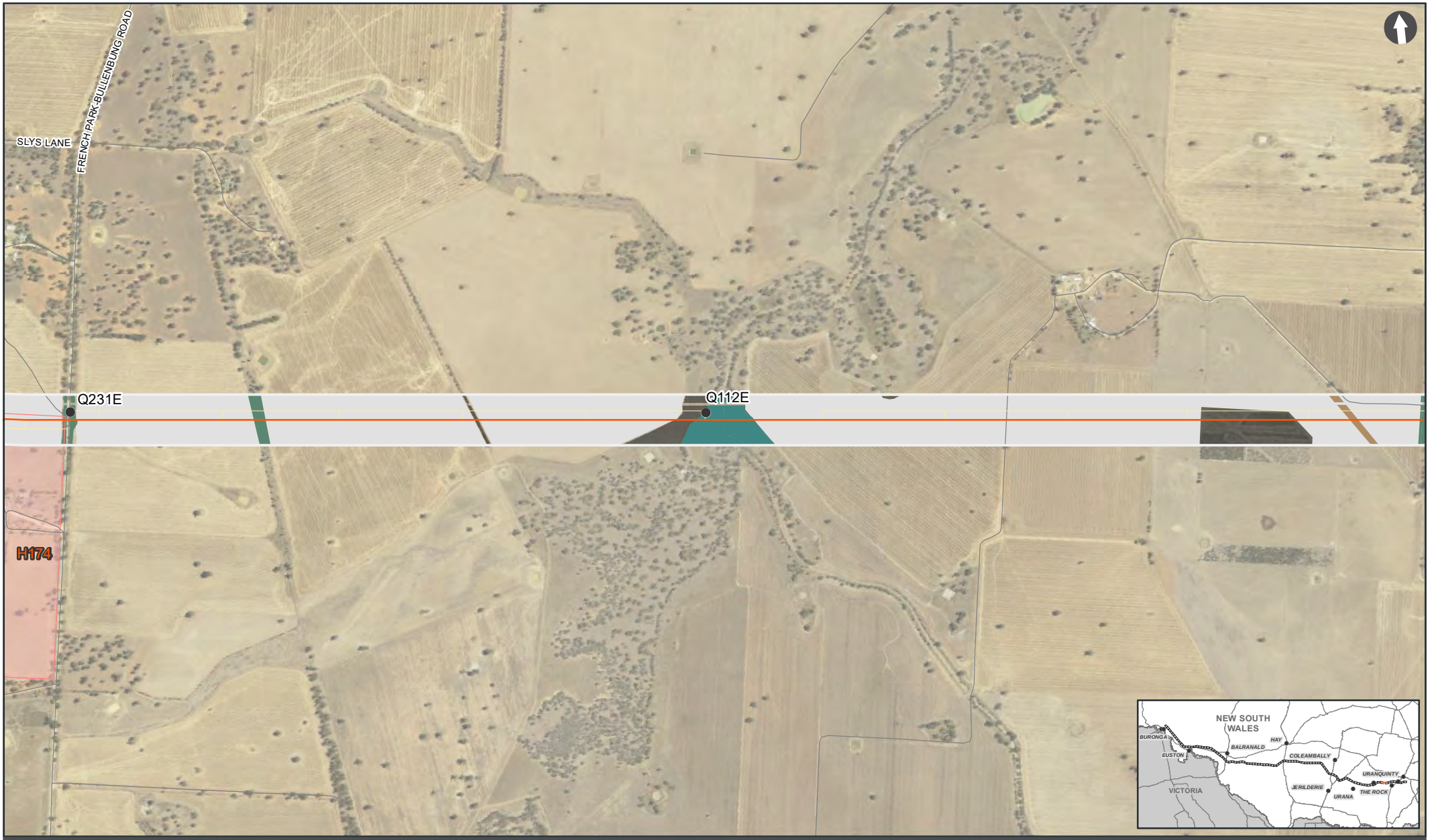
- PCT74 - Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion | SVM_Bench
- PCT76 - Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions | Mod-good
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | SVM_Bench
- Miscellaneous/exotic

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Source: NSWSS, ESRI, Transgrid, WSP

BDAR - Figure B-5cn

Native Vegetation Mapping of Plant Community Types and Zones



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping
- Category 1 - Exempt Land

Plant Community Types

- PCT5 - River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion. | Mod-good
- PCT76 - Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions | Mod-good
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | Derived
- Miscellaneous/exotic

BDAR - Figure B-5co

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- State Vegetation Mapping
- Category 1 - Exempt Land

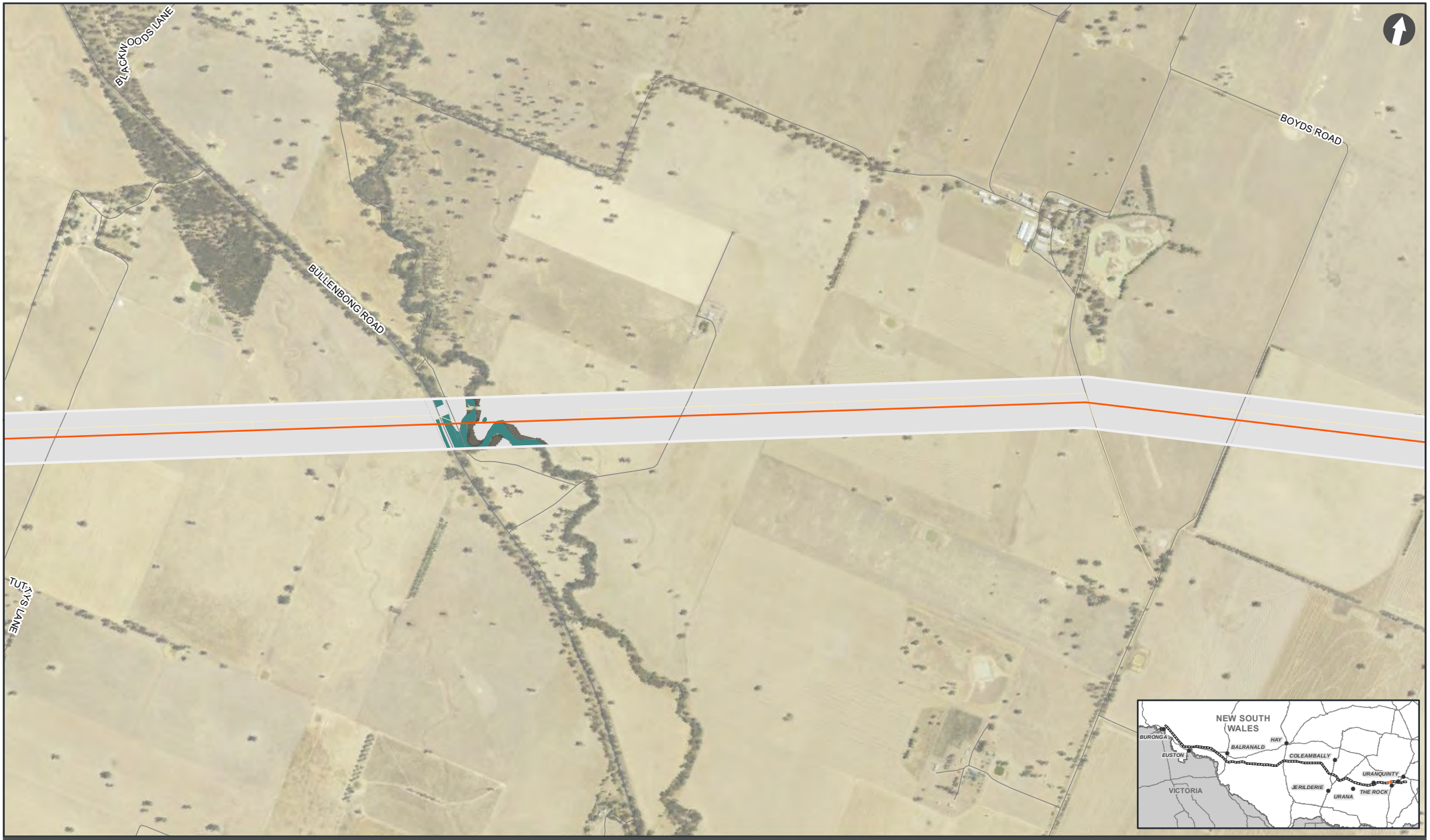
Plant Community Types
- PCT76 - Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions | Mod-good
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | Derived
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | Moderate
- Miscellaneous/exotic

BDAR - Figure B-5cp

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- State Vegetation Mapping
- Category 1 - Exempt Land

Plant Community Types

- PCT5 - River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion. | Mod-good
- Miscellaneous/exotic

BDAR - Figure B-5cq

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-5cr

Native Vegetation Mapping of Plant Community Types and Zones

Project Components

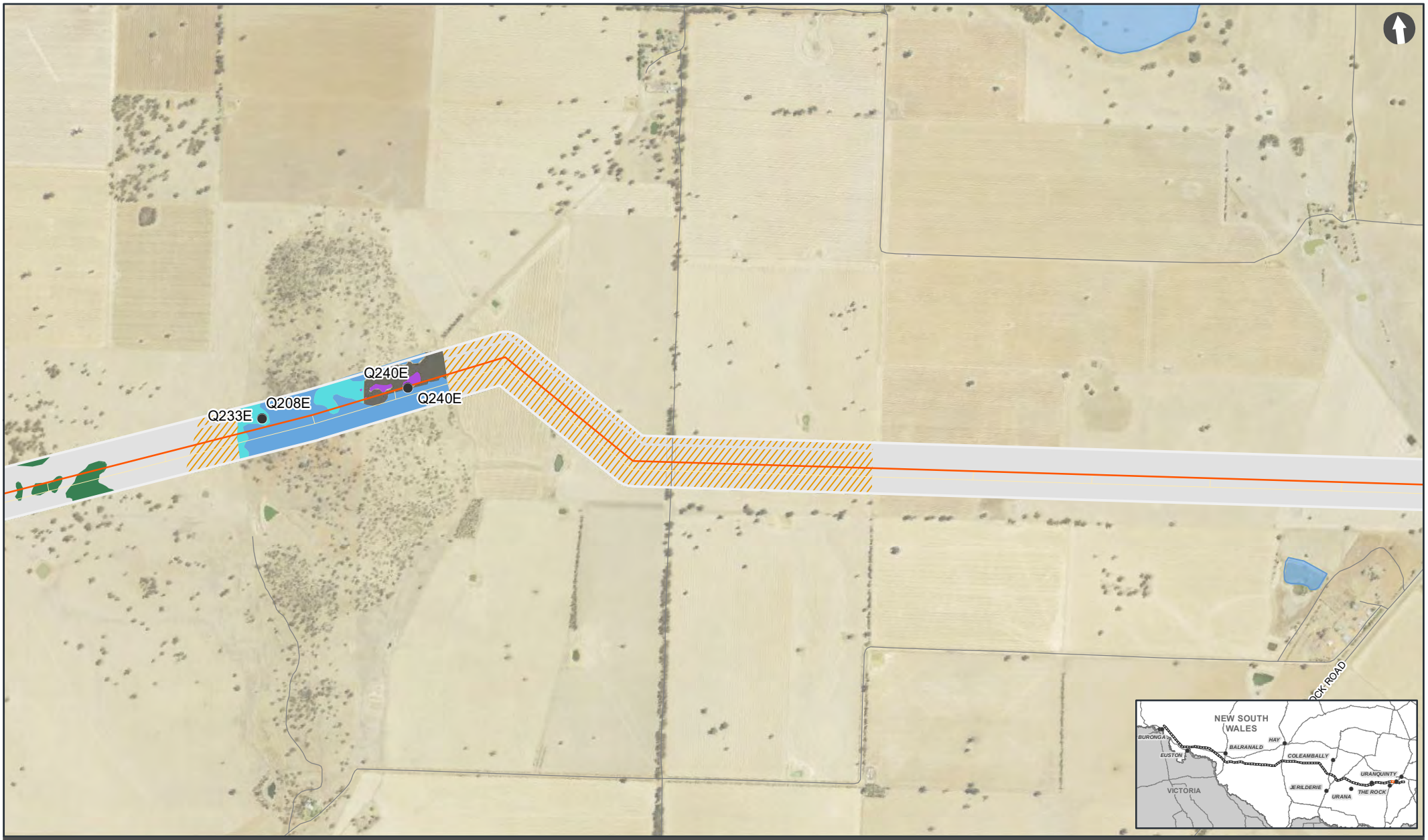
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping
- Category 1 - Exempt Land

Plant Community Types

- PCT267 - White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion | Mod-good
- PCT76 - Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions | Mod-good
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | Moderate
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | Poor
- Miscellaneous/exotic

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping
- Category 1 - Exempt Land

Plant Community Types
- PCT319 - Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion | Derived
- PCT319 - Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion | Mod-good
- PCT319 - Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion | Poor
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | Poor
- Miscellaneous/exotic

BDAR - Figure B-5cs

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- State Vegetation Mapping
- Category 1 - Exempt Land

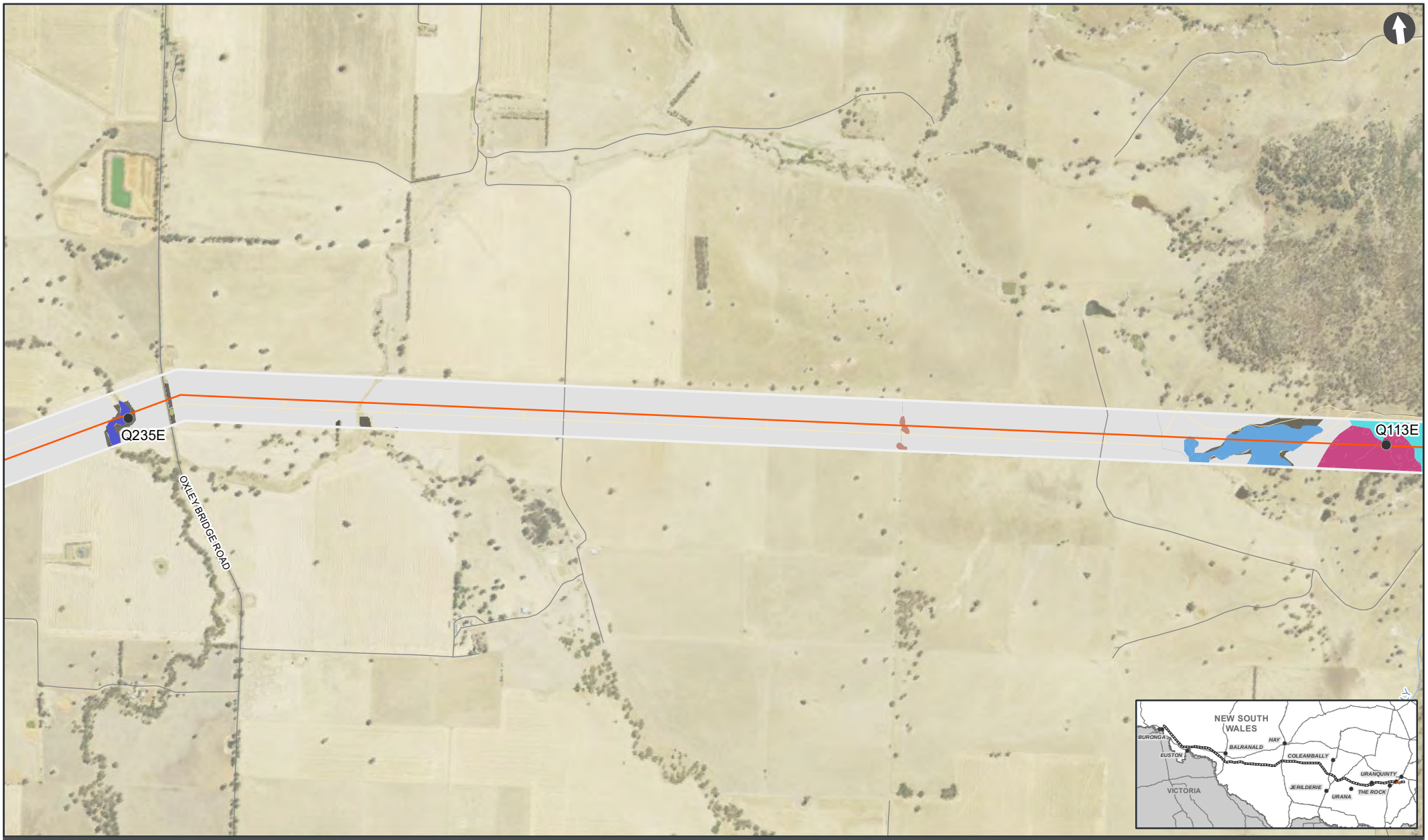
Plant Community Types
- PCT277 - Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion | Mod-good
- PCT74 - Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion | Mod-good
- Miscellaneous/exotic

BDAR - Figure B-5ct

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-5cu

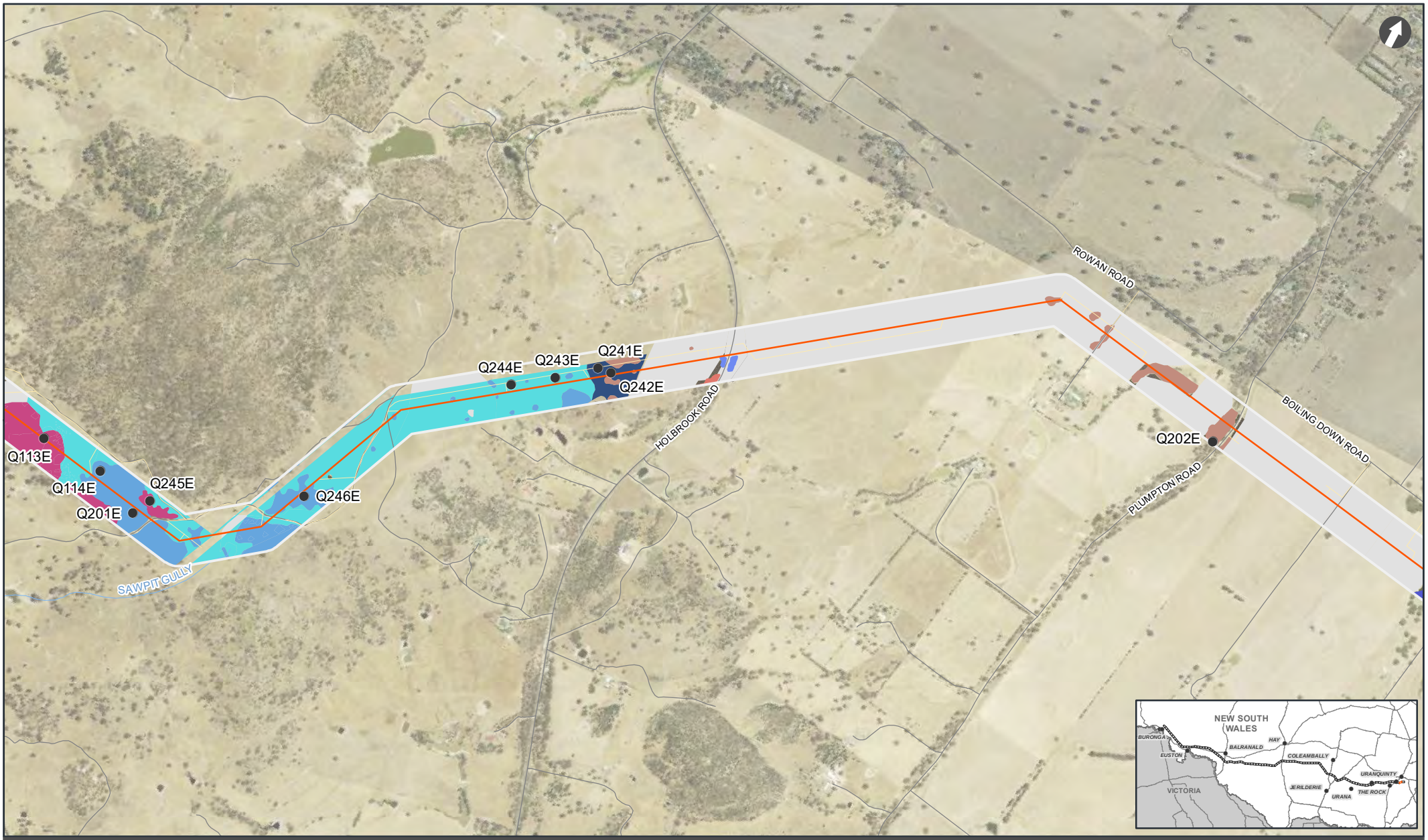
Native Vegetation Mapping of Plant Community Types and Zones

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping
- Category 1 - Exempt Land

Plant Community Types
- PCT110 - Western Grey Box - Cypress Pine shrubby woodland on stony footslopes in the NSW South Western Slopes Bioregion and Riverina Bioregion | Mod-good
- PCT277 - Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion | Mod-good
- PCT319 - Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion | Derived
- PCT319 - Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion | Mod-good
- PCT5 - River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion. | Poor
- PCT74 - Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion | Mod-good
- PCT76 - Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions | Poor
- Miscellaneous/exotic

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping
- Category 1 - Exempt Land

Plant Community Types

- PCT110 - Western Grey Box - Cypress Pine shrubby woodland on stony footslopes in the NSW South Western Slopes Bioregion and Riverina Bioregion | Mod-good
- PCT267 - White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion | Mod-good
- PCT277 - Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion | Derived
- PCT277 - Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion | Mod-good
- PCT319 - Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion | Derived
- PCT319 - Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion | Mod-good
- PCT5 - River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion. | Poor
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | Moderate

BDAR - Figure B-5CV

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- Holdings - No Access
- BAM Plot
- State Vegetation Mapping
- Category 1 - Exempt Land

Plant Community Types

- PCT277 - Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion | Mod-good
- PCT5 - River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion. | Poor
- PCT74 - Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion | Mod-good
- Miscellaneous/exotic

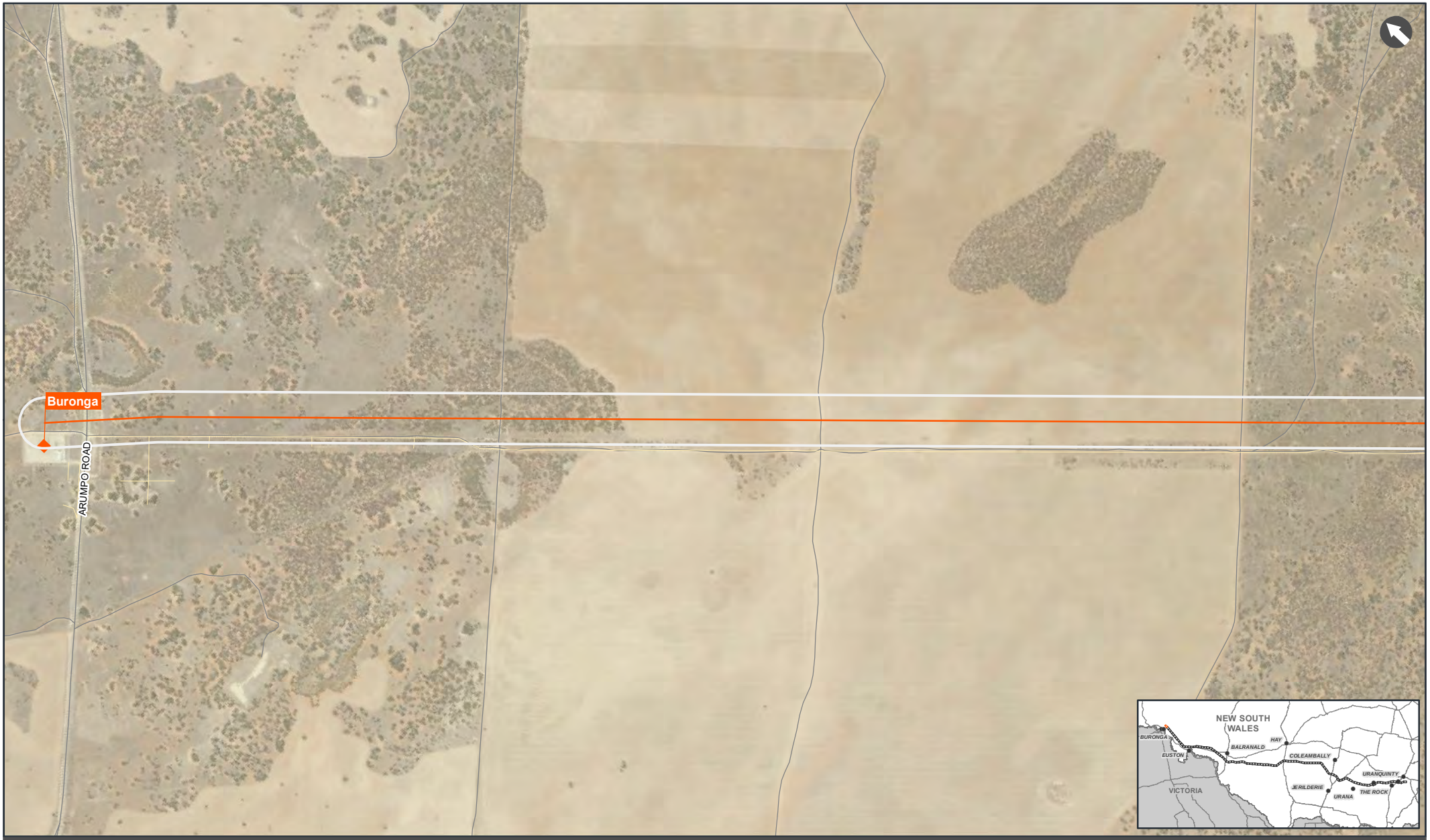
BDAR - Figure B-5CW

Native Vegetation Mapping of Plant Community Types and Zones

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Source: NSWSS, ESRI, Transgrid, WSP

APPENDIX B-6
NSW BC Act threatened ecological communities mapping



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BDAR - Figure B-6a

NSW BC Act Threatened Ecological Communities Mapping

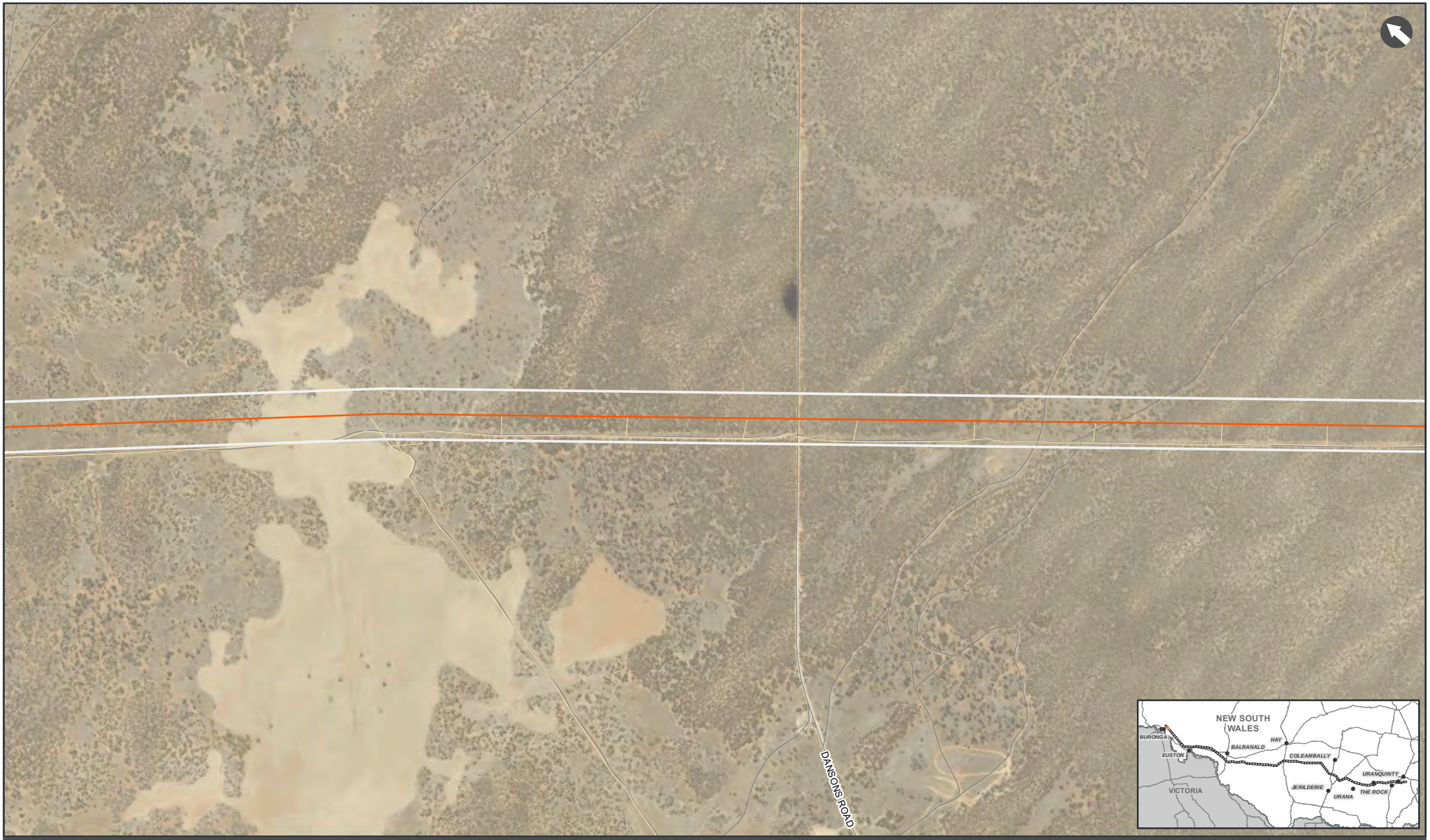
(Page 1 of 100)

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-6b

NSW BC Act Threatened Ecological Communities Mapping

(Page 2 of 100)

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\02_AppendixB\PS117658_BDAR_B006_TECMappingBCAct_r1v8.mxd

Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

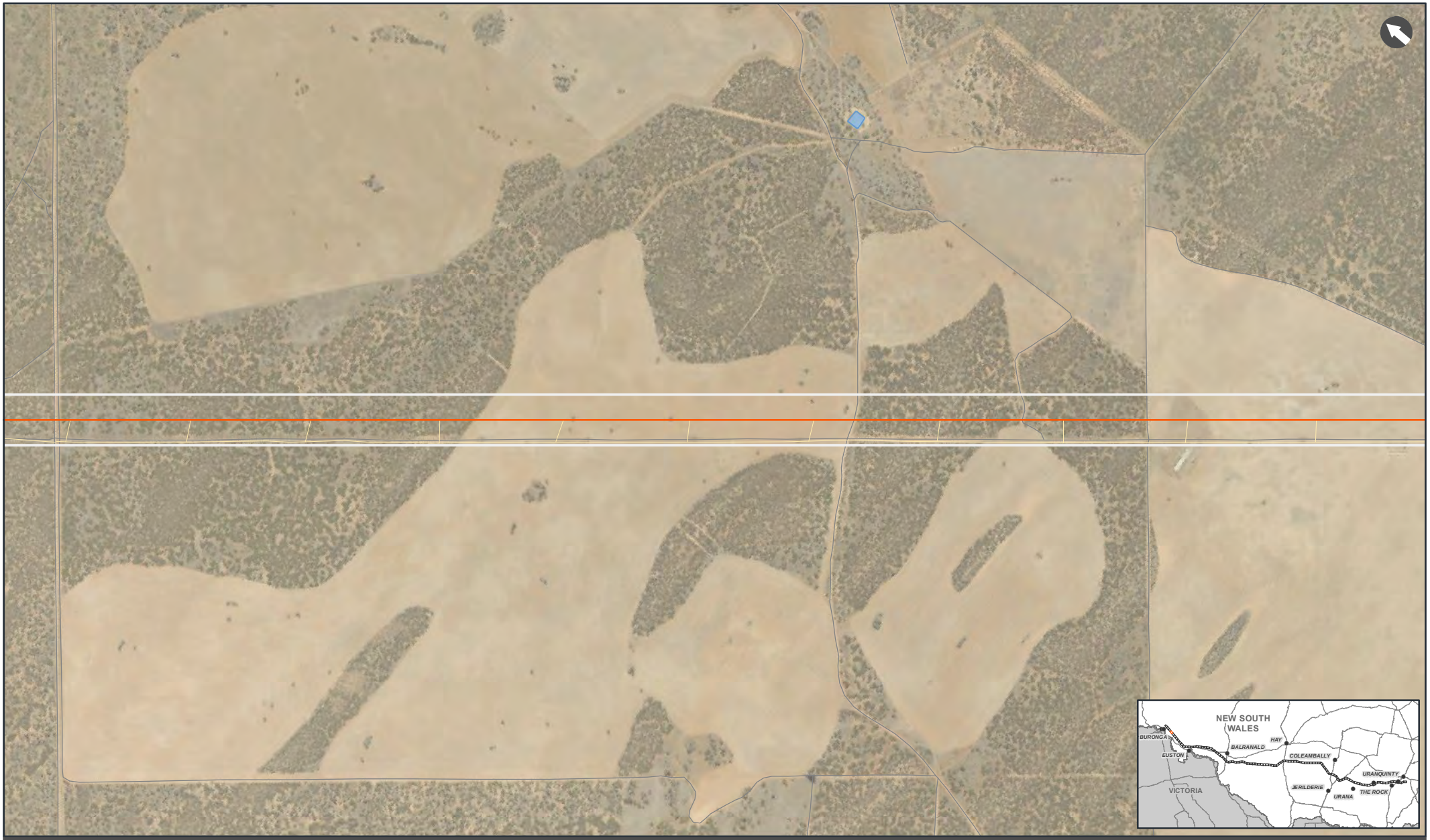
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

BDAR - Figure B-6c

NSW BC Act Threatened Ecological Communities Mapping

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-6d

NSW BC Act Threatened Ecological Communities Mapping

(Page 4 of 100)

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-6e

NSW BC Act Threatened Ecological Communities Mapping

(Page 5 of 100)

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\02_AppendixB\PS117658_BDAR_B006_TECMappingBCAct_r1v8.mxd

Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-6f

NSW BC Act Threatened Ecological Communities Mapping

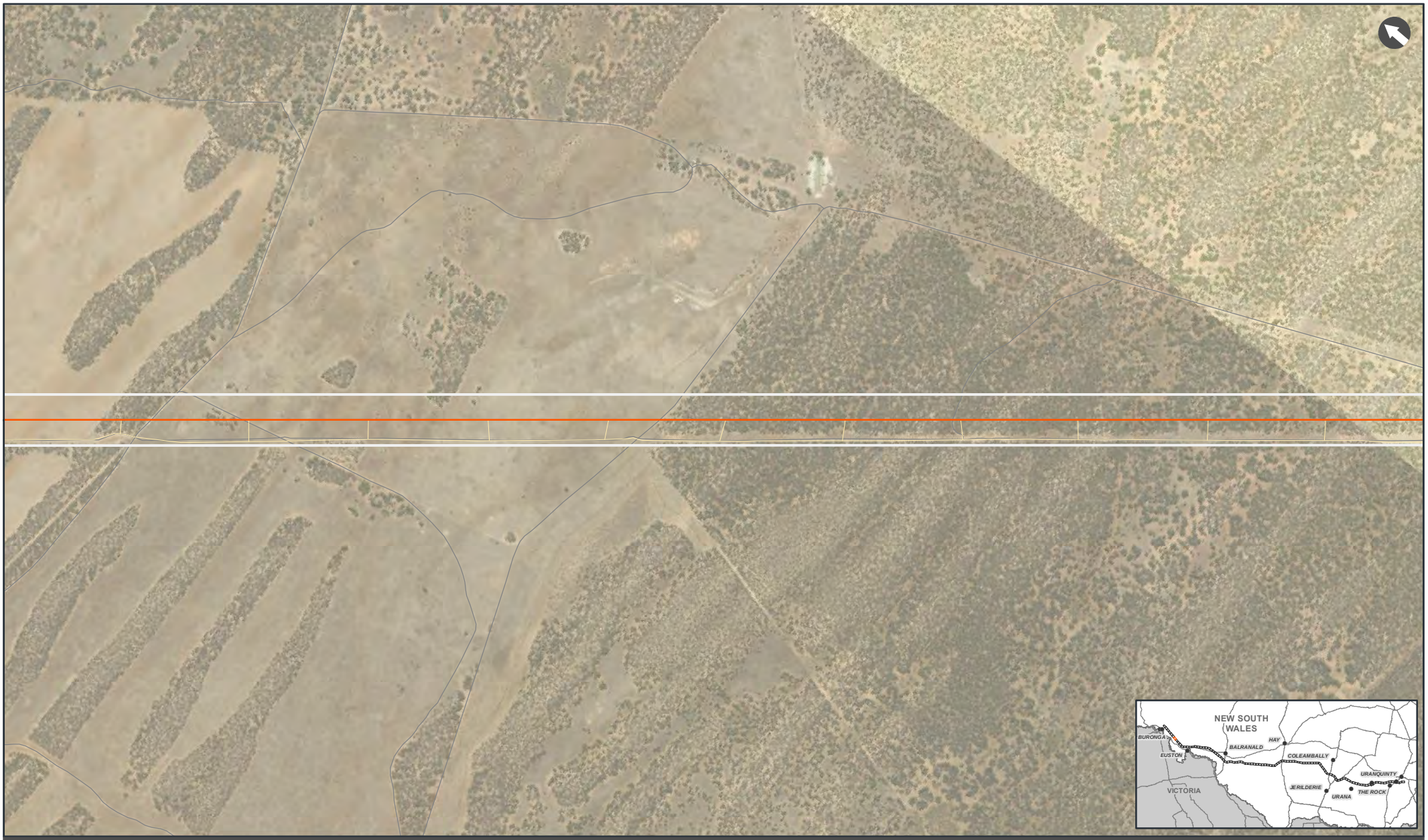
(Page 6 of 100)

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-6g

NSW BC Act Threatened Ecological Communities Mapping

(Page 7 of 100)

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\02_AppendixB\PS117658_BDAR_B006_TECMappingBCAct_r1v8.mxd

Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-6h

NSW BC Act Threatened Ecological Communities Mapping

(Page 8 of 100)

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

BDAR - Figure B-6i

NSW BC Act Threatened Ecological Communities Mapping

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Source: NSWSS, ESRI, Transgrid, WSP



0 0.25 0.5 KM

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

BDAR - Figure B-6j

NSW BC Act Threatened Ecological Communities Mapping

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\02_AppendixB\PS117658_BDAR_B006_TECMappingBCAct_r1v8.mxd

Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

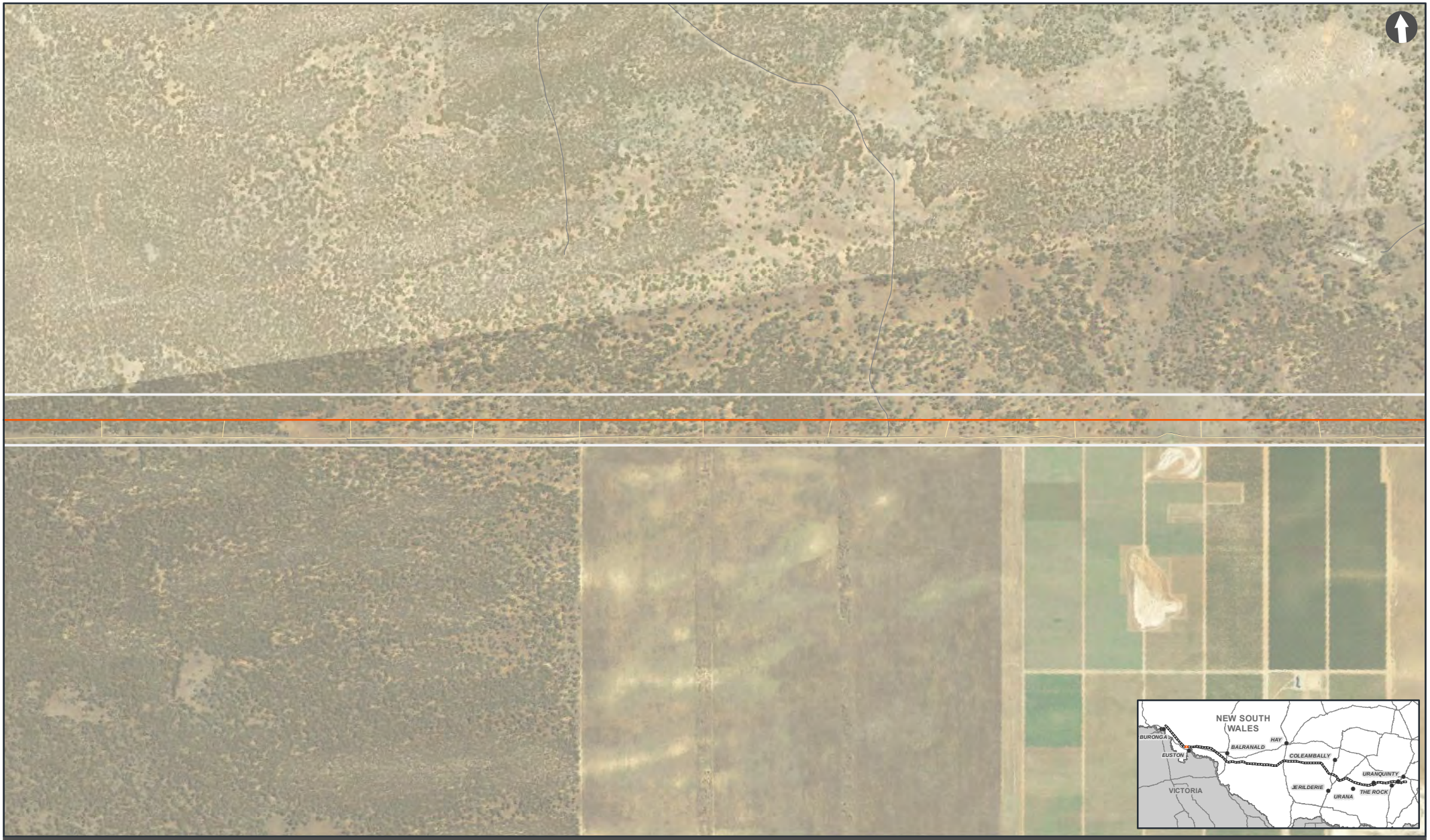
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

BDAR - Figure B-6k

NSW BC Act Threatened Ecological Communities Mapping

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\02_AppendixB\PS117658_BDAR_B006_TECMappingBCAct_r1v8.mxd

Source: NSWSS, ESRI, Transgrid, WSP



0 0.25 0.5 KM

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

BDAR - Figure B-6l

NSW BC Act Threatened Ecological Communities Mapping

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-6m

NSW BC Act Threatened Ecological Communities Mapping

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-6n

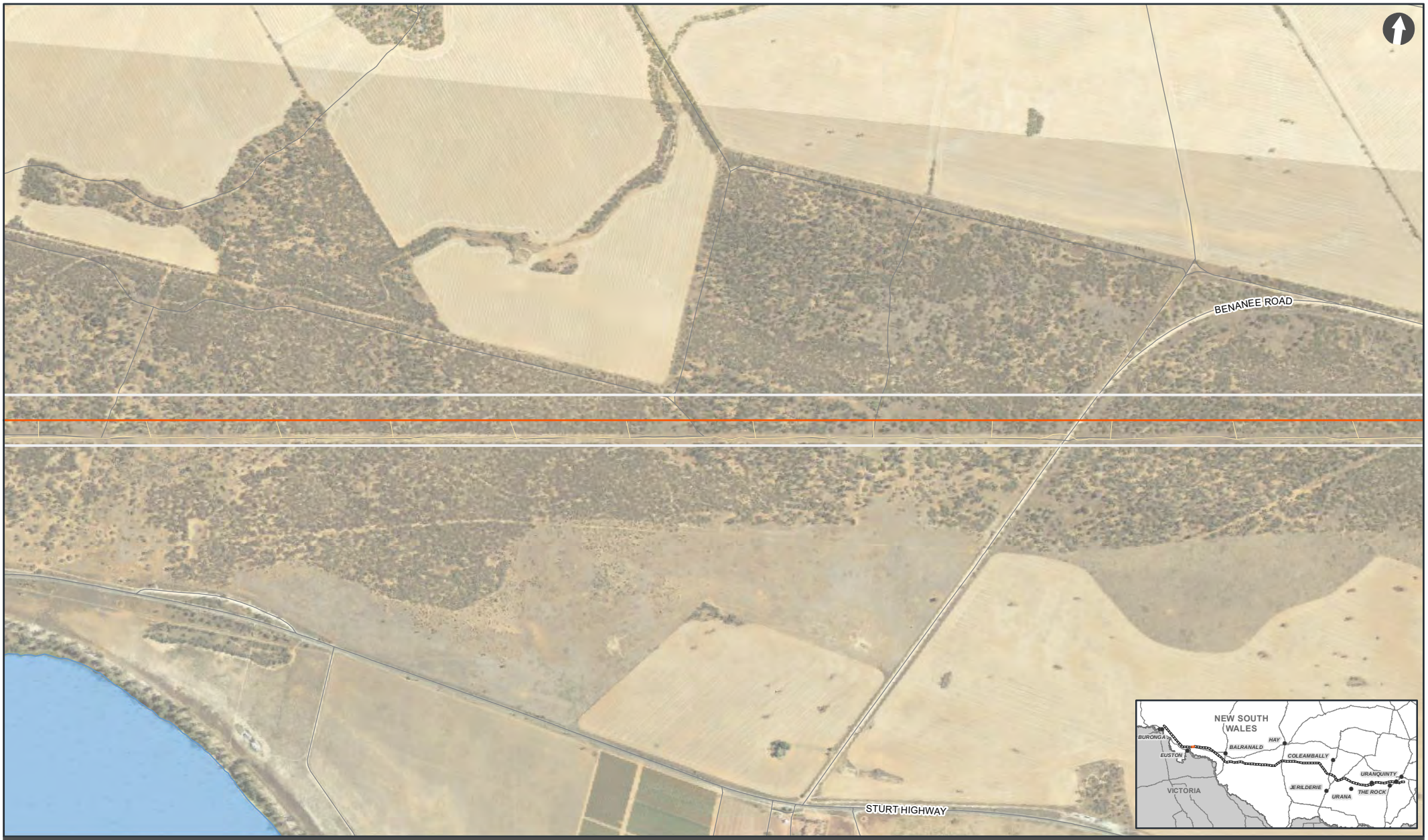
NSW BC Act Threatened Ecological Communities Mapping

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

BDAR - Figure B-6o

NSW BC Act Threatened Ecological Communities Mapping

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Source: NSWSS, ESRI, Transgrid, WSP



0 0.25 0.5 KM

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Ecological Community

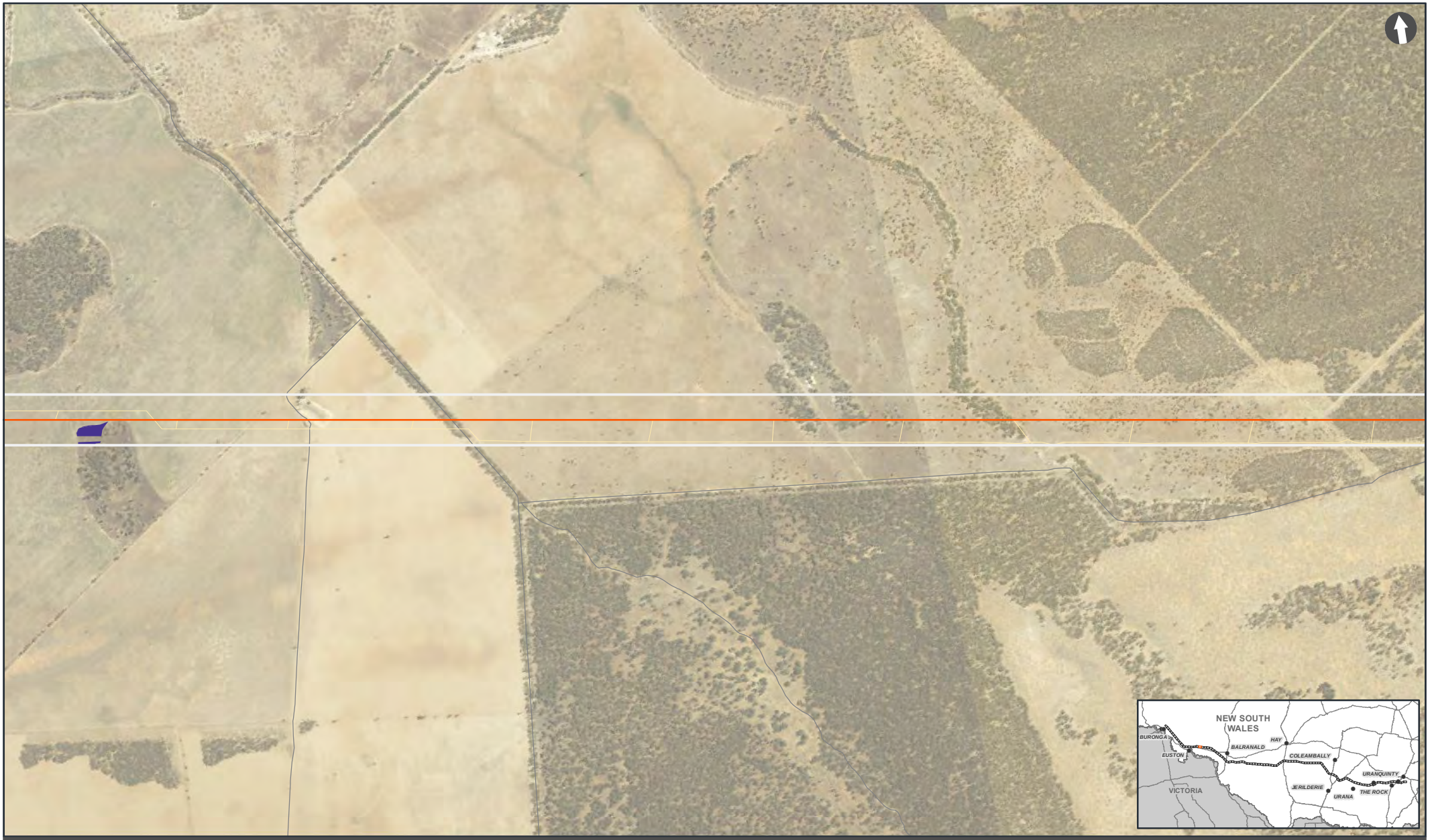
Acacia melvillei shrubland in the Riverina and Murray Darling Depression bioregions | Endangered

BDAR - Figure B-6p

NSW BC Act Threatened Ecological Communities Mapping

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Source: NSWSS, ESRI, Transgrid, WSP



0 0.25 0.5 KM

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Ecological Community

Acacia melvillei shrubland in the Riverina and Murray Darling Depression bioregions | Endangered

BDAR - Figure B-6q

NSW BC Act Threatened Ecological Communities Mapping

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

BDAR - Figure B-6r

NSW BC Act Threatened Ecological Communities Mapping

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure B-6s

NSW BC Act Threatened Ecological Communities Mapping

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Ecological Community

- *Acacia melvillei* shrubland in the Riverina and Murray Darling Depression bioregions | Endangered

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

BDAR - Figure B-6t

NSW BC Act Threatened Ecological Communities Mapping

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\02_AppendixB\PS117658_BDAR_B006_TECMappingBCAct_r1v8.mxd

Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Ecological Community

Acacia melvillei shrubland in the Riverina and Murray Darling Depression bioregions | Endangered

BDAR - Figure B-6u

NSW BC Act Threatened Ecological Communities Mapping

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\02_AppendixB\PS117658_BDAR_B006_TECMappingBCAct_r1v8.mxd

Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-6v

NSW BC Act Threatened Ecological Communities Mapping

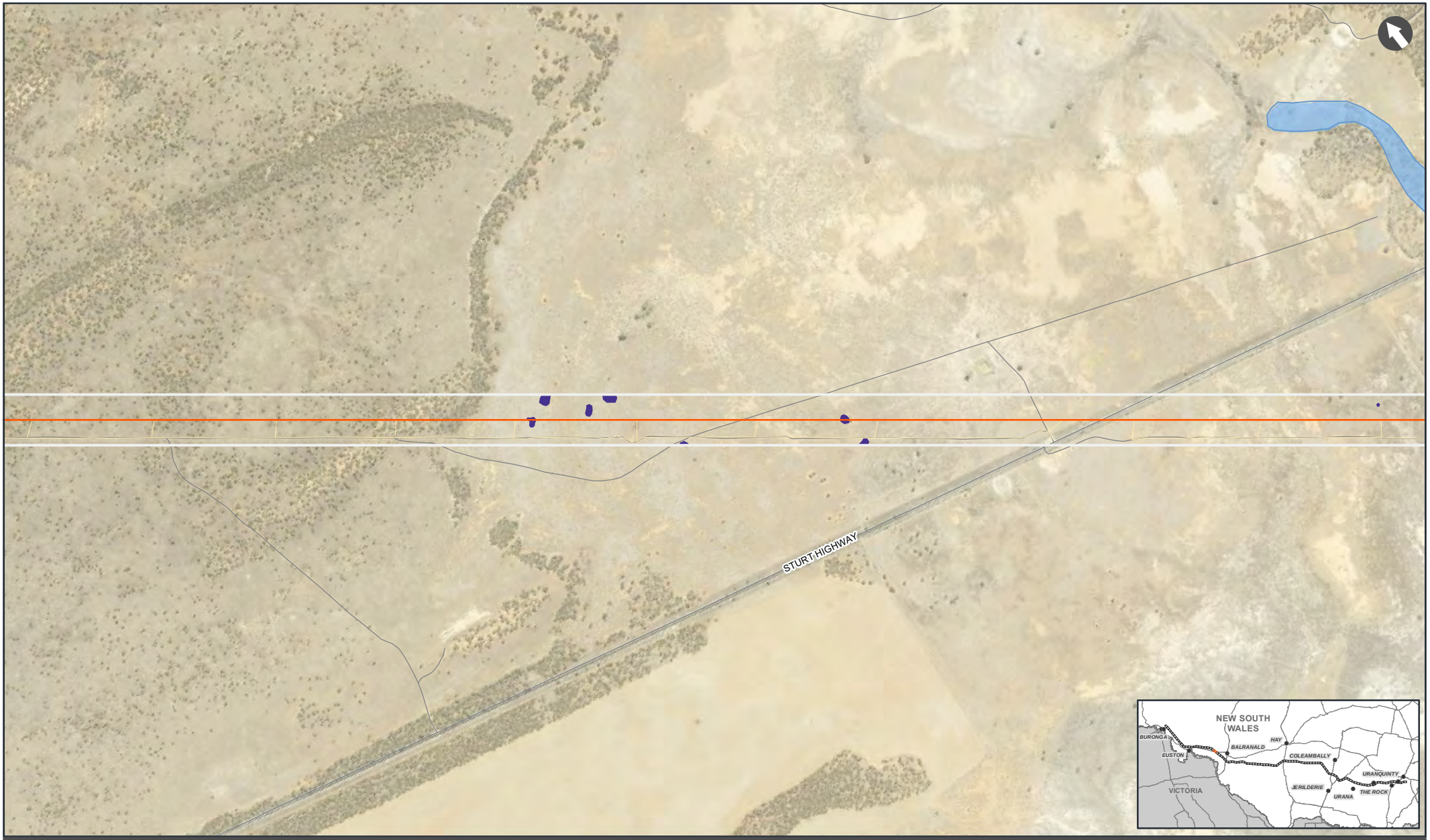
(Page 22 of 100)

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Ecological Community
- *Acacia melvillei* shrubland in the Riverina and Murray Darling Depression bioregions | Endangered

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\02_AppendixB\PS117658_BDAR_B006_TECMappingBCAct_r1v8.mxd

Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-6w

NSW BC Act Threatened Ecological Communities Mapping

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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Ecological Community

Acacia melvillei shrubland in the Riverina and Murray Darling Depression bioregions | Endangered

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\02_AppendixB\PS117658_BDAR_B006_TECMappingBCAct_r1v8.mxd

Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-6x

NSW BC Act Threatened Ecological Communities Mapping

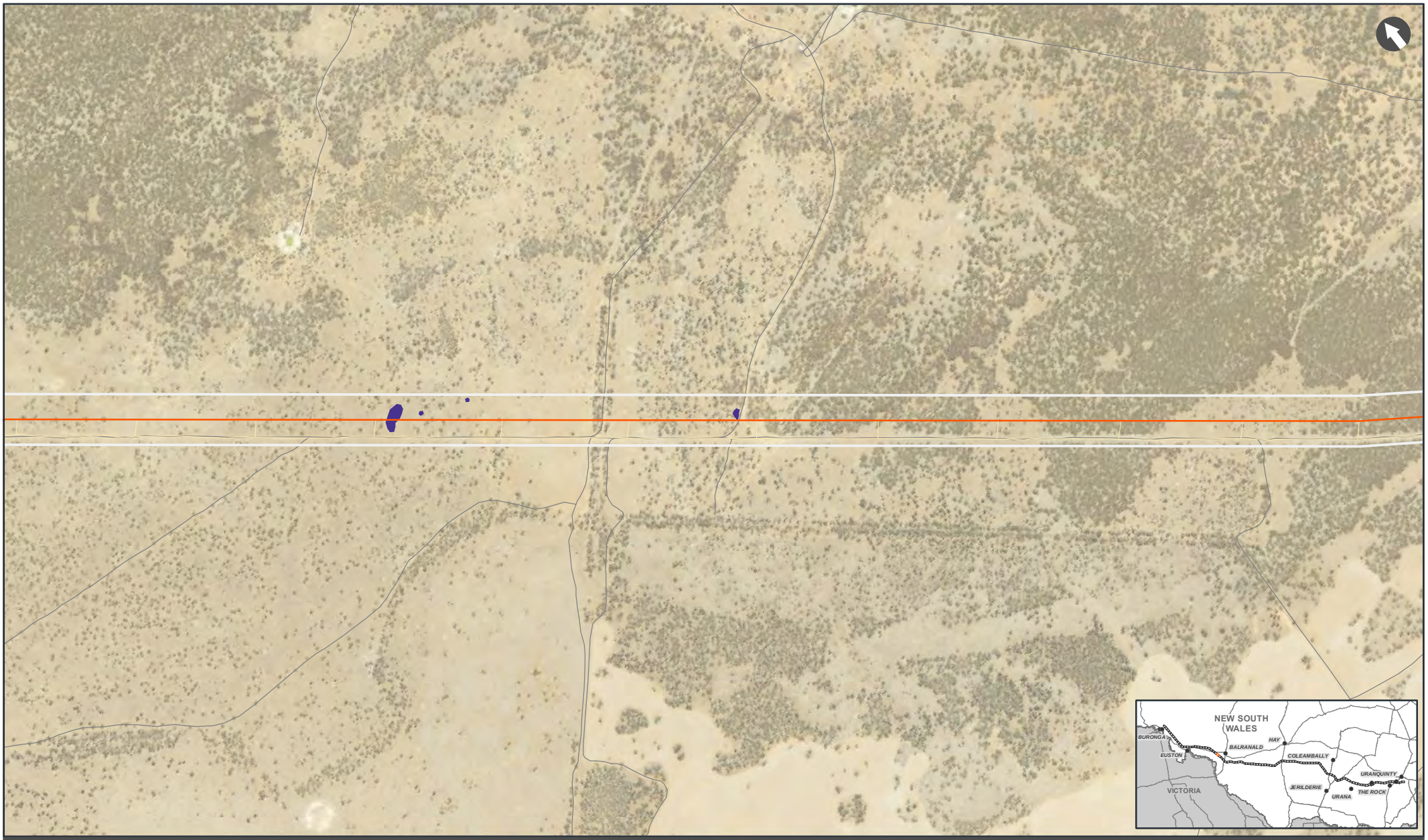
(Page 24 of 100)

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Ecological Community
- *Acacia melvillei* shrubland in the Riverina and Murray Darling Depression bioregions | Endangered

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-6y

NSW BC Act Threatened Ecological Communities Mapping

(Page 25 of 100)

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Ecological Community

Acacia melvillei shrubland in the Riverina and Murray Darling Depression bioregions | Endangered

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

BDAR - Figure B-6z

NSW BC Act Threatened Ecological Communities Mapping

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\02_AppendixB\PS117658_BDAR_B006_TECMappingBCAct_r1v8.mxd

Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

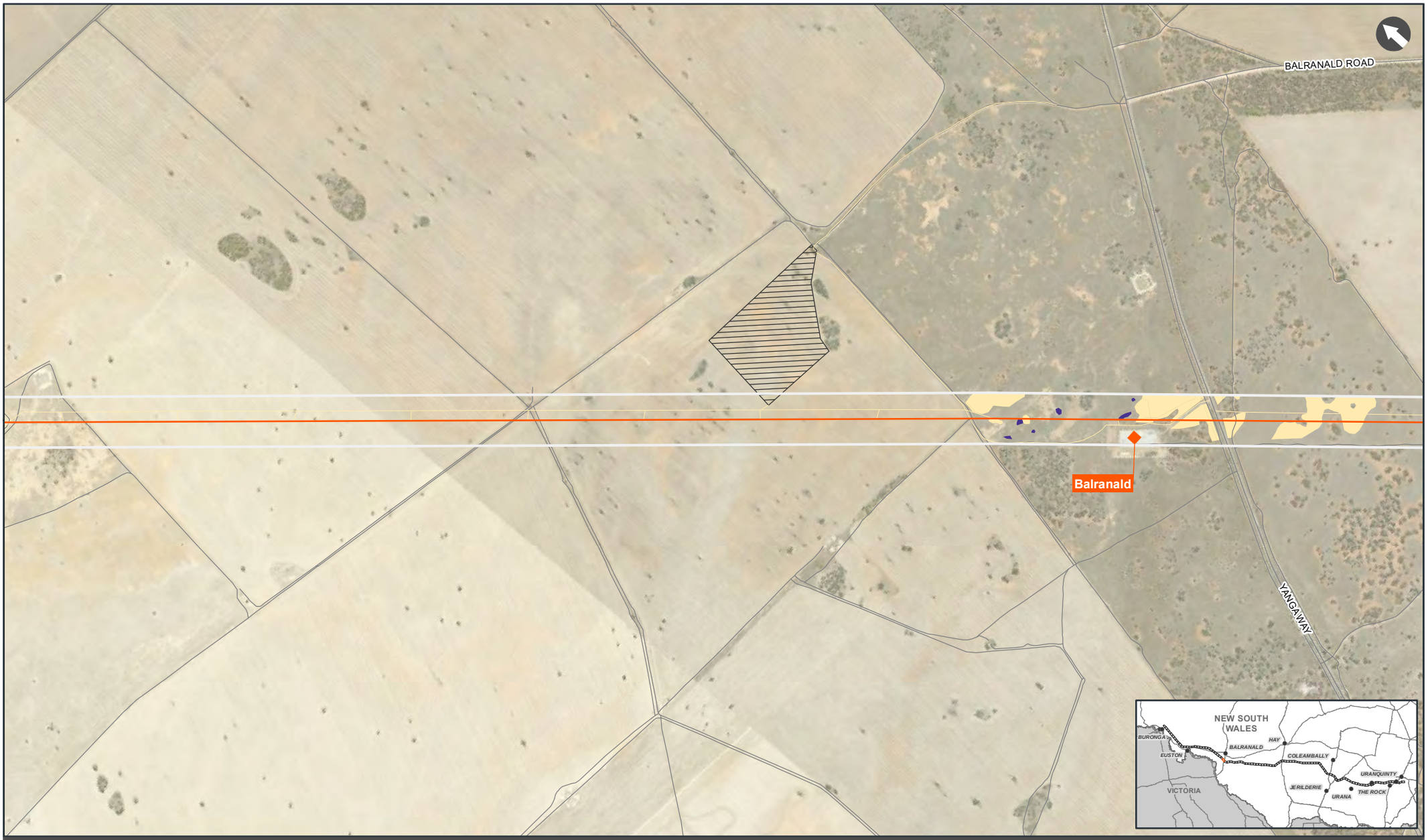
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

BDAR - Figure B-6aa

NSW BC Act Threatened Ecological Communities Mapping

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\02_AppendixB\PS117658_BDAR_B006_TECMappingBCAct_r1v8.mxd

Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Ecological Community

- *Acacia melvillei* shrubland in the Riverina and Murray Darling Depression bioregions | Endangered
- *Allocasuarina luehmanii* woodland in the Riverina and Murray-Darling Depression bioregions | Endangered

BDAR - Figure B-6ab

NSW BC Act Threatened Ecological Communities Mapping

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Ecological Community

Allocasuarina luehmanii woodland in the Riverina and Murray-Darling Depression bioregions | Endangered

BDAR - Figure B-6ac

NSW BC Act Threatened Ecological Communities Mapping

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

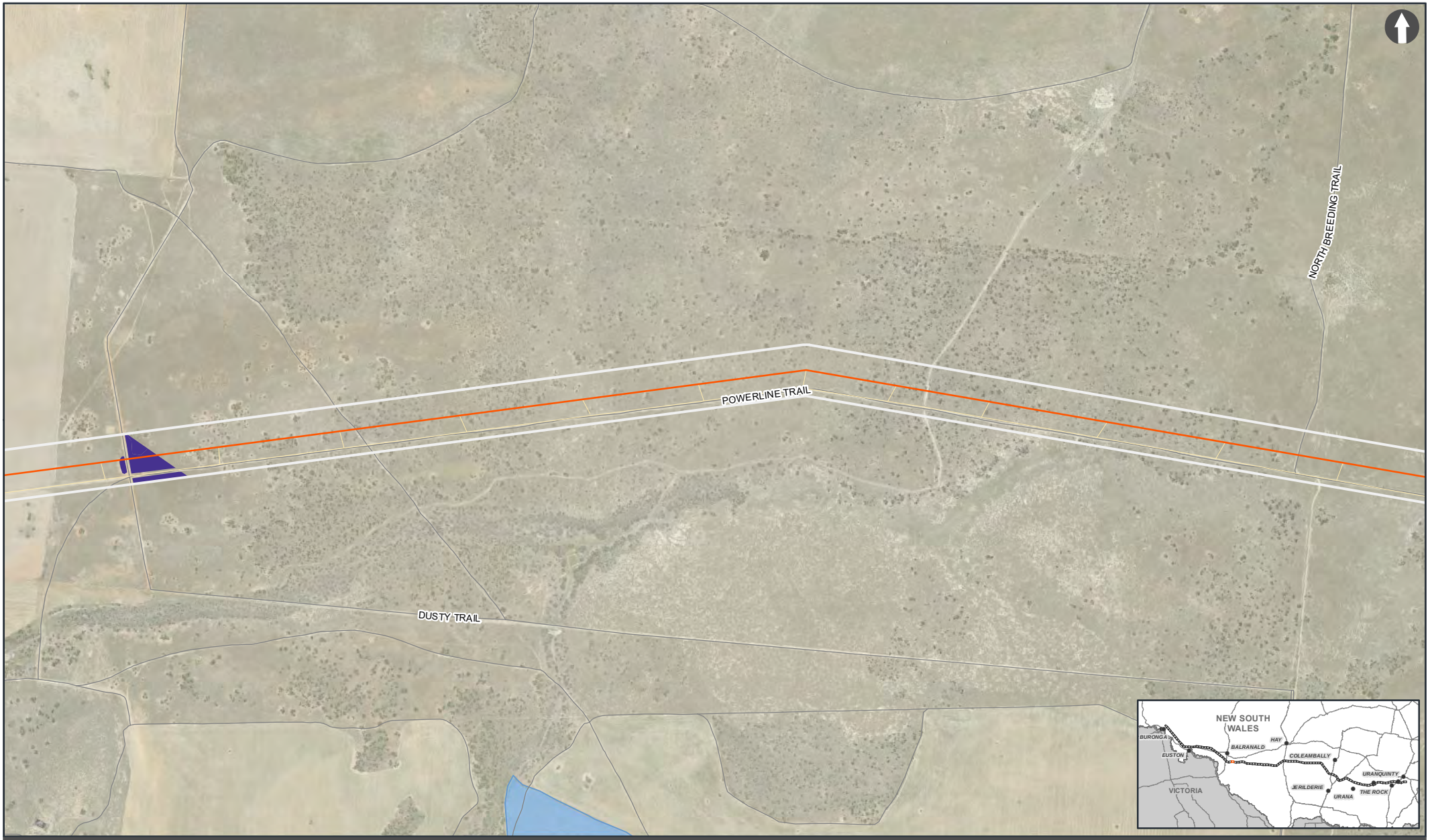
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

BDAR - Figure B-6ad

NSW BC Act Threatened Ecological Communities Mapping

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-6ae

NSW BC Act Threatened Ecological Communities Mapping

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Ecological Community

- *Acacia melvillei* shrubland in the Riverina and Murray Darling Depression bioregions | Endangered

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

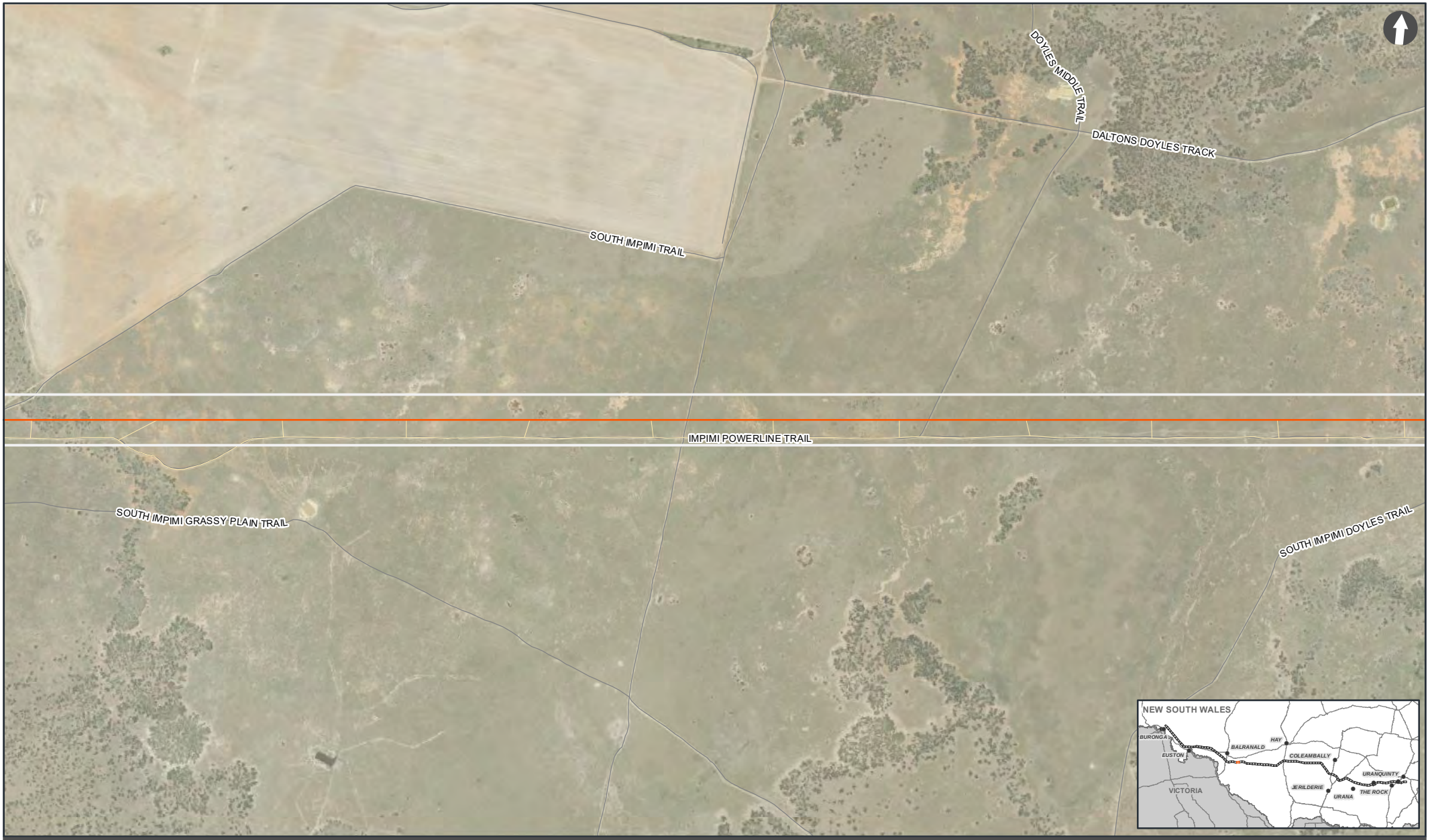
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

BDAR - Figure B-6af

NSW BC Act Threatened Ecological Communities Mapping

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\02_AppendixB\PS117658_BDAR_B006_TECMappingBCAct_r1v8.mxd

Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure B-6ag

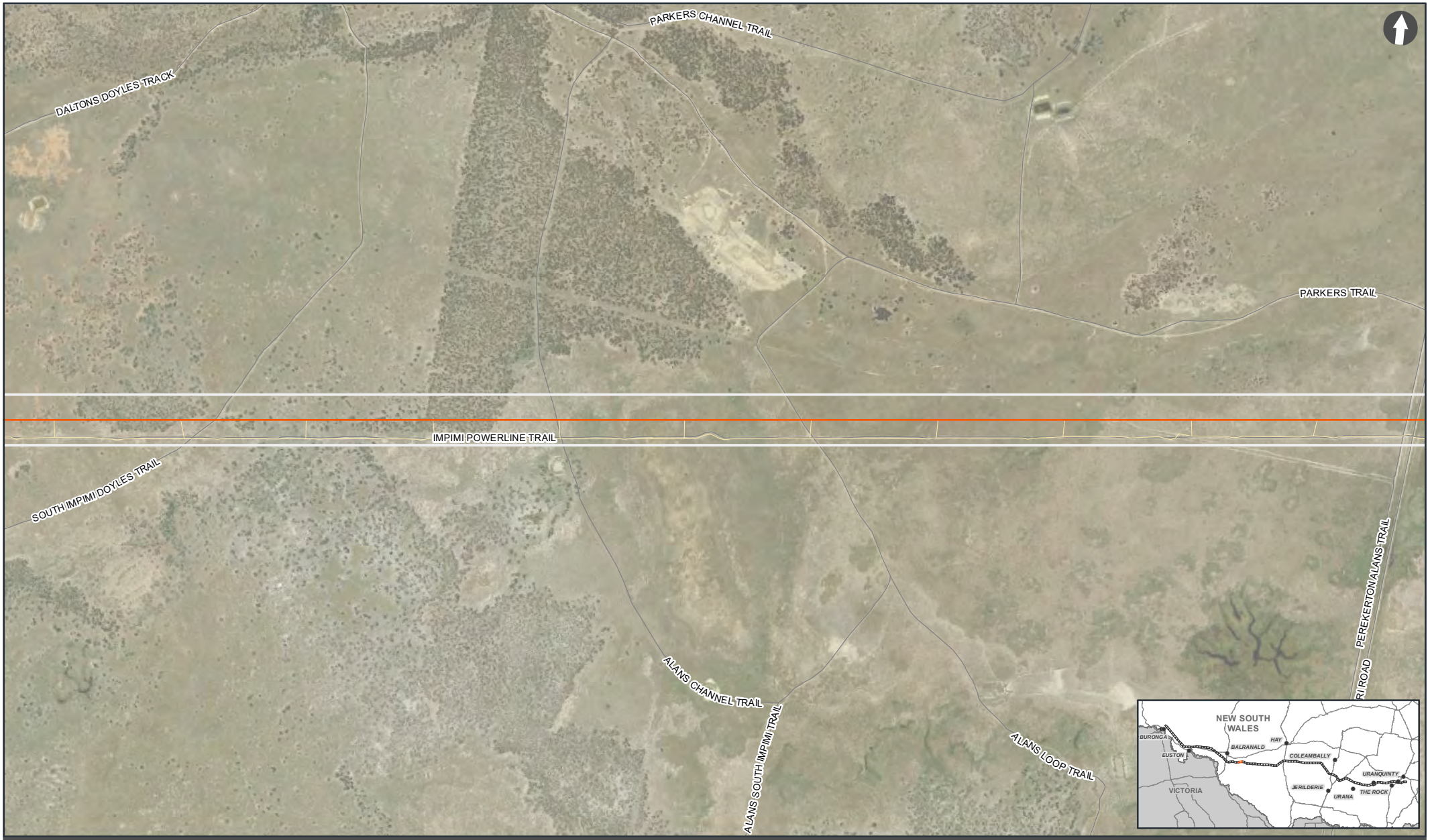
NSW BC Act Threatened Ecological Communities Mapping

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

BDAR - Figure B-6ah

NSW BC Act Threatened Ecological Communities Mapping

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-6ai

NSW BC Act Threatened Ecological Communities Mapping

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

BDAR - Figure B-6aj

NSW BC Act Threatened Ecological Communities Mapping

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\02_AppendixB\PS117658_BDAR_B006_TECMappingBCAct_r1v8.mxd

Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

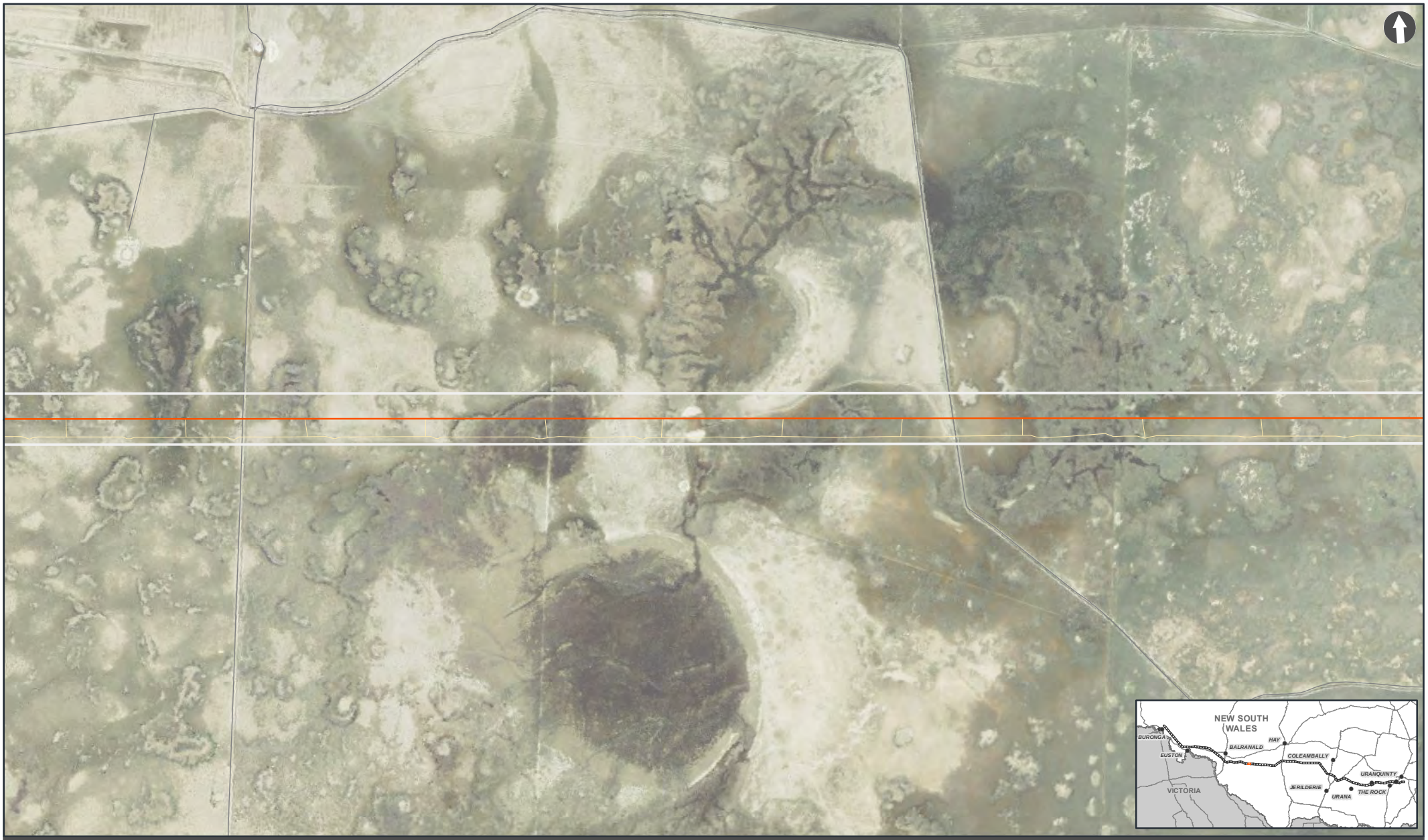
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

BDAR - Figure B-6ak

NSW BC Act Threatened Ecological Communities Mapping

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\02_AppendixB\PS117658_BDAR_B006_TECMappingBCAct_r1v8.mxd

Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

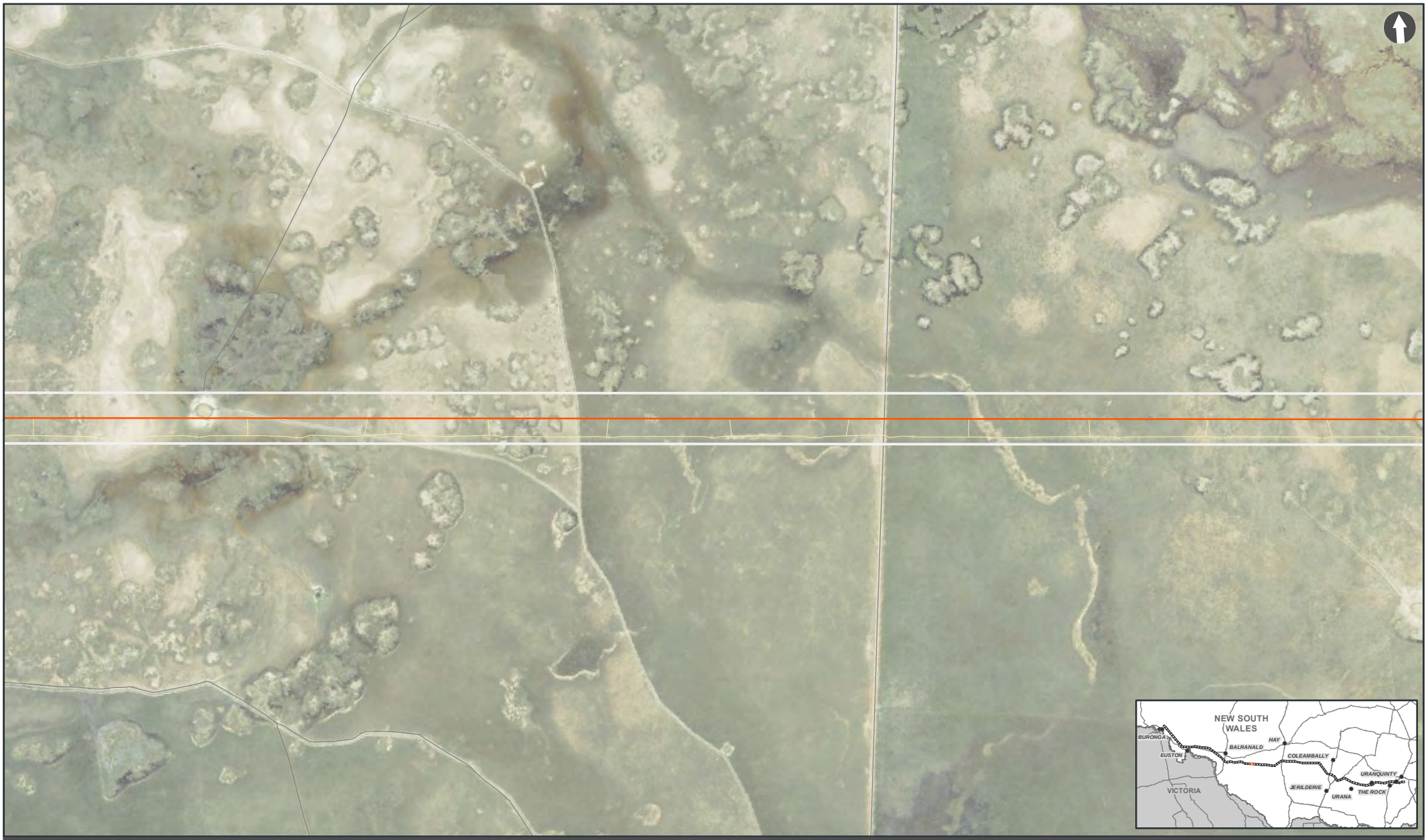
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

BDAR - Figure B-6al

NSW BC Act Threatened Ecological Communities Mapping

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

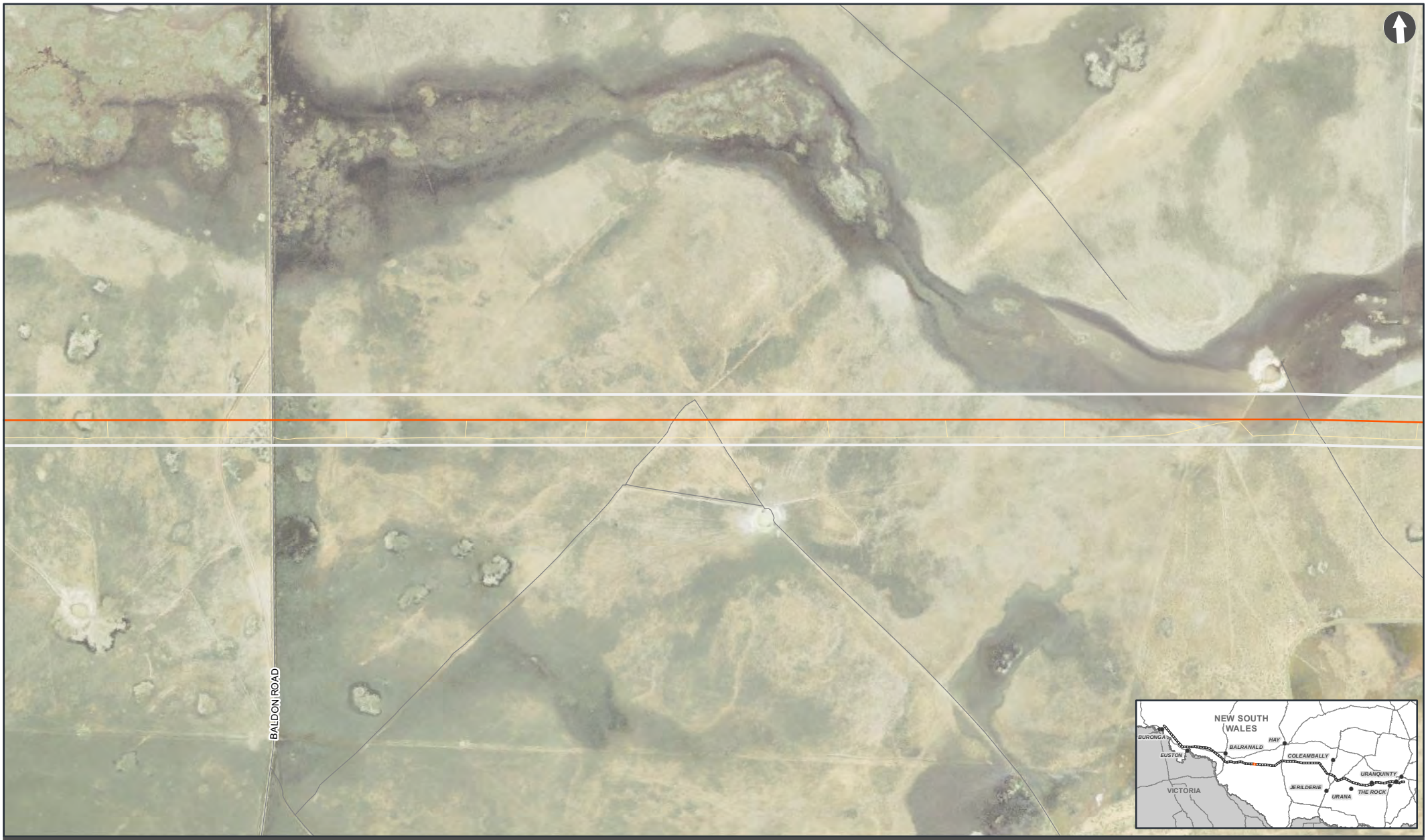
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

BDAR - Figure B-6am

NSW BC Act Threatened Ecological Communities Mapping

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\02_AppendixB\PS117658_BDAR_B006_TECMappingBCAct_r1v8.mxd

Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

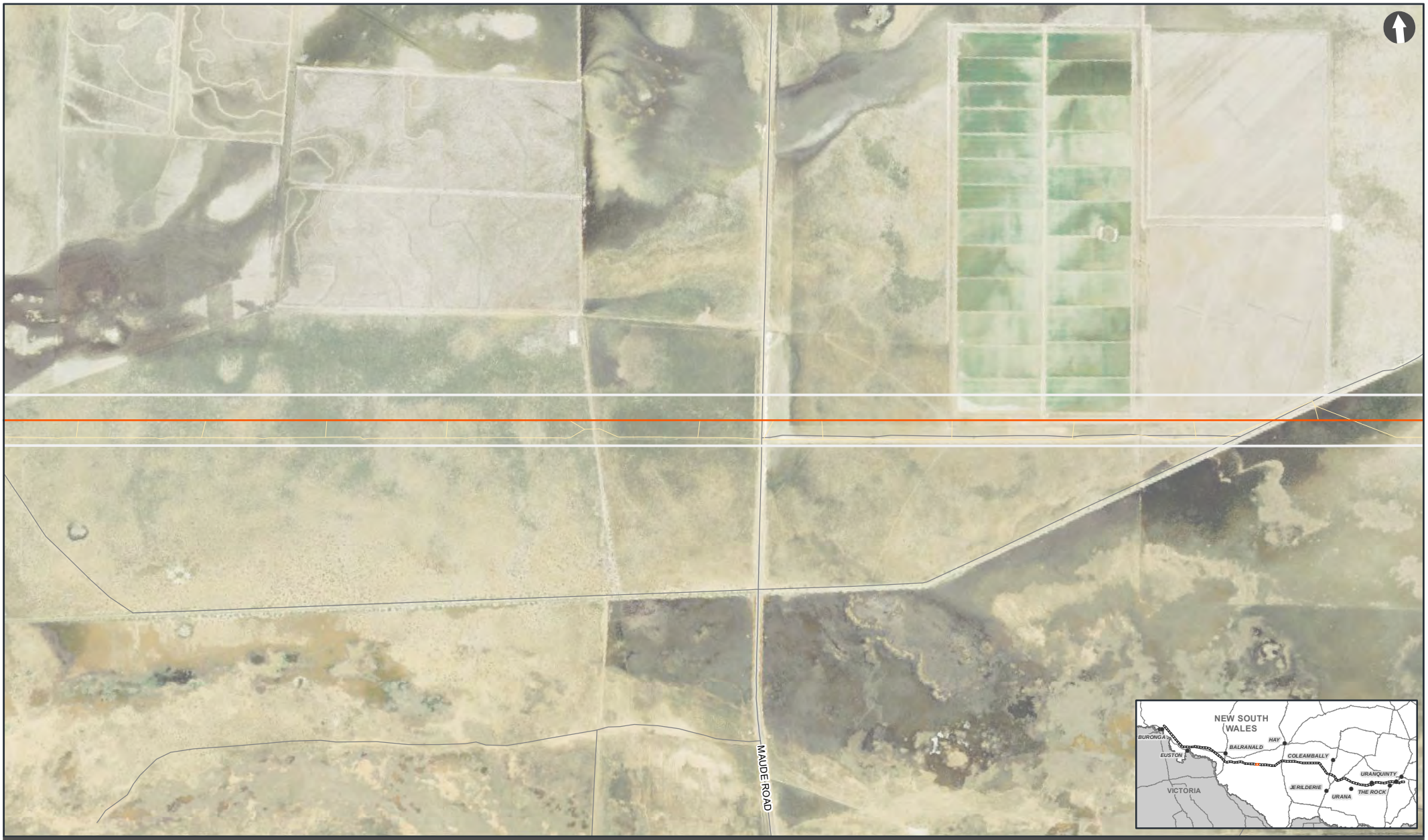
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

BDAR - Figure B-6an

NSW BC Act Threatened Ecological Communities Mapping

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\02_AppendixB\PS117658_BDAR_B006_TECMappingBCAct_r1v8.mxd

Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

BDAR - Figure B-6ao

NSW BC Act Threatened Ecological Communities Mapping

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\02_AppendixB\PS117658_BDAR_B006_TECMappingBCAct_r1v8.mxd

Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

BDAR - Figure B-6ap

NSW BC Act Threatened Ecological Communities Mapping

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\02_AppendixB\PS117658_BDAR_B006_TECMappingBCAct_r1v8.mxd

Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

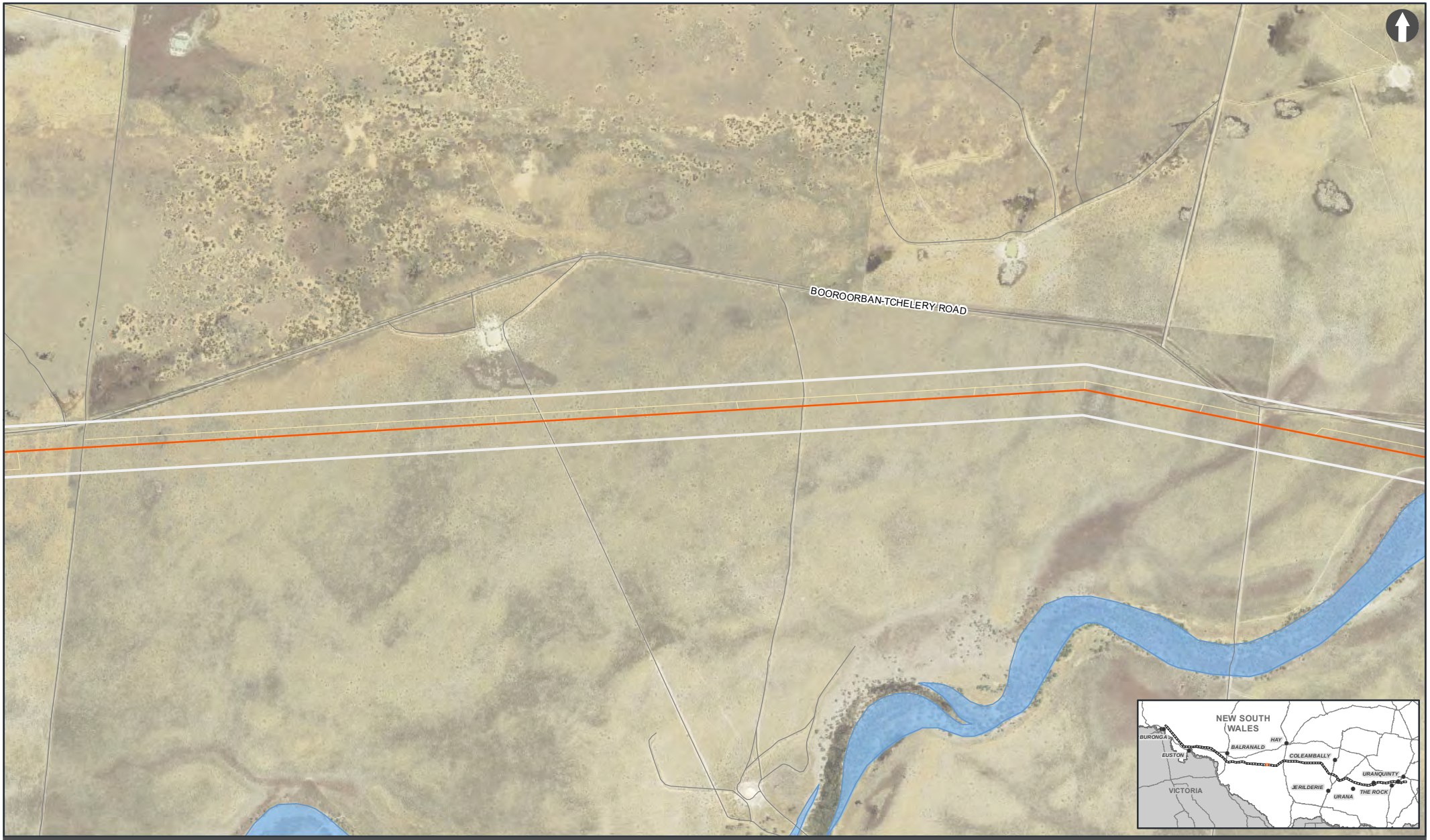
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

BDAR - Figure B-6aq

NSW BC Act Threatened Ecological Communities Mapping

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

BDAR - Figure B-6ar

NSW BC Act Threatened Ecological Communities Mapping

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\02_AppendixB\PS117658_BDAR_B006_TECMappingBCAct_r1v8.mxd

Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-6as

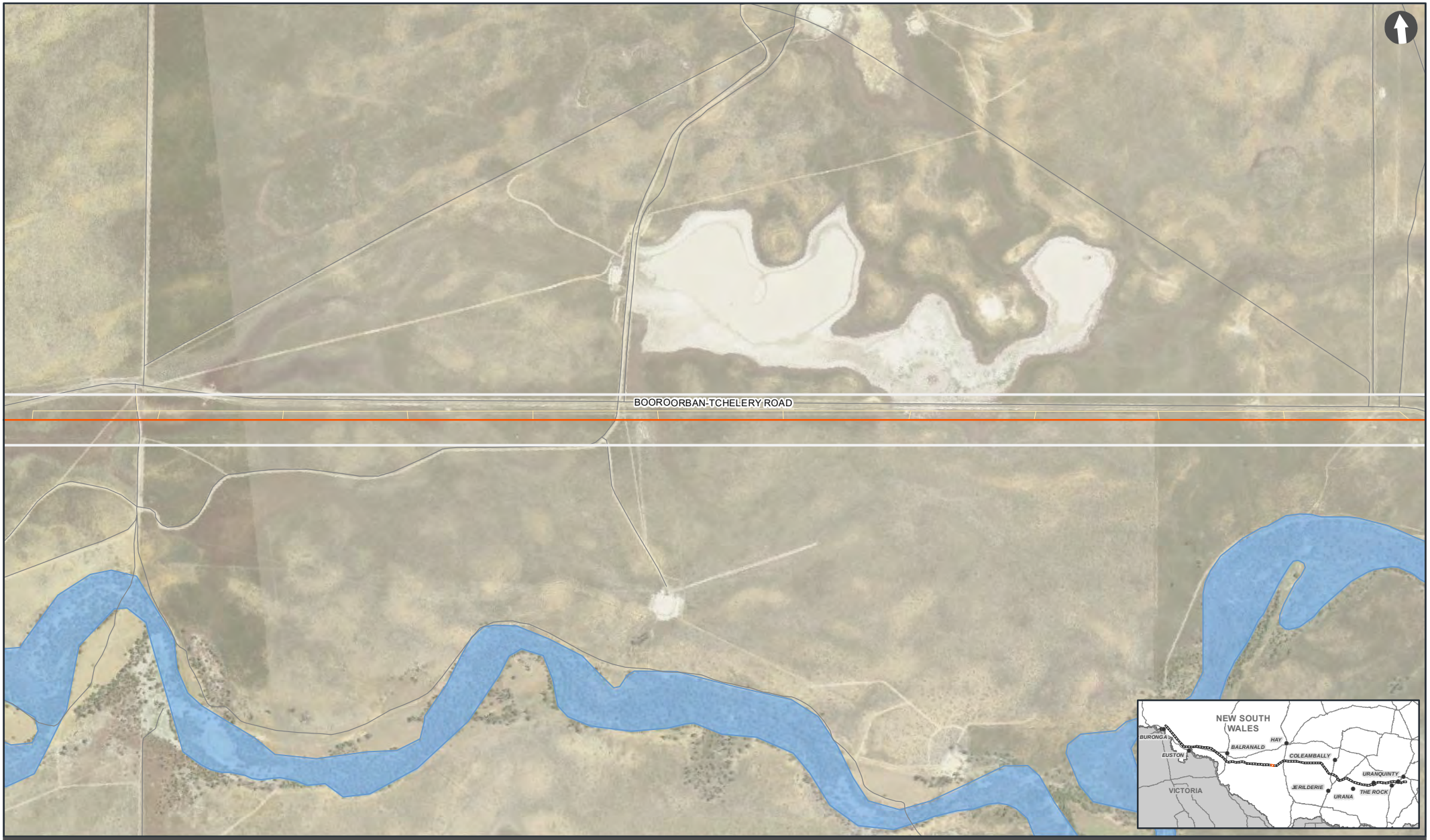
NSW BC Act Threatened Ecological Communities Mapping

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\02_AppendixB\PS117658_BDAR_B006_TECMappingBCAct_r1v8.mxd

Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure B-6at

NSW BC Act Threatened Ecological Communities Mapping

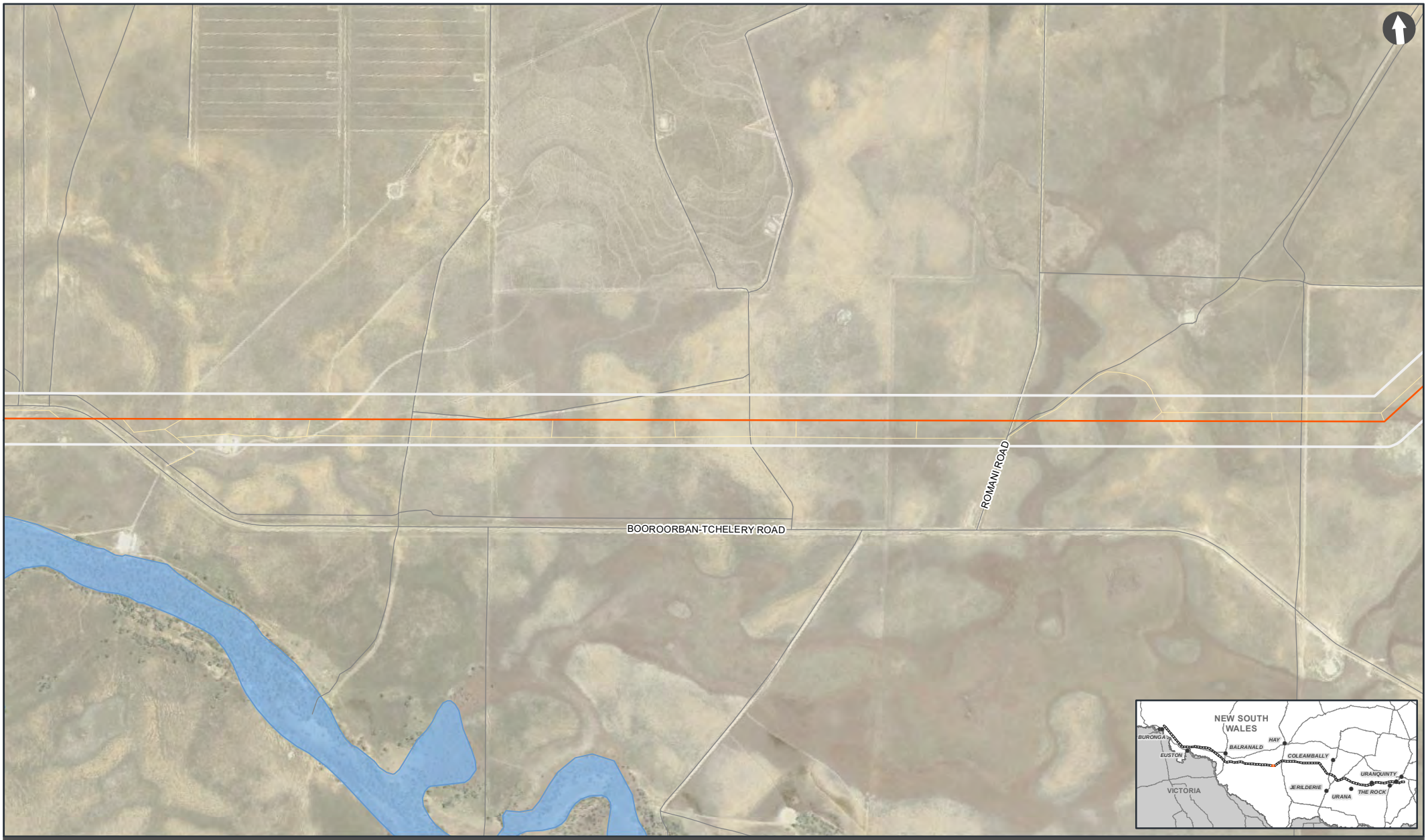
(Page 46 of 100)

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\02_AppendixB\PS117658_BDAR_B006_TECMappingBCAct_r1v8.mxd

Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-6au

NSW BC Act Threatened Ecological Communities Mapping

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-6av

NSW BC Act Threatened Ecological Communities Mapping

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Project Components

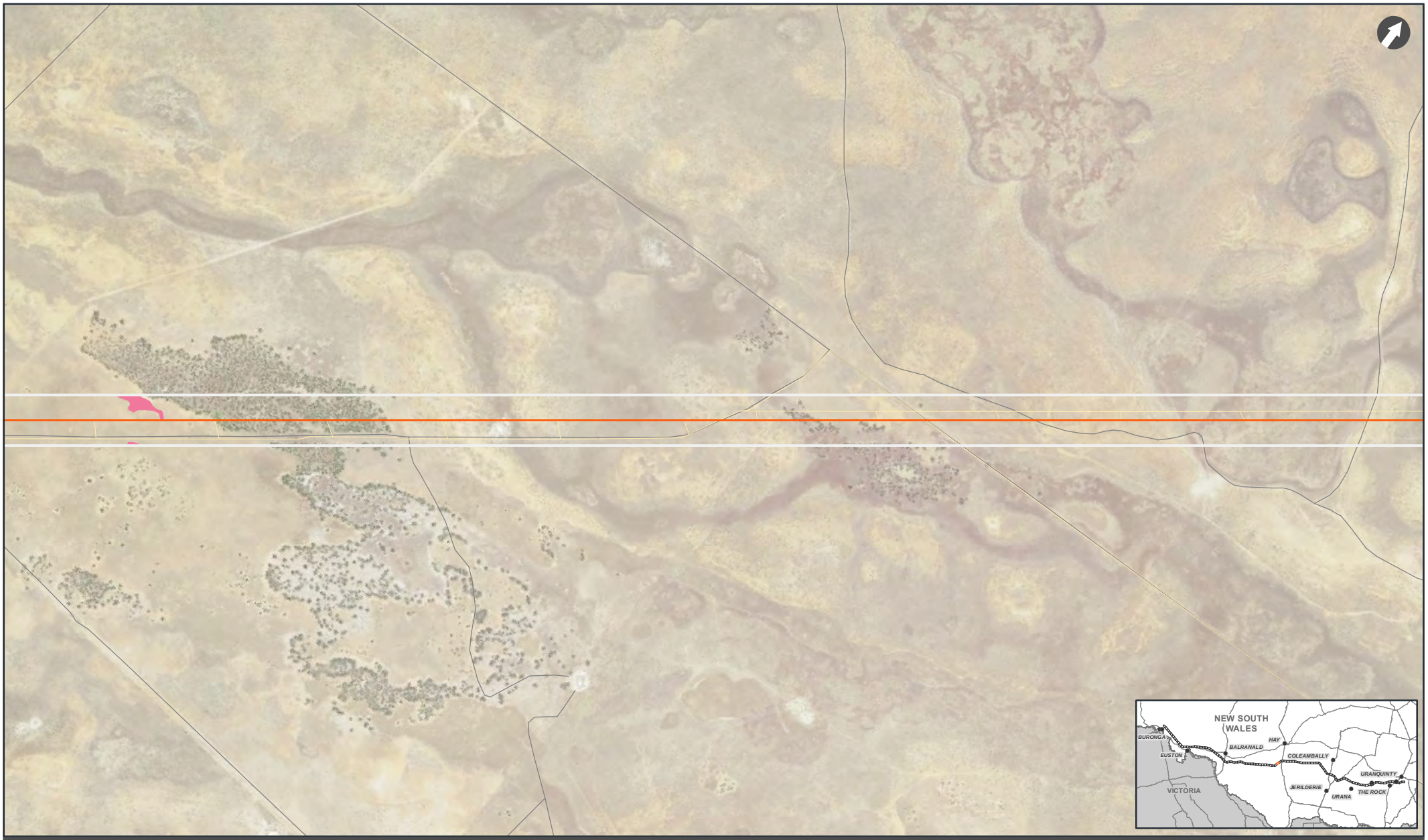
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Ecological Community

- Sandhill Pine woodland in the Riverina, Murray – Darling Depression and NSW South Western Slopes bioregions | Endangered
- State Vegetation Mapping

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Source: NSWSS, ESRI, Transgrid, WSP



0 0.25 0.5 KM

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Ecological Community

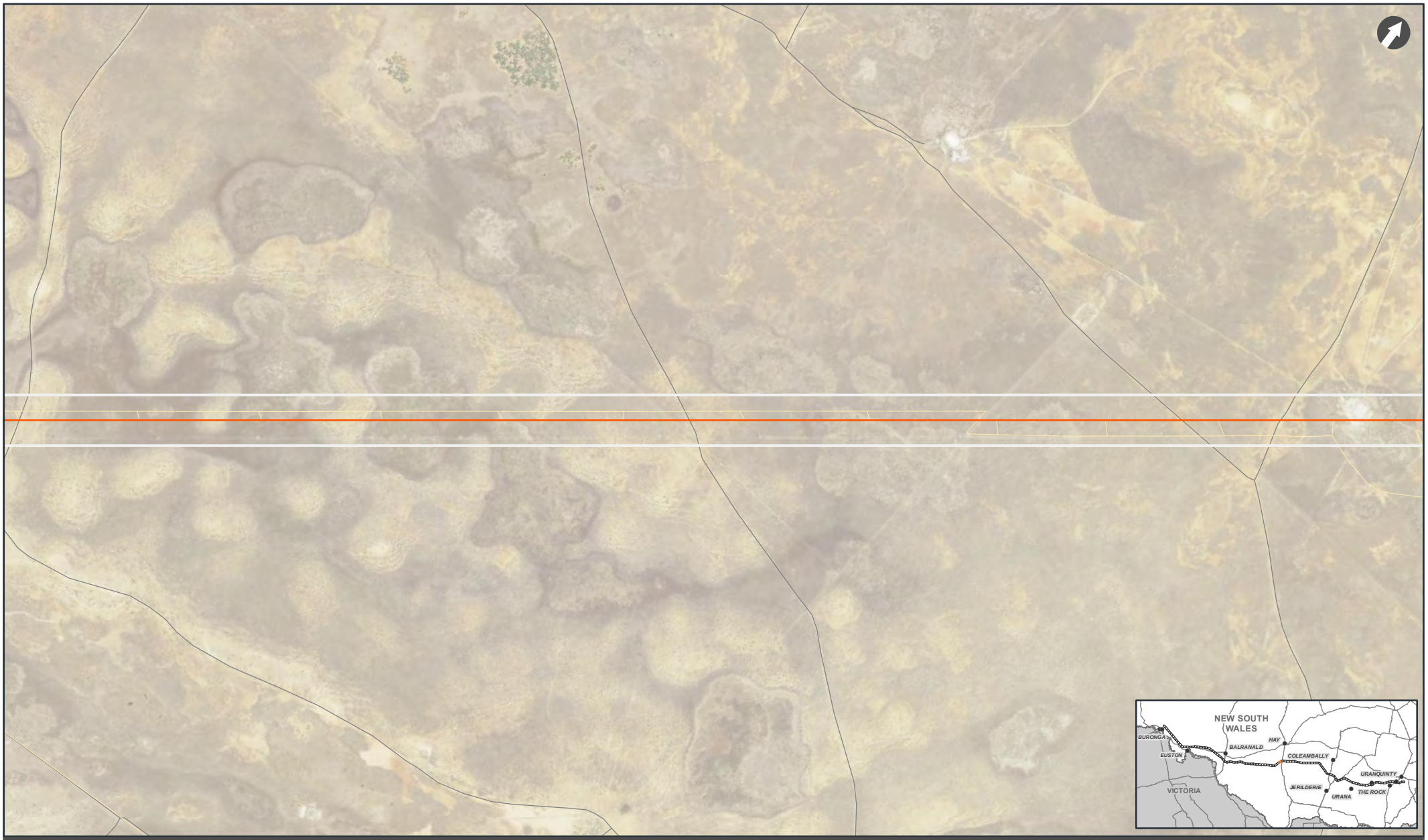
- Sandhill Pine woodland in the Riverina, Murray – Darling Depression and NSW South Western Slopes bioregions | Endangered

BDAR - Figure B-6aw

NSW BC Act Threatened Ecological Communities Mapping

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-6ax

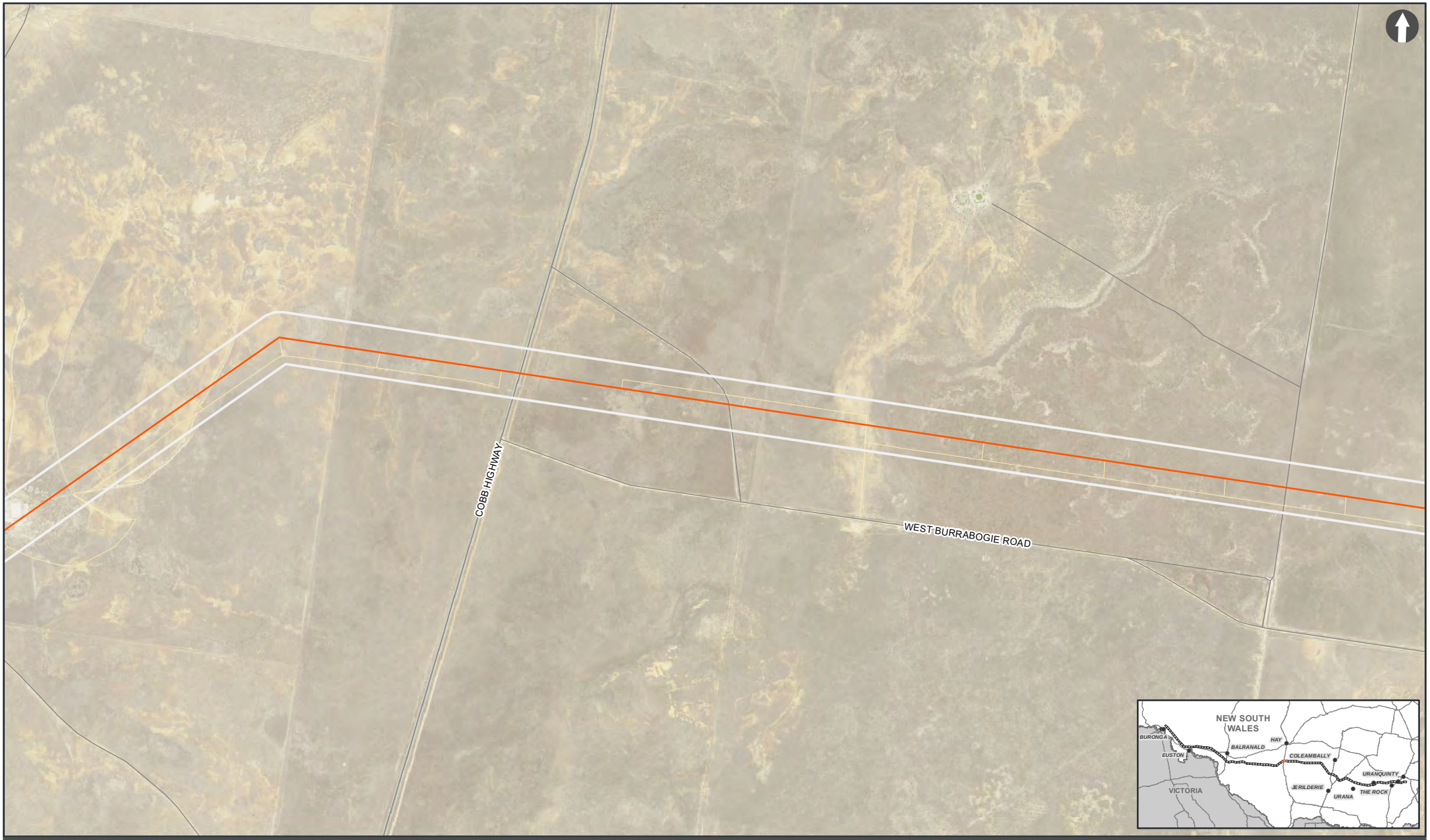
NSW BC Act Threatened Ecological Communities Mapping

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-6ay

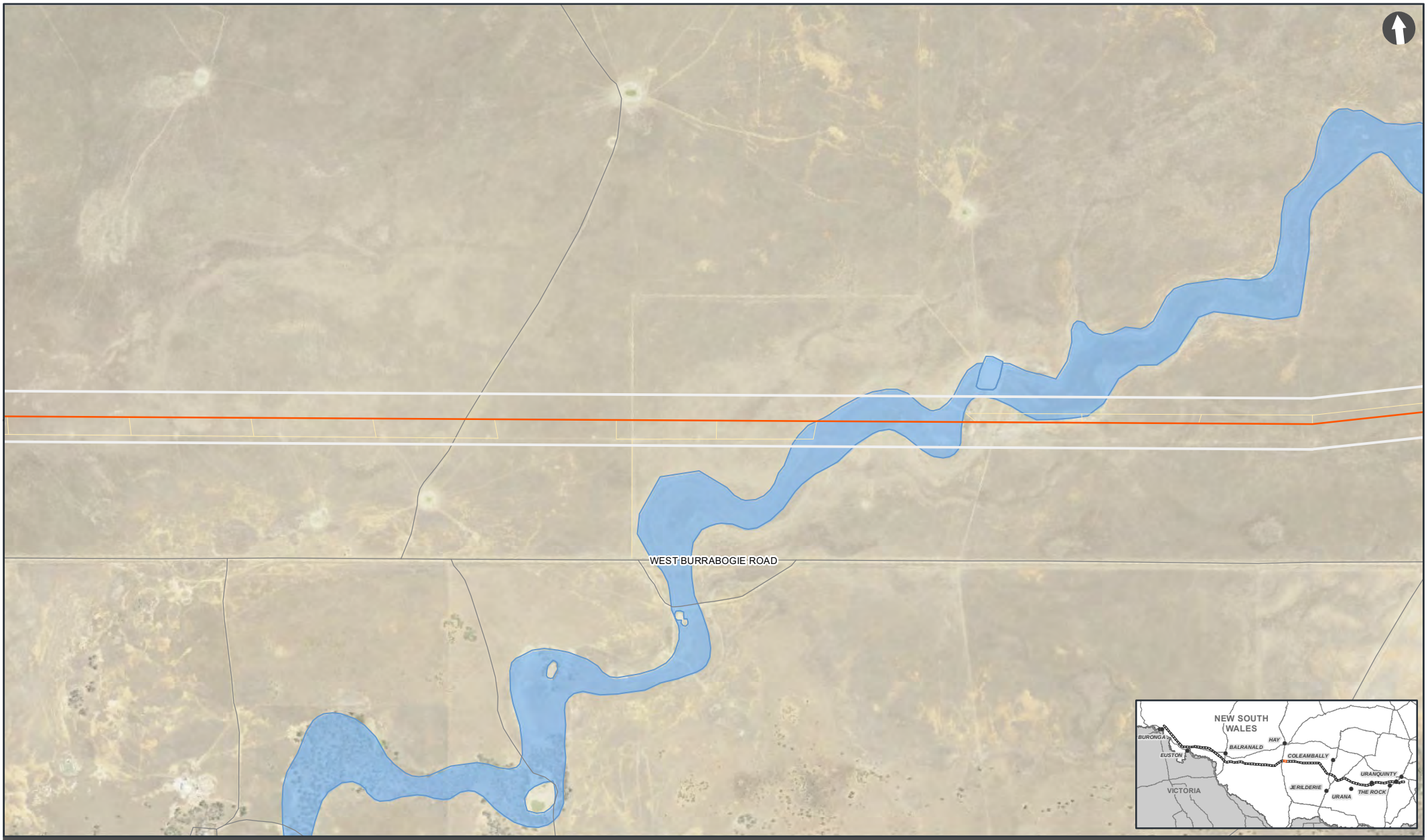
NSW BC Act Threatened Ecological Communities Mapping

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\02_AppendixB\PS117658_BDAR_B006_TECMappingBCAct_r1v8.mxd

Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

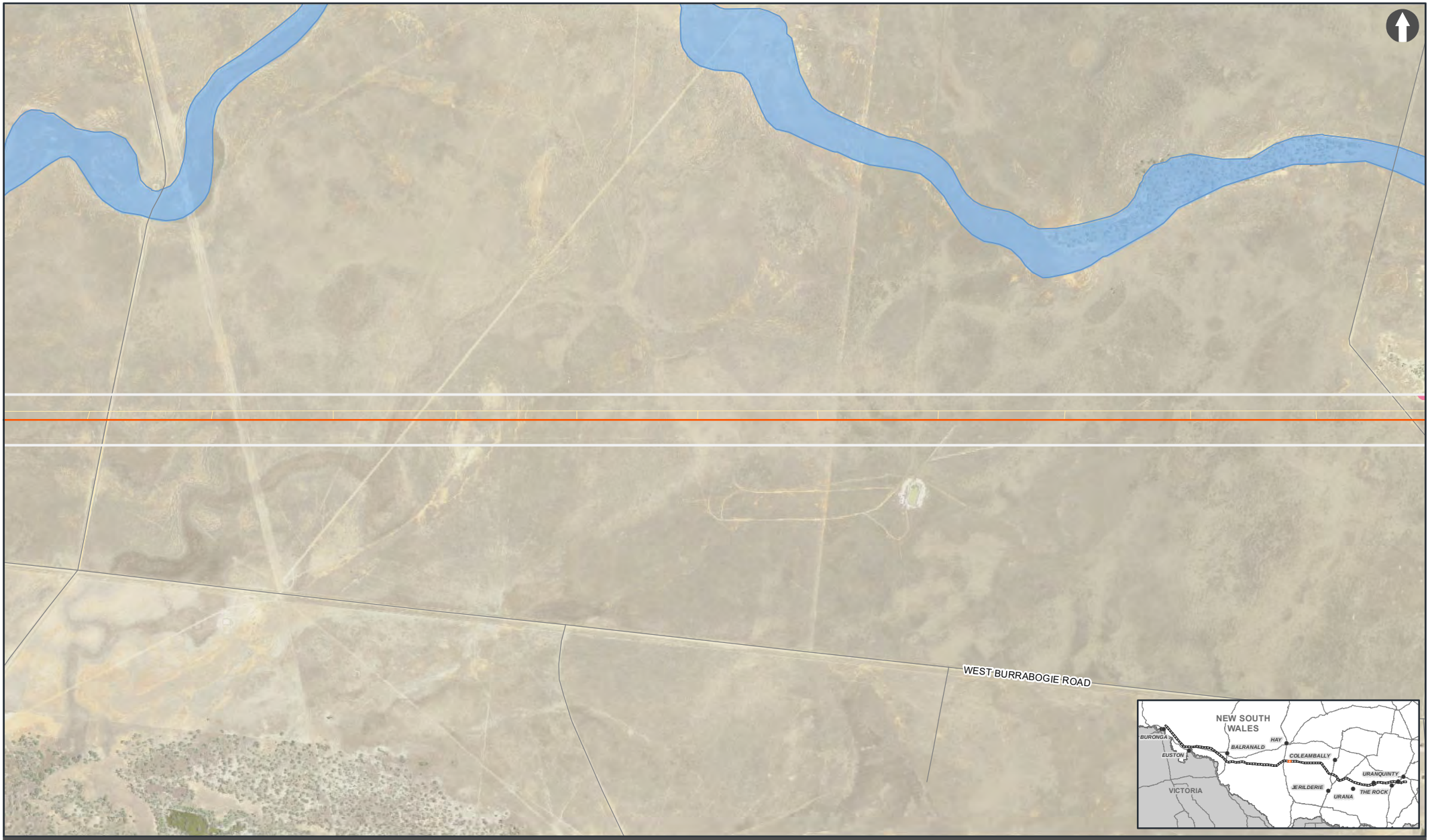
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

BDAR - Figure B-6az

NSW BC Act Threatened Ecological Communities Mapping

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\02_AppendixB\PS117658_BDAR_B006_TECMappingBCAct_r1v8.mxd

Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-6ba

NSW BC Act Threatened Ecological Communities Mapping

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Project Components

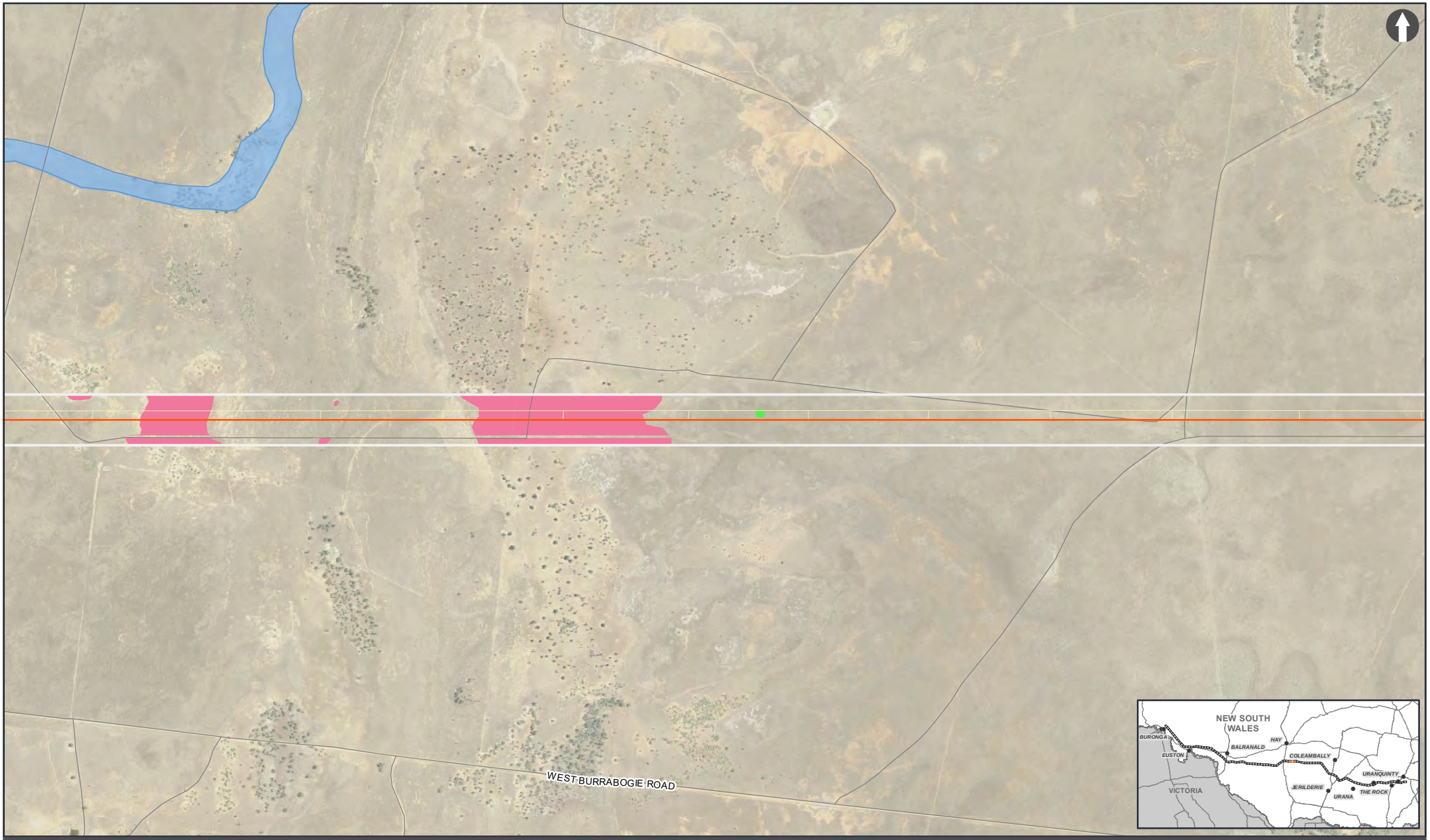
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Ecological Community

- Sandhill Pine woodland in the Riverina, Murray – Darling Depression and NSW South Western Slopes bioregions | Endangered

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

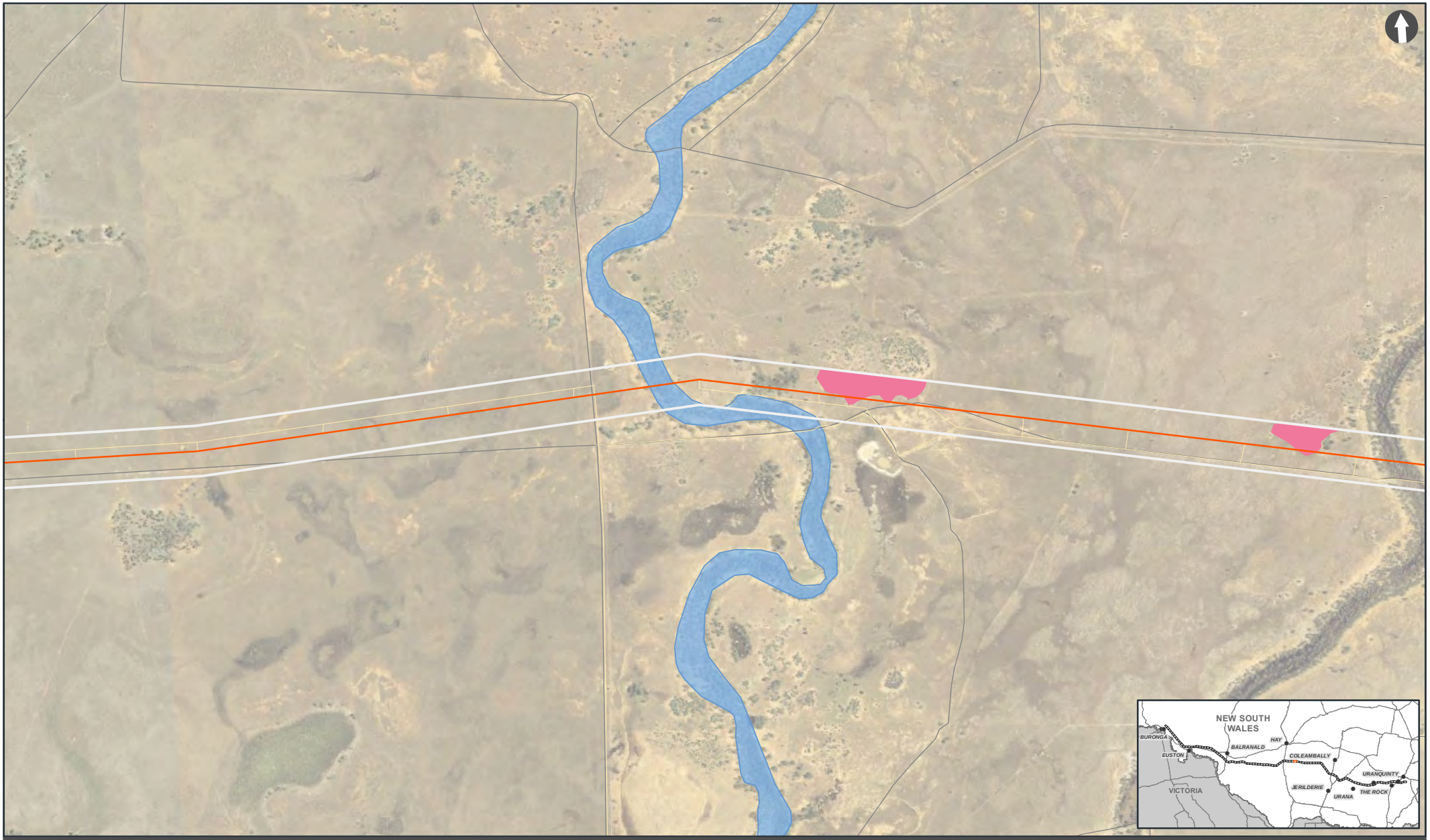
Threatened Ecological Community
- Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray – Darling Depression, Riverina and NSW South Western Slopes bioregions | Endangered
- Sandhill Pine woodland in the Riverina, Murray – Darling Depression and NSW South Western Slopes bioregions | Endangered

BDAR - Figure B-6bb

NSW BC Act Threatened Ecological Communities Mapping

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\02_AppendixB\PS117658_BDAR_B006_TECMappingBCAct_r1v8.mxd

Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Ecological Community

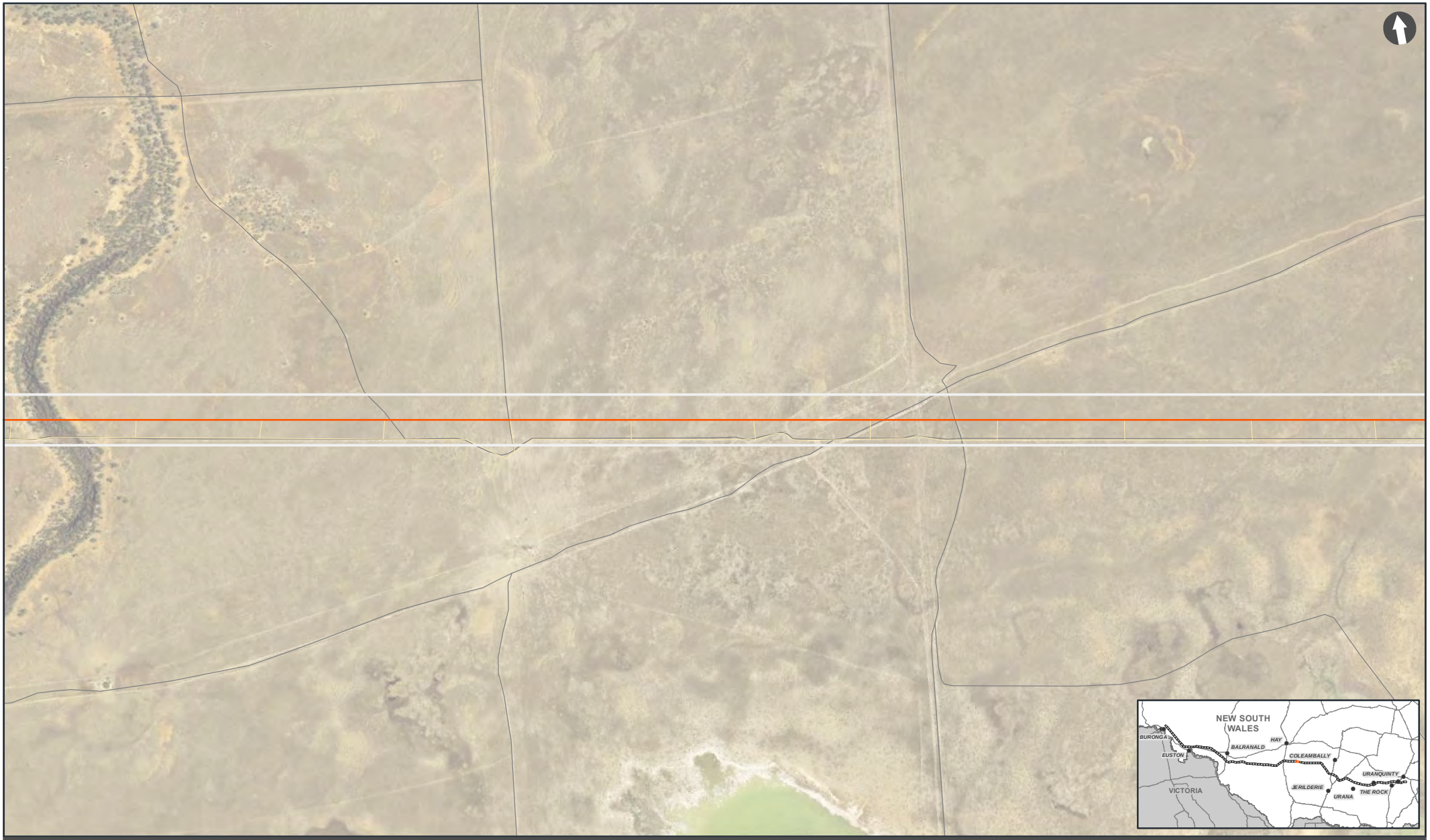
- Sandhill Pine woodland in the Riverina, Murray – Darling Depression and NSW South Western Slopes bioregions | Endangered

BDAR - Figure B-6bc

NSW BC Act Threatened Ecological Communities Mapping

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

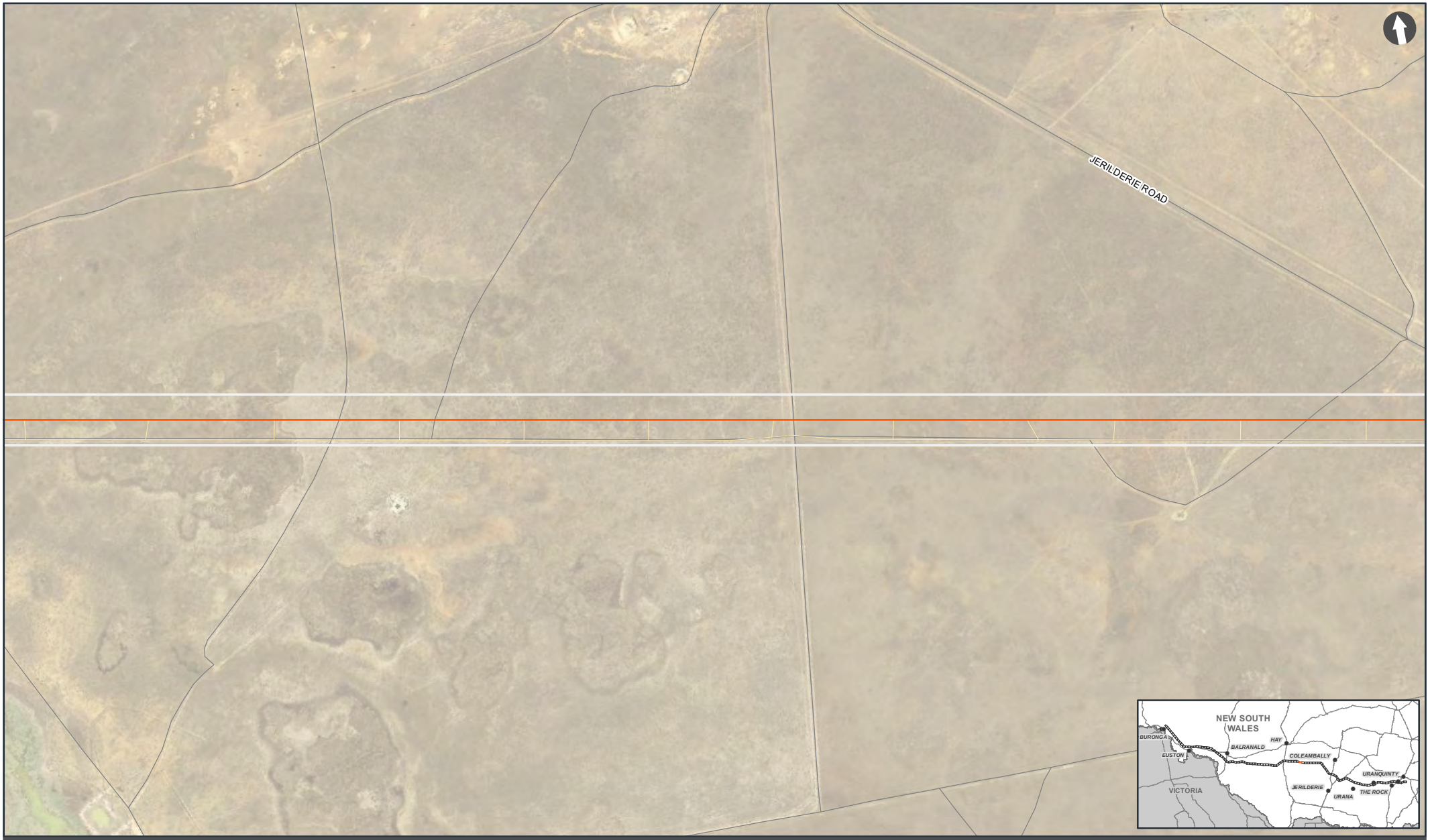
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

BDAR - Figure B-6bd

NSW BC Act Threatened Ecological Communities Mapping

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure B-6be

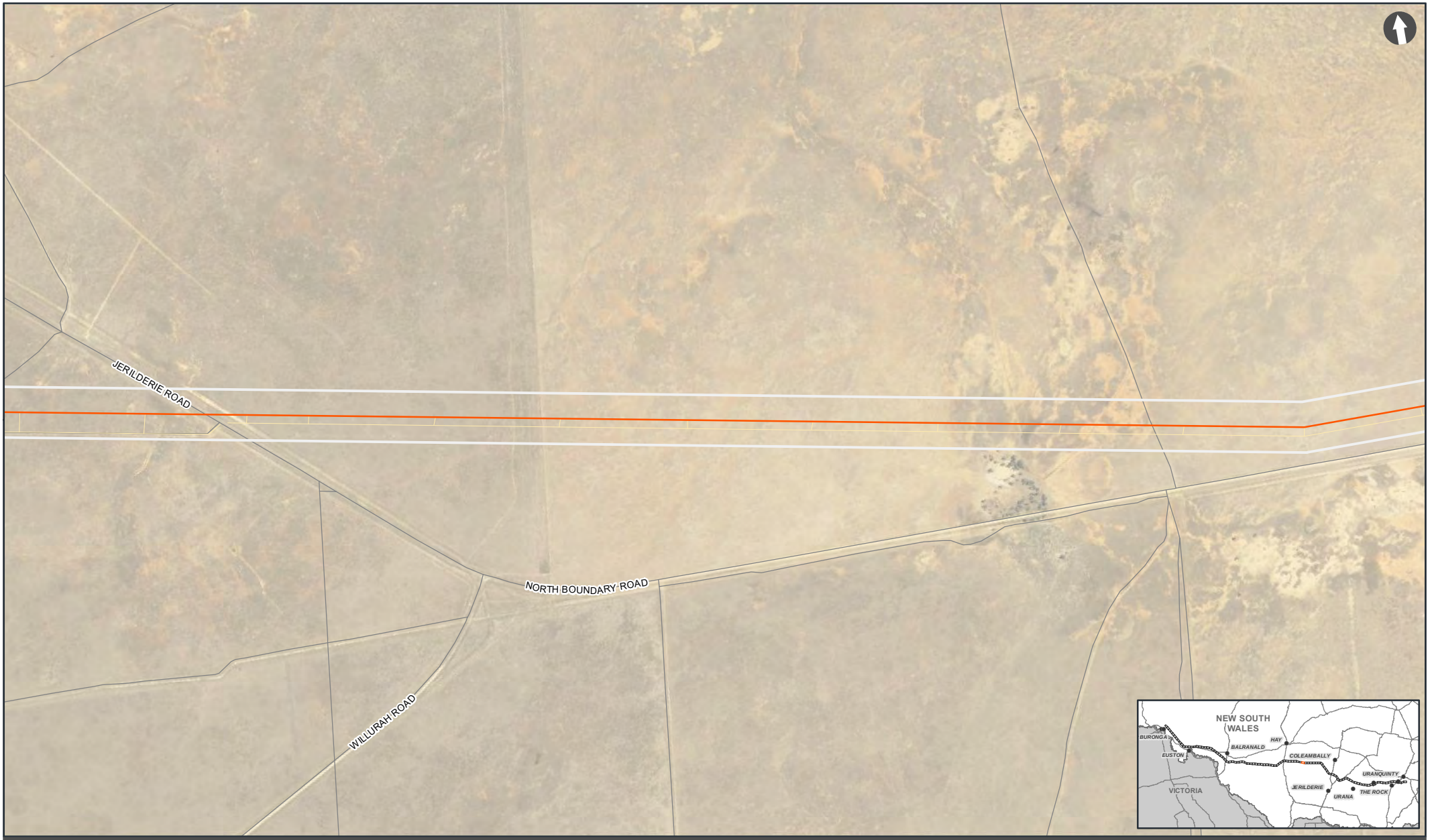
NSW BC Act Threatened Ecological Communities Mapping

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-6bf

NSW BC Act Threatened Ecological Communities Mapping

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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-6bg

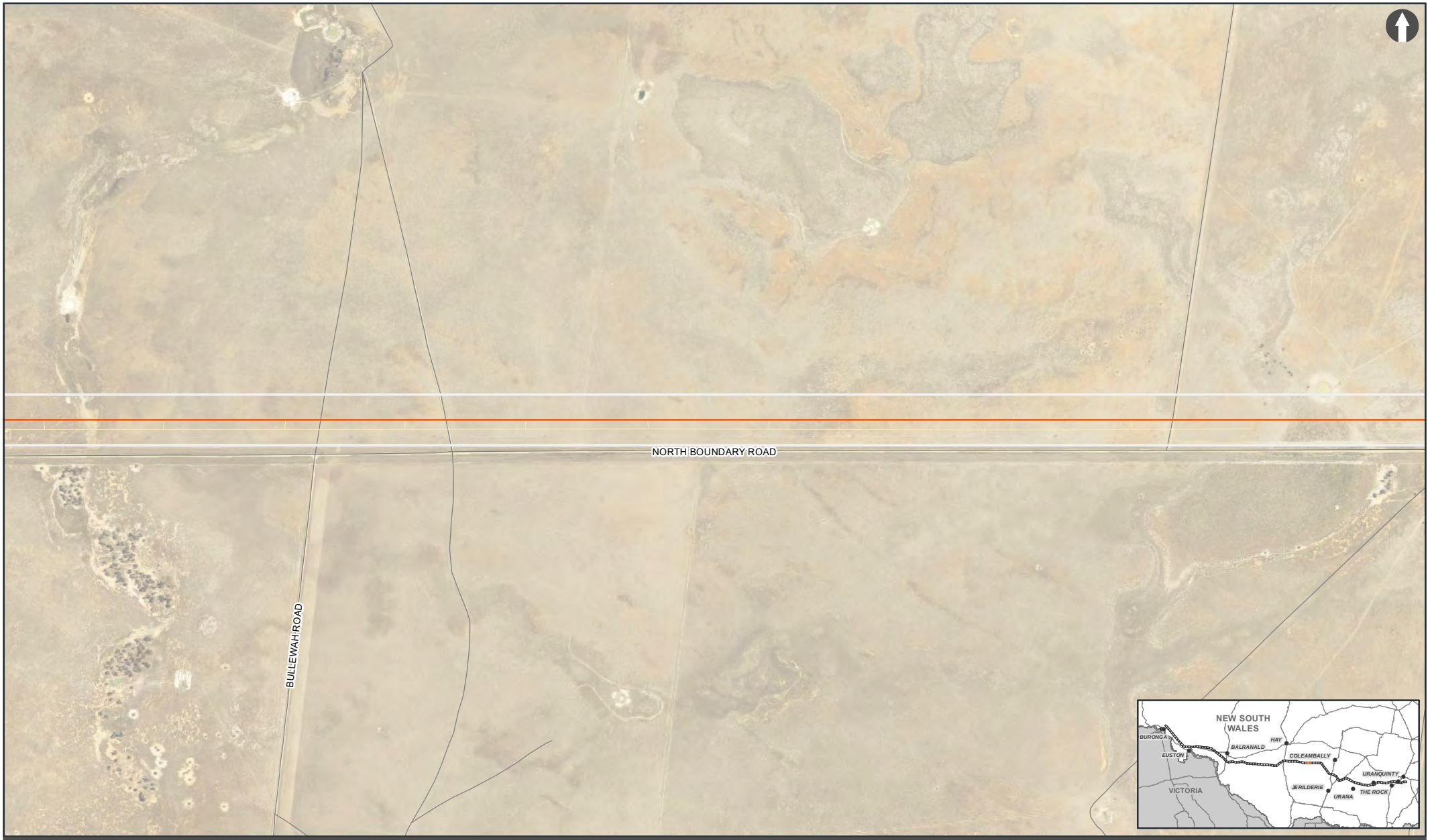
NSW BC Act Threatened Ecological Communities Mapping

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-6bh

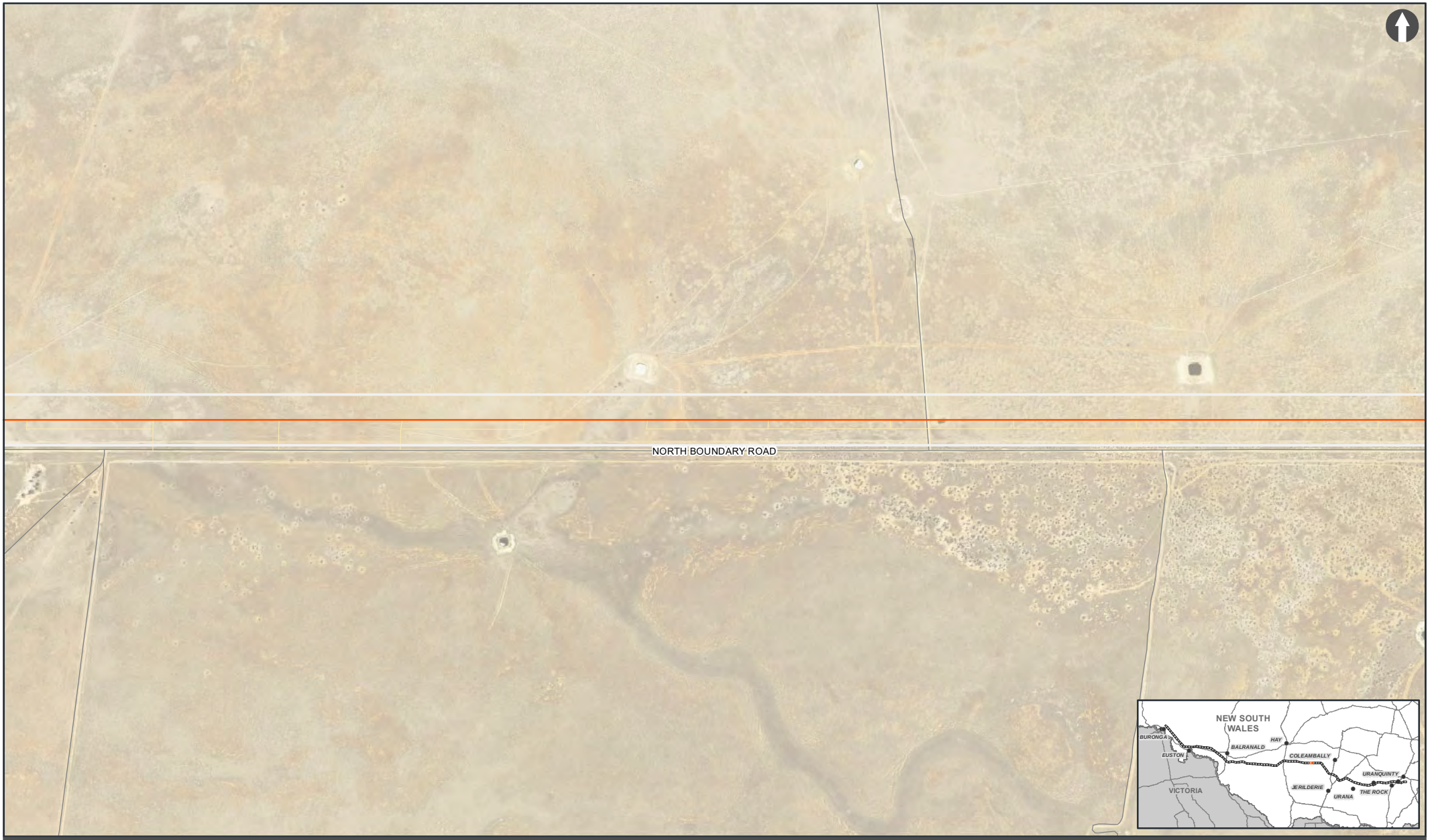
NSW BC Act Threatened Ecological Communities Mapping

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

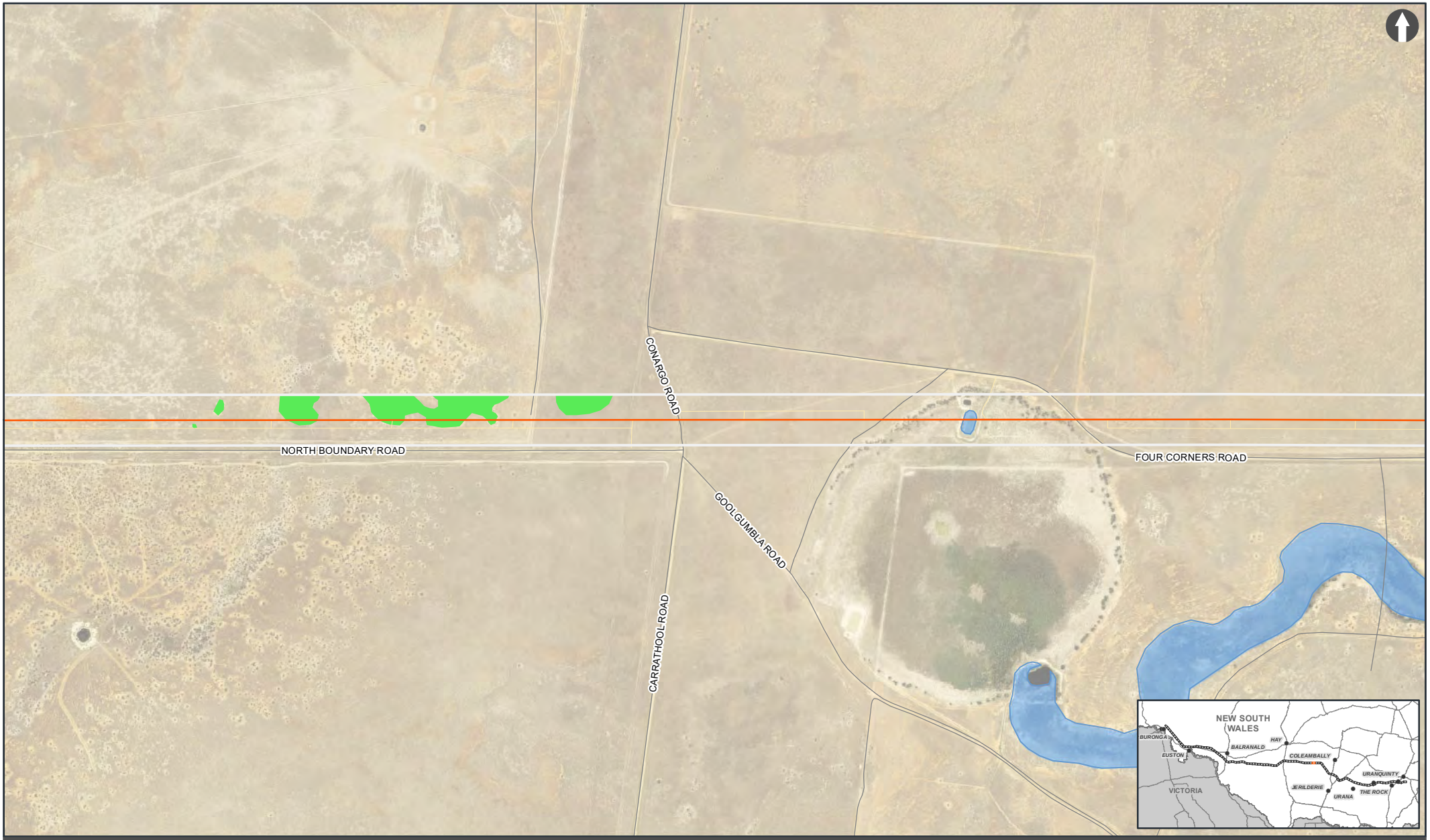
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

BDAR - Figure B-6bi

NSW BC Act Threatened Ecological Communities Mapping

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-6bj

NSW BC Act Threatened Ecological Communities Mapping

Project Components

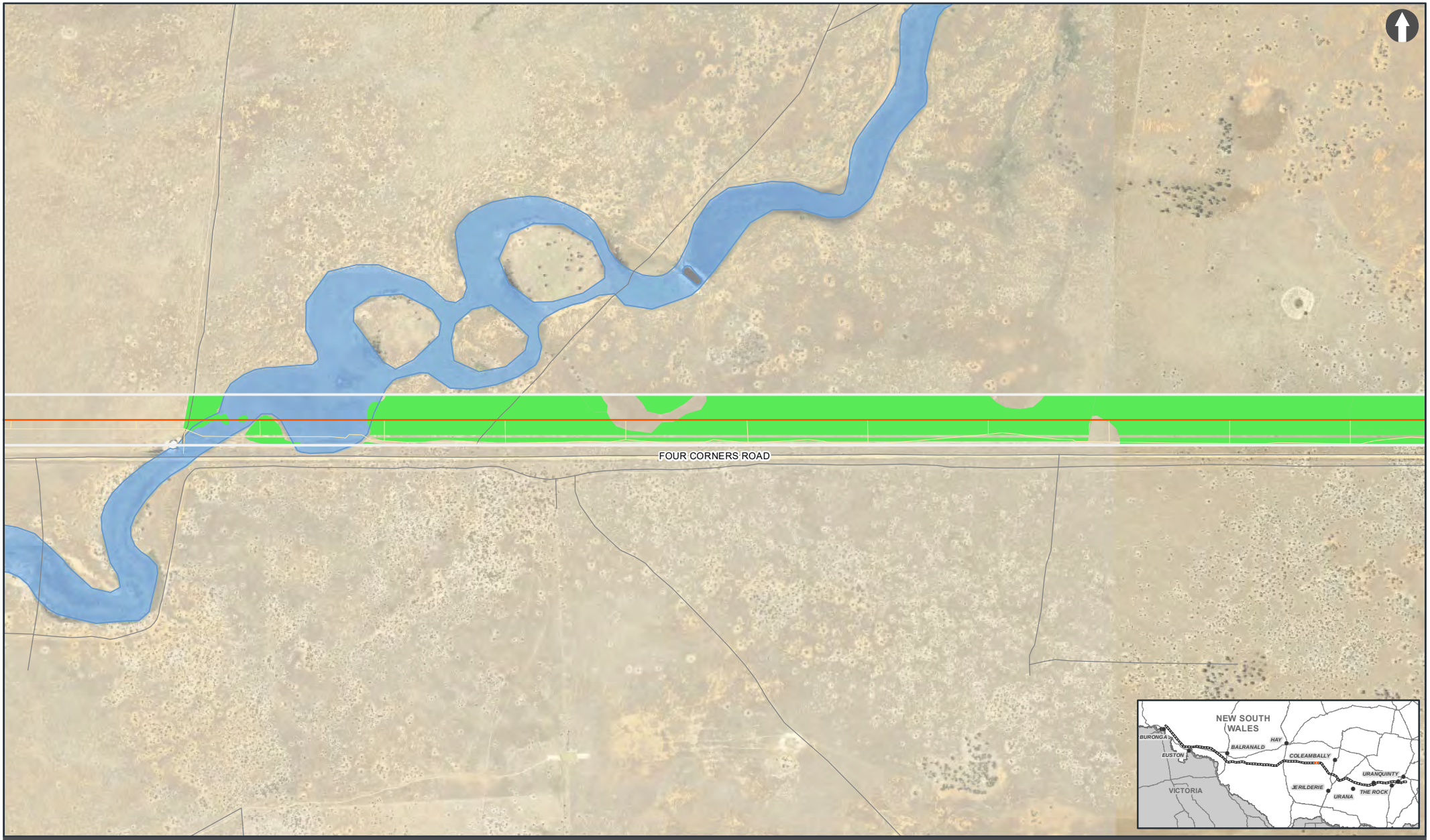
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Ecological Community

- Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray – Darling Depression, Riverina and NSW South Western Slopes bioregions | Endangered

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Ecological Community

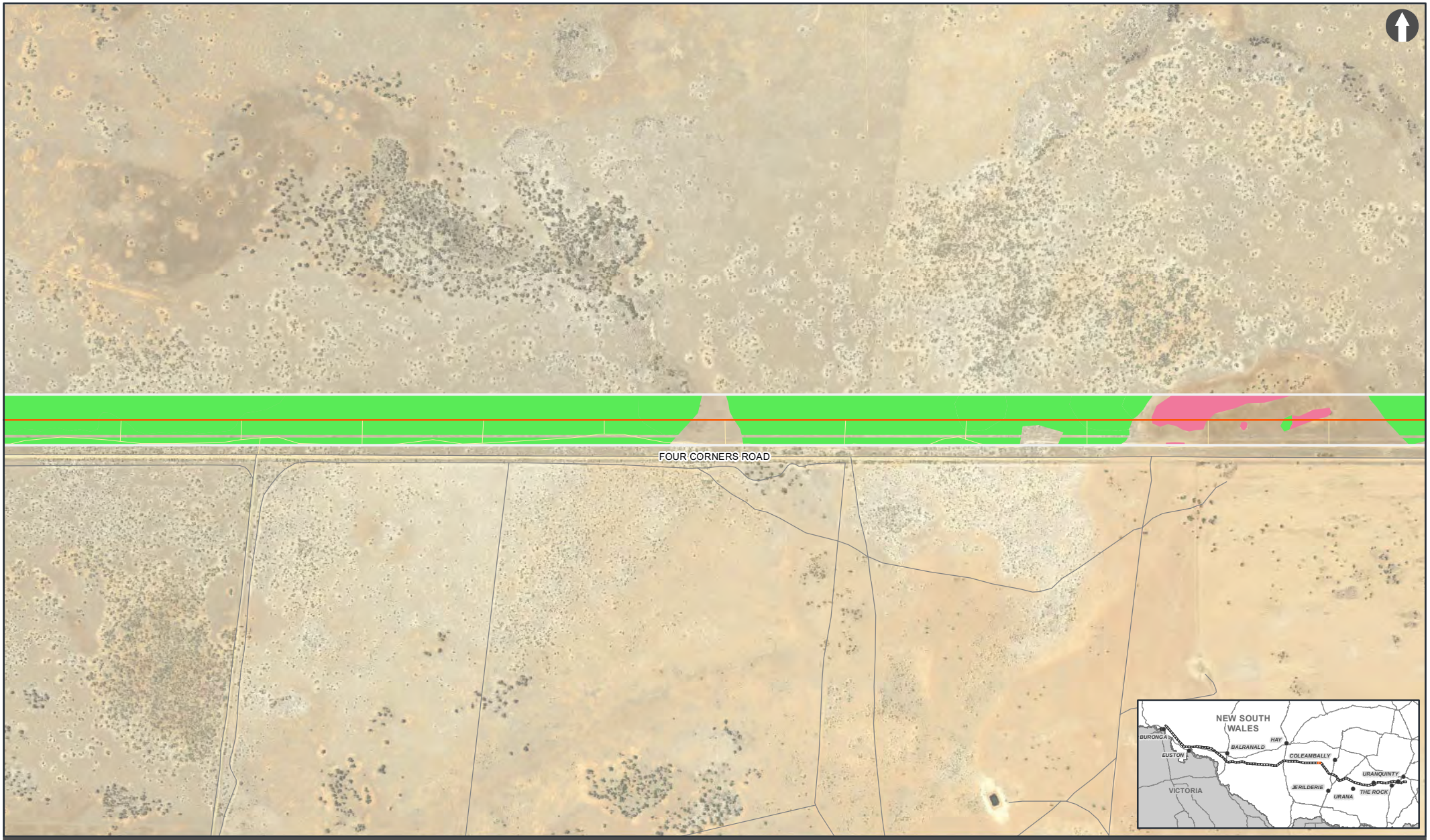
- Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray – Darling Depression, Riverina and NSW South Western Slopes bioregions | Endangered

BDAR - Figure B-6bk

NSW BC Act Threatened Ecological Communities Mapping

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure B-6bl

NSW BC Act Threatened Ecological Communities Mapping

Project Components

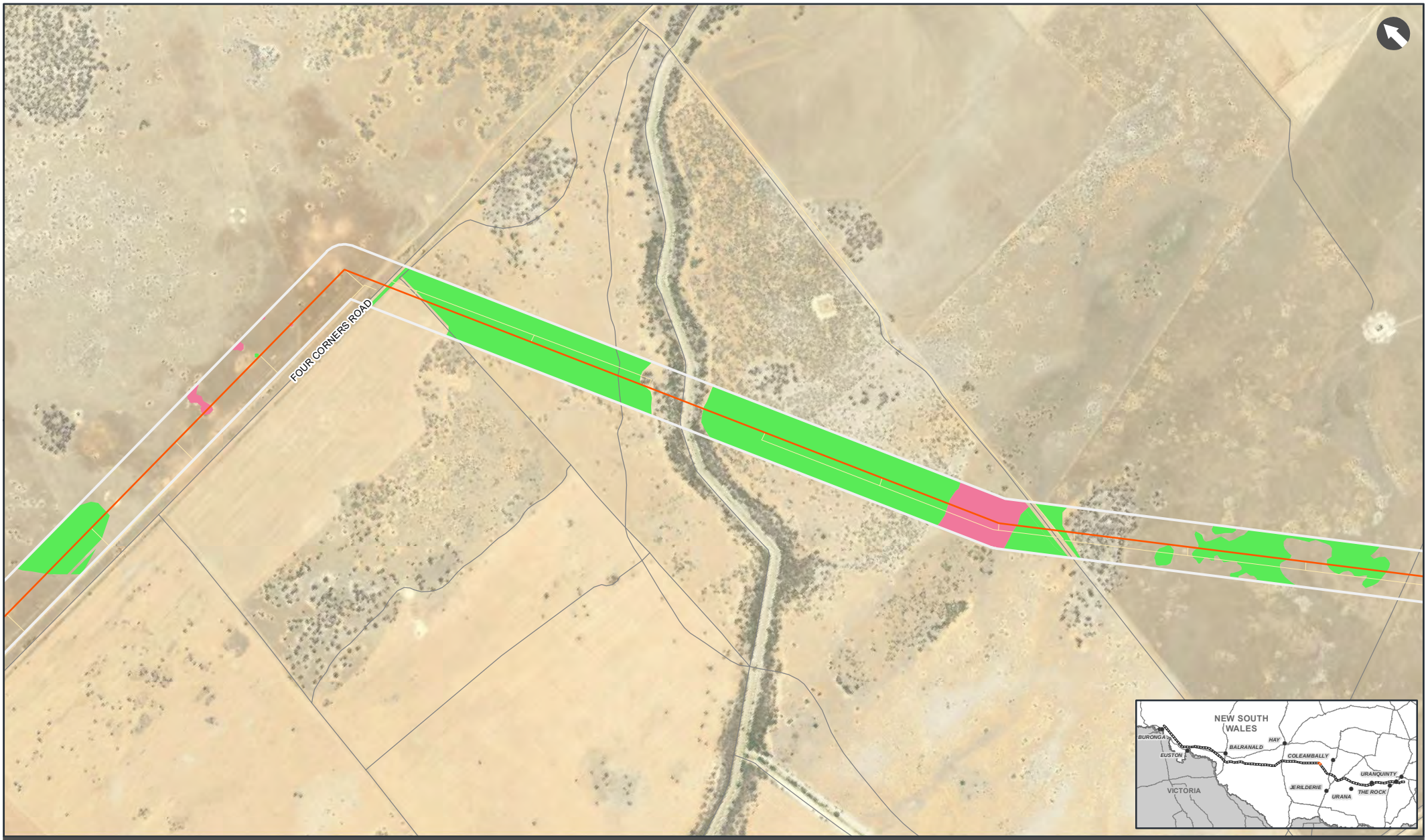
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Ecological Community

- Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray – Darling Depression, Riverina and NSW South Western Slopes bioregions | Endangered
- Sandhill Pine woodland in the Riverina, Murray – Darling Depression and NSW South Western Slopes bioregions | Endangered

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-6bm

NSW BC Act Threatened Ecological Communities Mapping

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Project Components

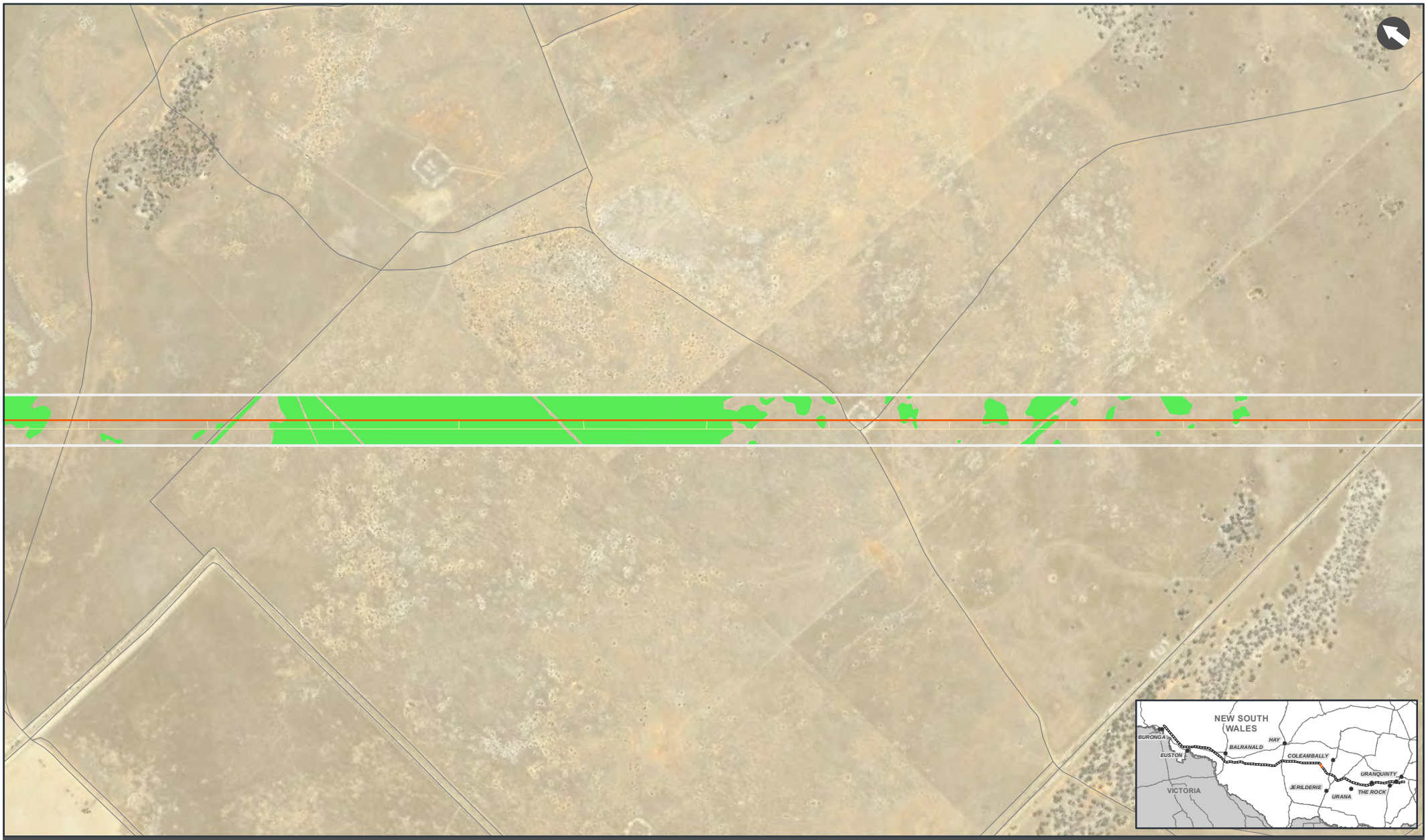
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Ecological Community

- Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray – Darling Depression, Riverina and NSW South Western Slopes bioregions | Endangered
- Sandhill Pine woodland in the Riverina, Murray – Darling Depression and NSW South Western Slopes bioregions | Endangered

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Ecological Community

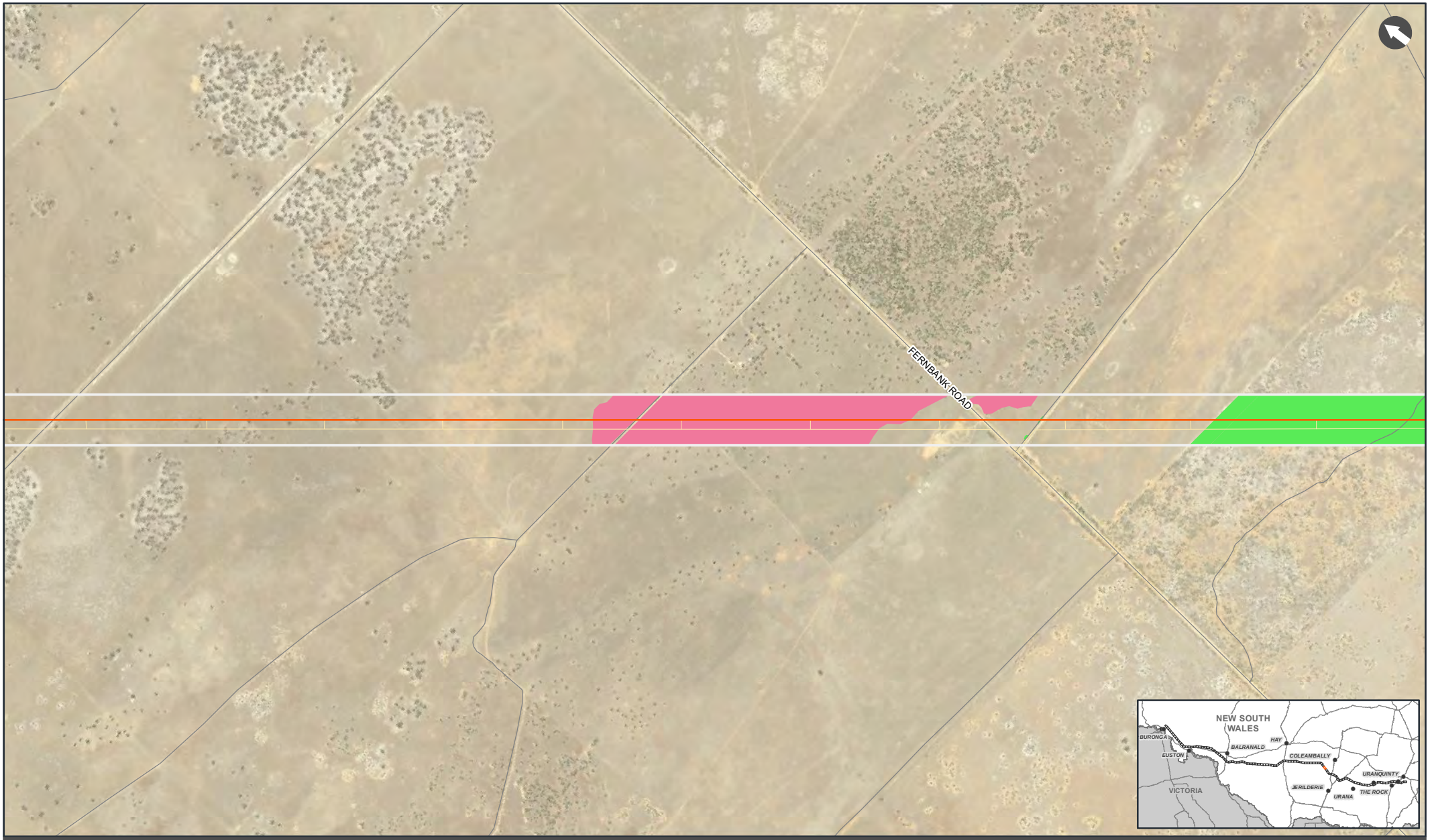
- Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray – Darling Depression, Riverina and NSW South Western Slopes bioregions | Endangered

BDAR - Figure B-6bn

NSW BC Act Threatened Ecological Communities Mapping

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Ecological Community

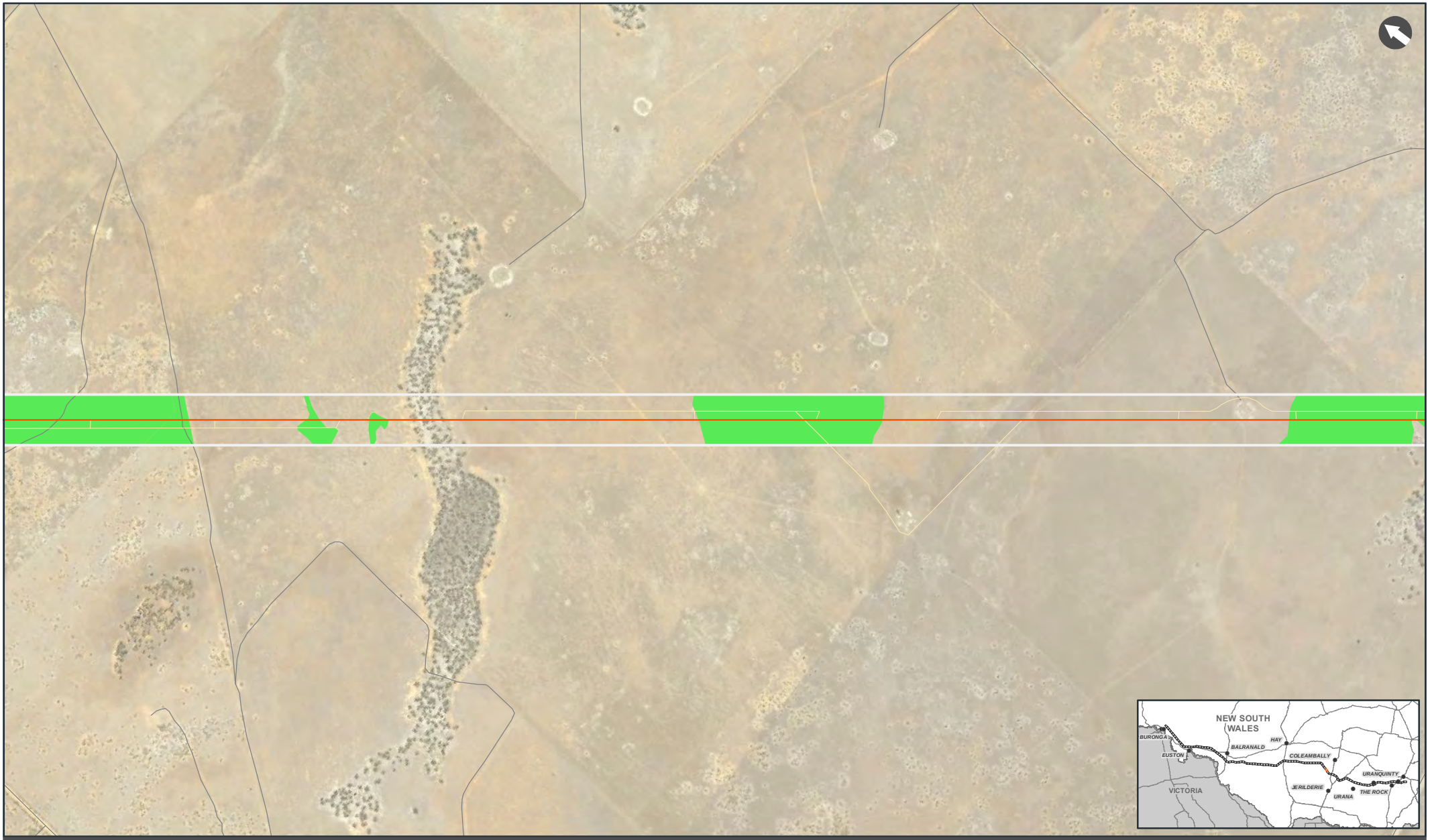
- Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray – Darling Depression, Riverina and NSW South Western Slopes bioregions | Endangered
- Sandhill Pine woodland in the Riverina, Murray – Darling Depression and NSW South Western Slopes bioregions | Endangered

BDAR - Figure B-6bo

NSW BC Act Threatened Ecological Communities Mapping

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-6bp

NSW BC Act Threatened Ecological Communities Mapping

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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Ecological Community

- Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray – Darling Depression, Riverina and NSW South Western Slopes bioregions | Endangered

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

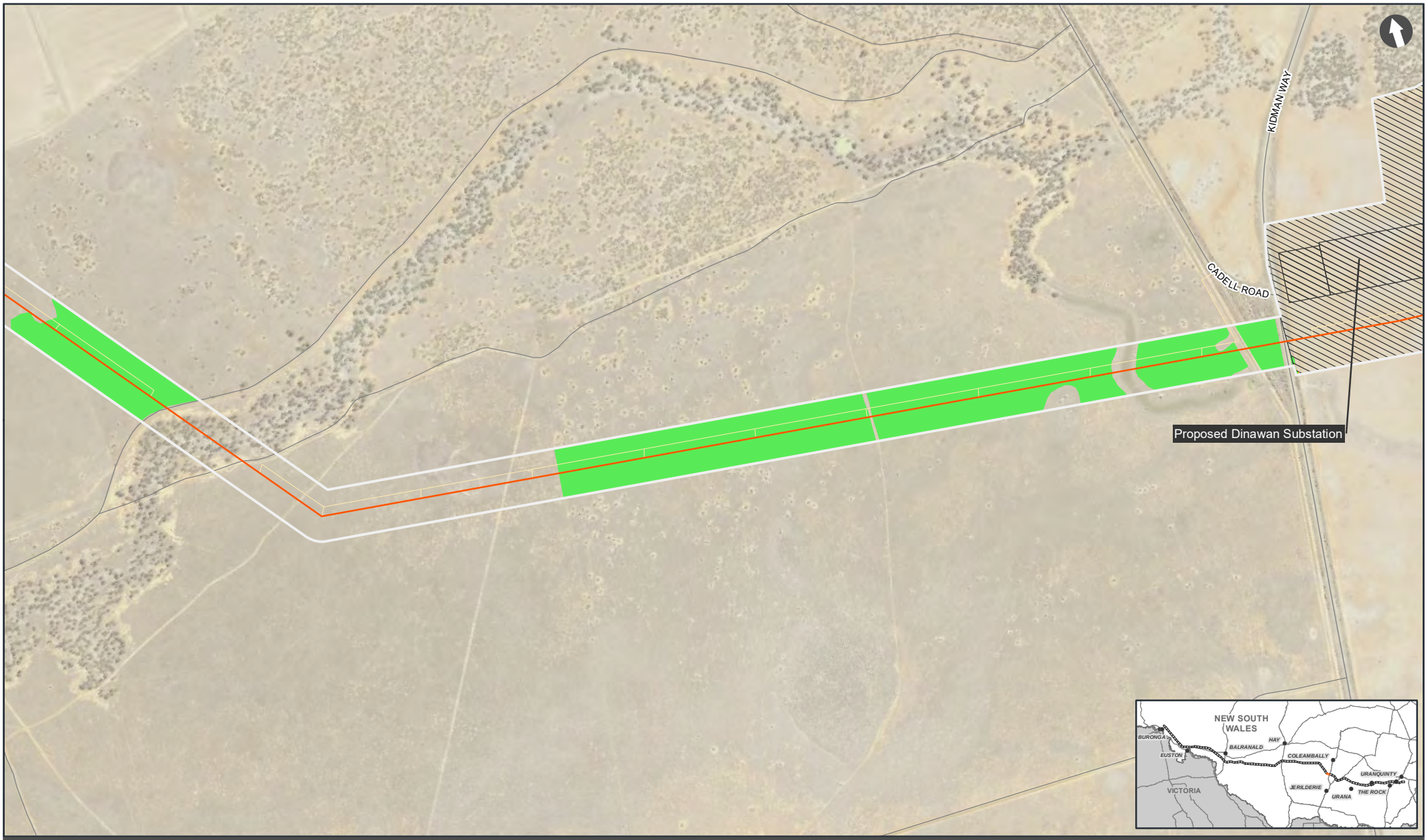
Threatened Ecological Community
- Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray – Darling Depression, Riverina and NSW South Western Slopes bioregions | Endangered

BDAR - Figure B-6bq

NSW BC Act Threatened Ecological Communities Mapping

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-6br

NSW BC Act Threatened Ecological Communities Mapping

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Ecological Community
- Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray – Darling Depression, Riverina and NSW South Western Slopes bioregions | Endangered
- State Vegetation Mapping

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\02_AppendixB\PS117658_BDAR_B006_TECMappingBCAct_r1v8.mxd

Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-6bs

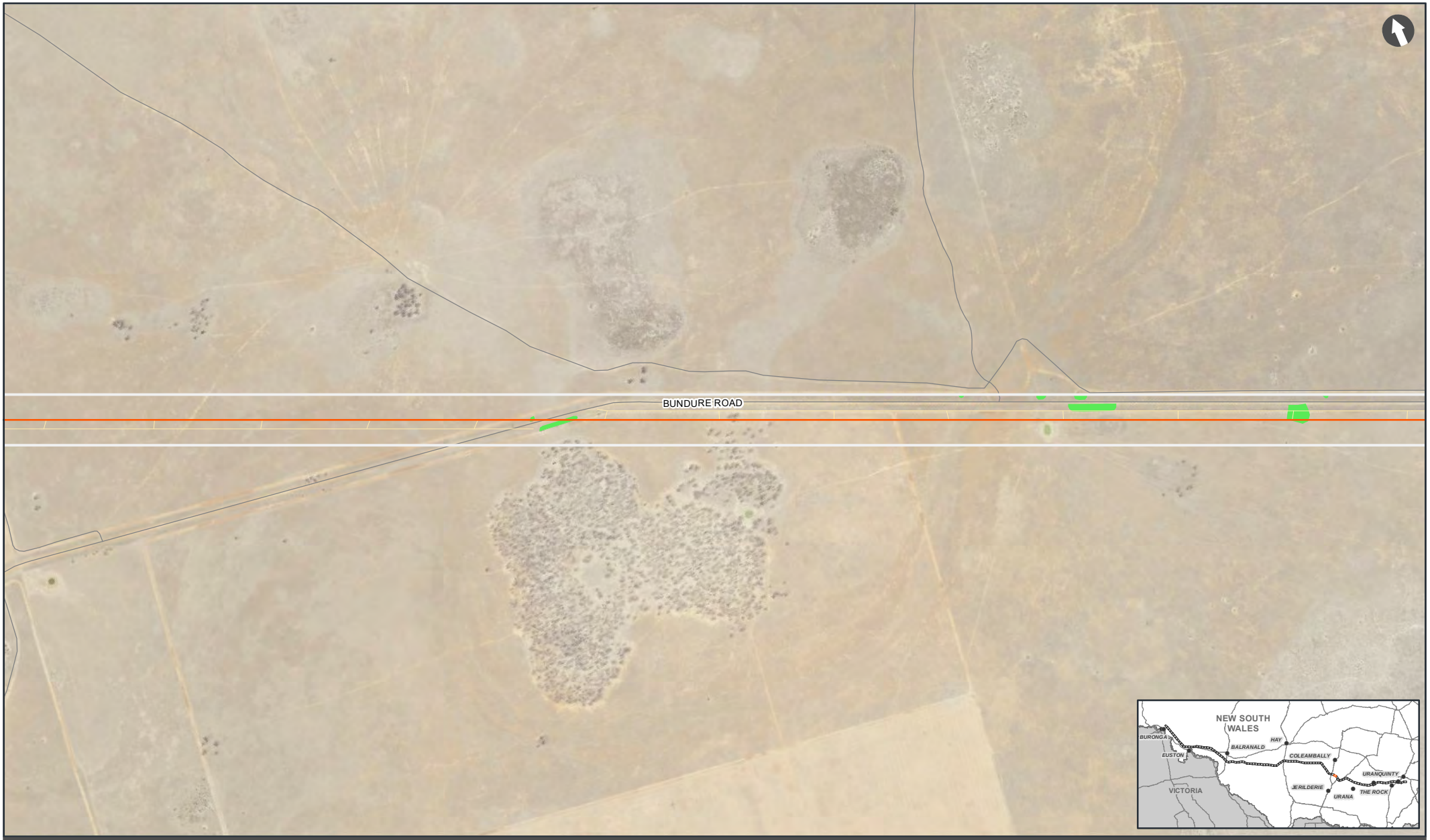
NSW BC Act Threatened Ecological Communities Mapping

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Ecological Community

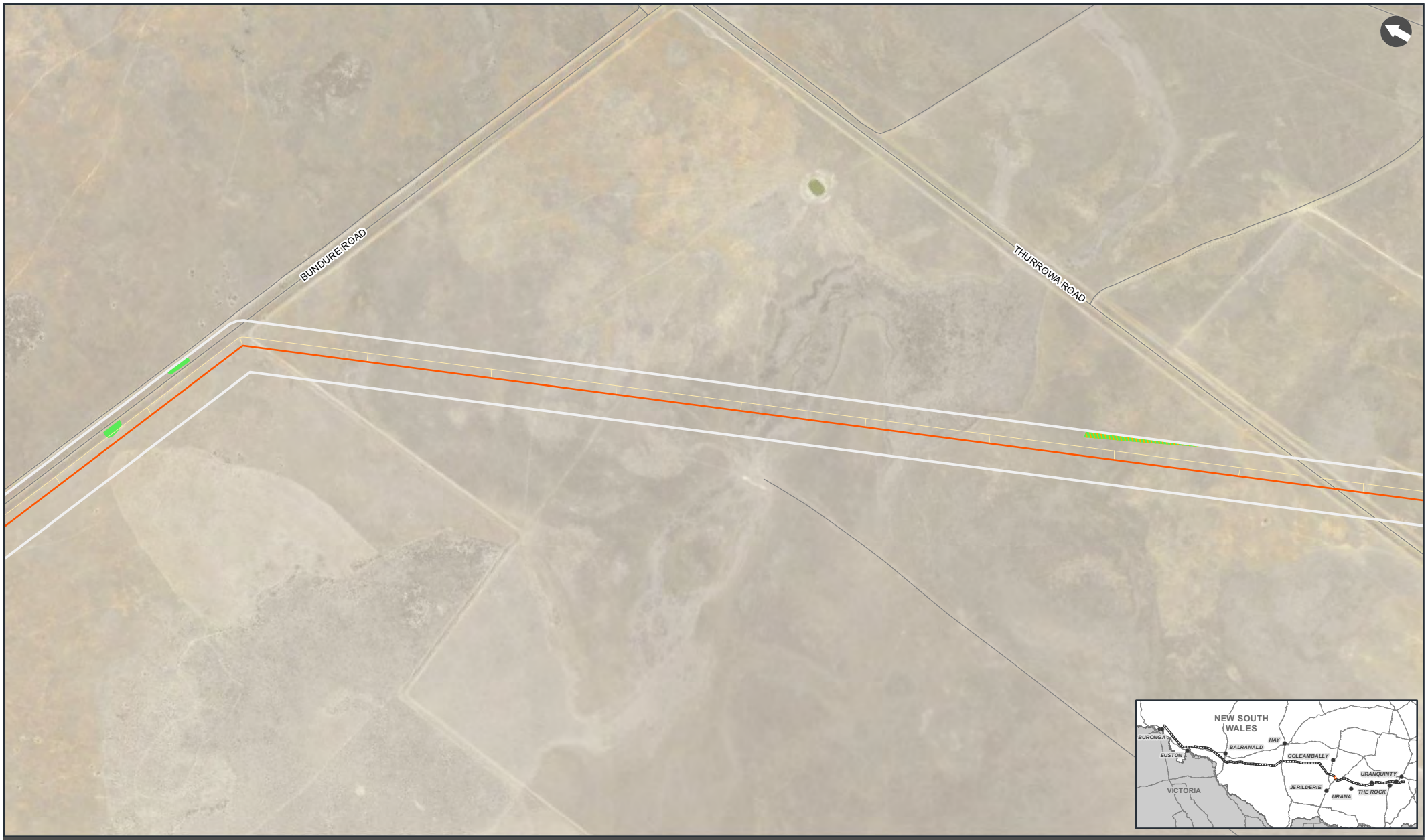
- Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray – Darling Depression, Riverina and NSW South Western Slopes bioregions | Endangered

BDAR - Figure B-6bt

NSW BC Act Threatened Ecological Communities Mapping

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-6bu

NSW BC Act Threatened Ecological Communities Mapping

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Ecological Community
- Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray – Darling Depression, Riverina and NSW South Western Slopes bioregions | Endangered
- State Vegetation Mapping

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-6bv

NSW BC Act Threatened Ecological Communities Mapping

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point

- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Ecological Community
- Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray – Darling Depression, Riverina and NSW South Western Slopes bioregions | Endangered

- State Vegetation Mapping

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

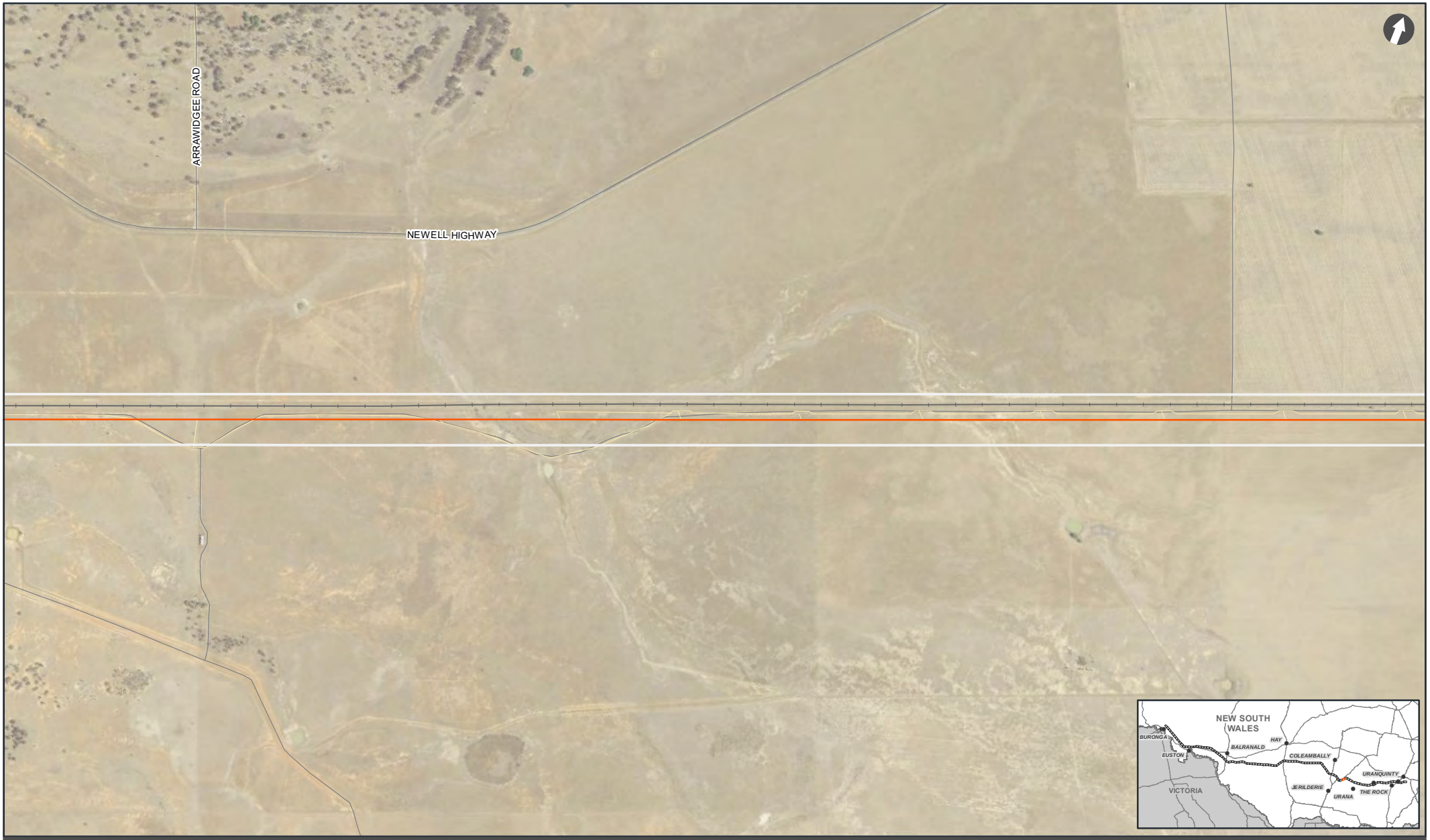
Threatened Ecological Community
- Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray – Darling Depression, Riverina and NSW South Western Slopes bioregions | Endangered
- State Vegetation Mapping

BDAR - Figure B-6bw

NSW BC Act Threatened Ecological Communities Mapping

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-6bx

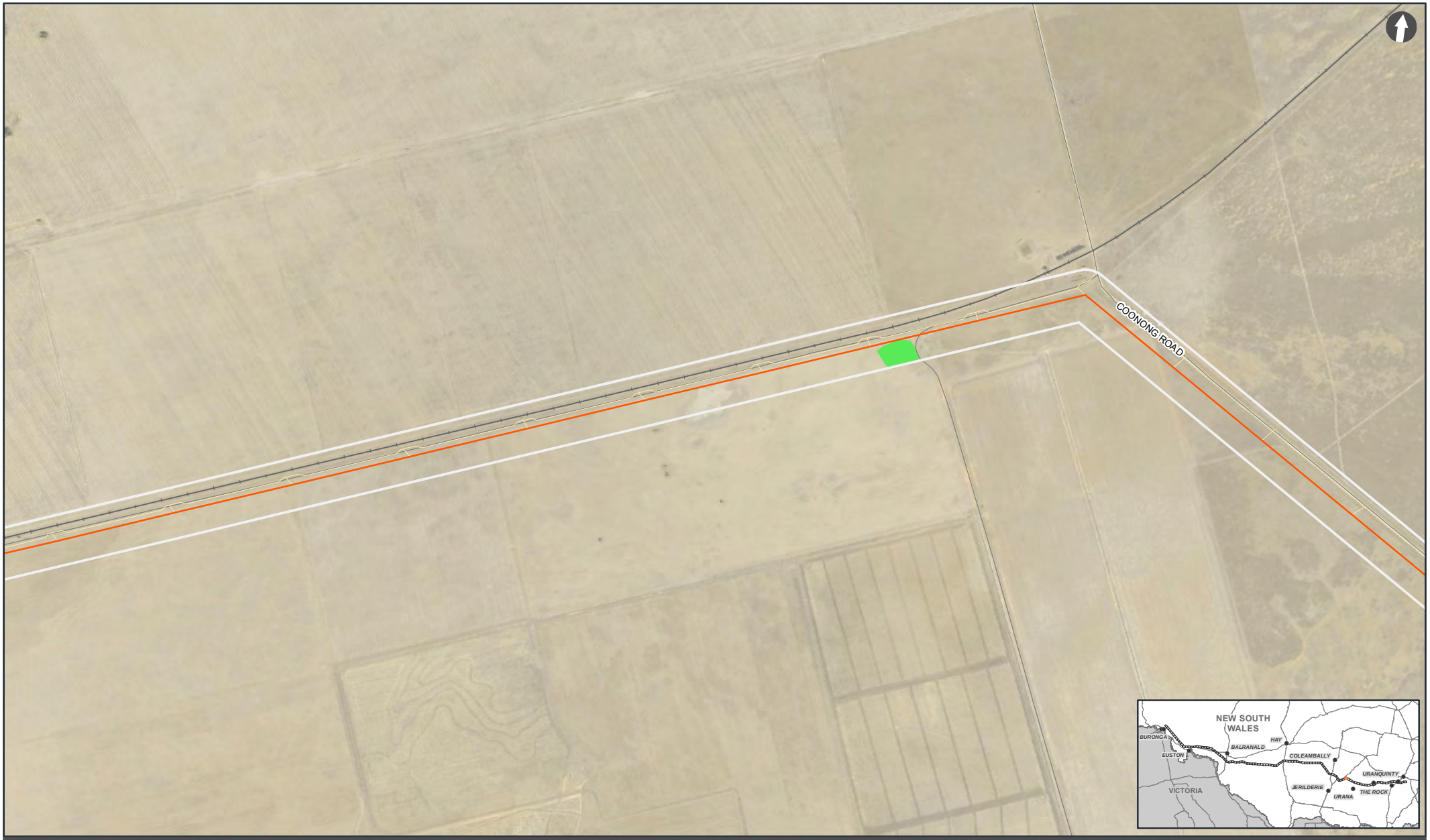
NSW BC Act Threatened Ecological Communities Mapping

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Ecological Community

- Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray – Darling Depression, Riverina and NSW South Western Slopes bioregions | Endangered

BDAR - Figure B-6by

NSW BC Act Threatened Ecological Communities Mapping

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-6bz

NSW BC Act Threatened Ecological Communities Mapping

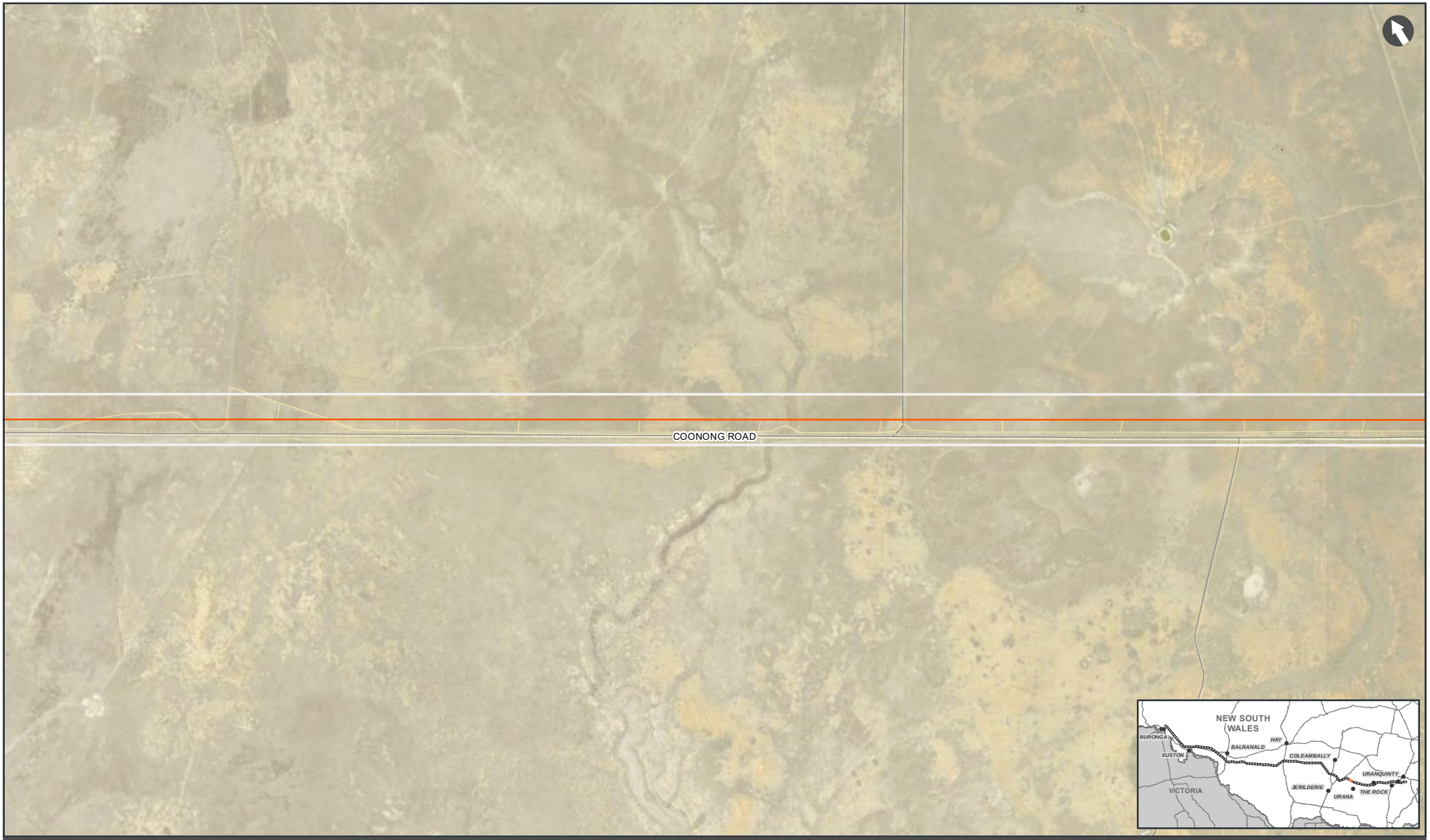
(Page 78 of 100)

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-6ca

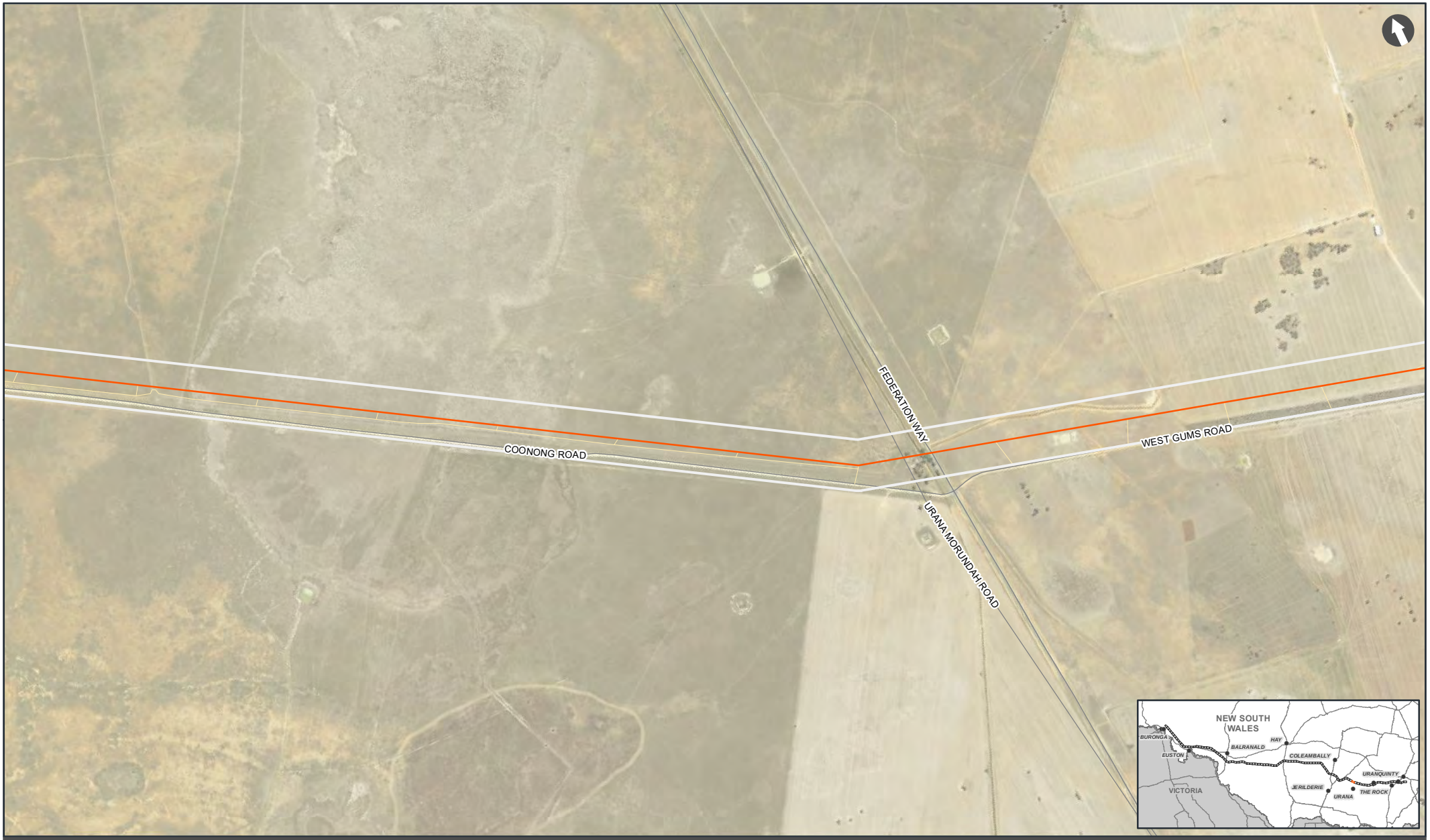
NSW BC Act Threatened Ecological Communities Mapping

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-6cb

NSW BC Act Threatened Ecological Communities Mapping

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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\02_AppendixB\PS117658_BDAR_B006_TECMappingBCAct_r1v8.mxd

Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Ecological Community
- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland | Critically Endangered

BDAR - Figure B-6cc

NSW BC Act Threatened Ecological Communities Mapping

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure B-6cd

NSW BC Act Threatened Ecological Communities Mapping

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Ecological Community

- Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions | Endangered
- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland | Critically Endangered
- State Vegetation Mapping

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Ecological Community

- Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions | Endangered
- Sandhill Pine woodland in the Riverina, Murray – Darling Depression and NSW South Western Slopes bioregions | Endangered
- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland | Critically Endangered
- State Vegetation Mapping

BDAR - Figure B-6ce

NSW BC Act Threatened Ecological Communities Mapping

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-6cf

NSW BC Act Threatened Ecological Communities Mapping

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

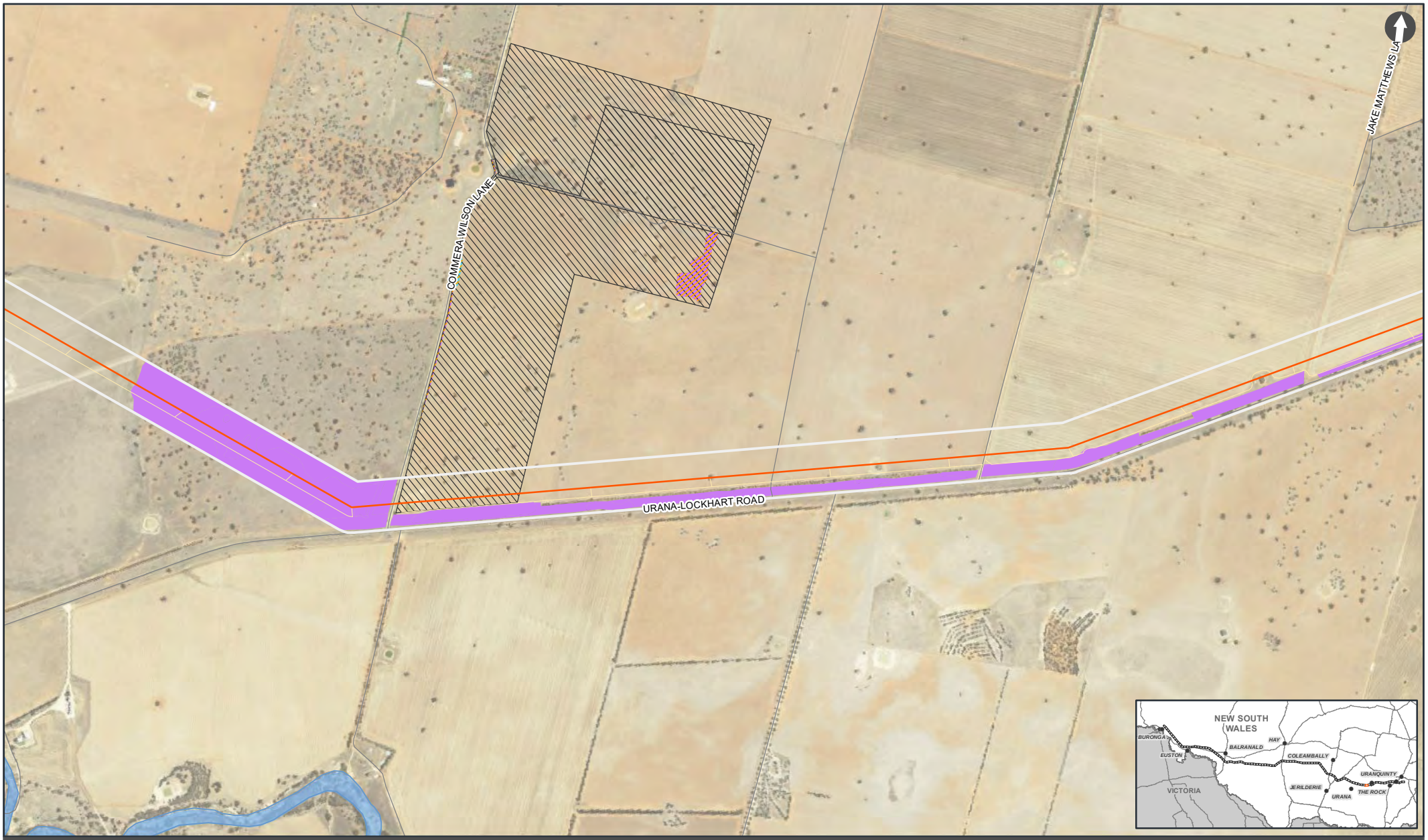
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

BDAR - Figure B-6cg

NSW BC Act Threatened Ecological Communities Mapping

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Ecological Community

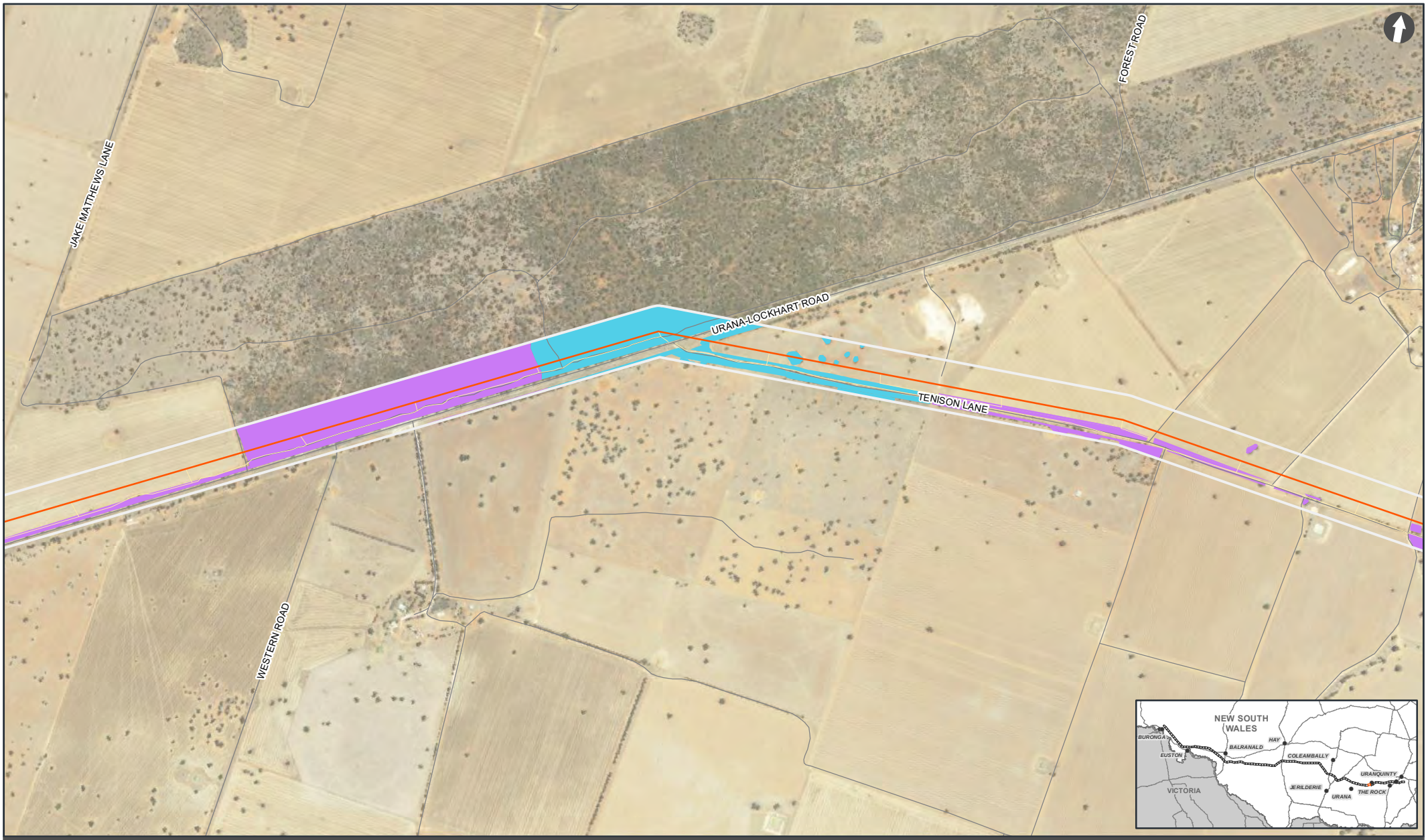
- Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions | Endangered
- Sandhill Pine woodland in the Riverina, Murray – Darling Depression and NSW South Western Slopes bioregions | Endangered
- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland | Critically Endangered
- State Vegetation Mapping

BDAR - Figure B-6ch

NSW BC Act Threatened Ecological Communities Mapping

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-6ci

NSW BC Act Threatened Ecological Communities Mapping

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Project Components

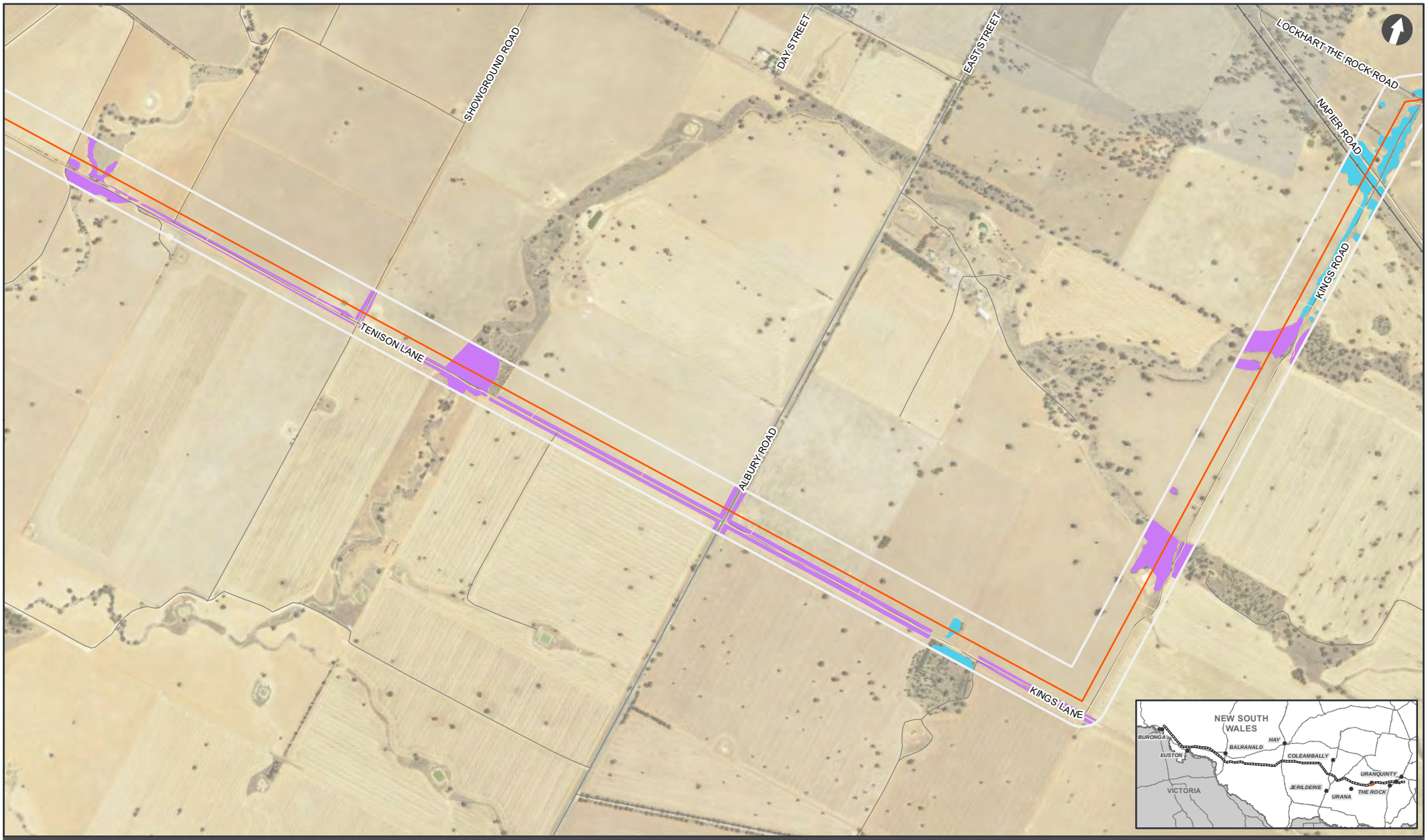
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Ecological Community

- Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions | Endangered
- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland | Critically Endangered

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Ecological Community

- Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions | Endangered
- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland | Critically Endangered

BDAR - Figure B-6cj

NSW BC Act Threatened Ecological Communities Mapping

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-6ck

NSW BC Act Threatened Ecological Communities Mapping

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Project Components

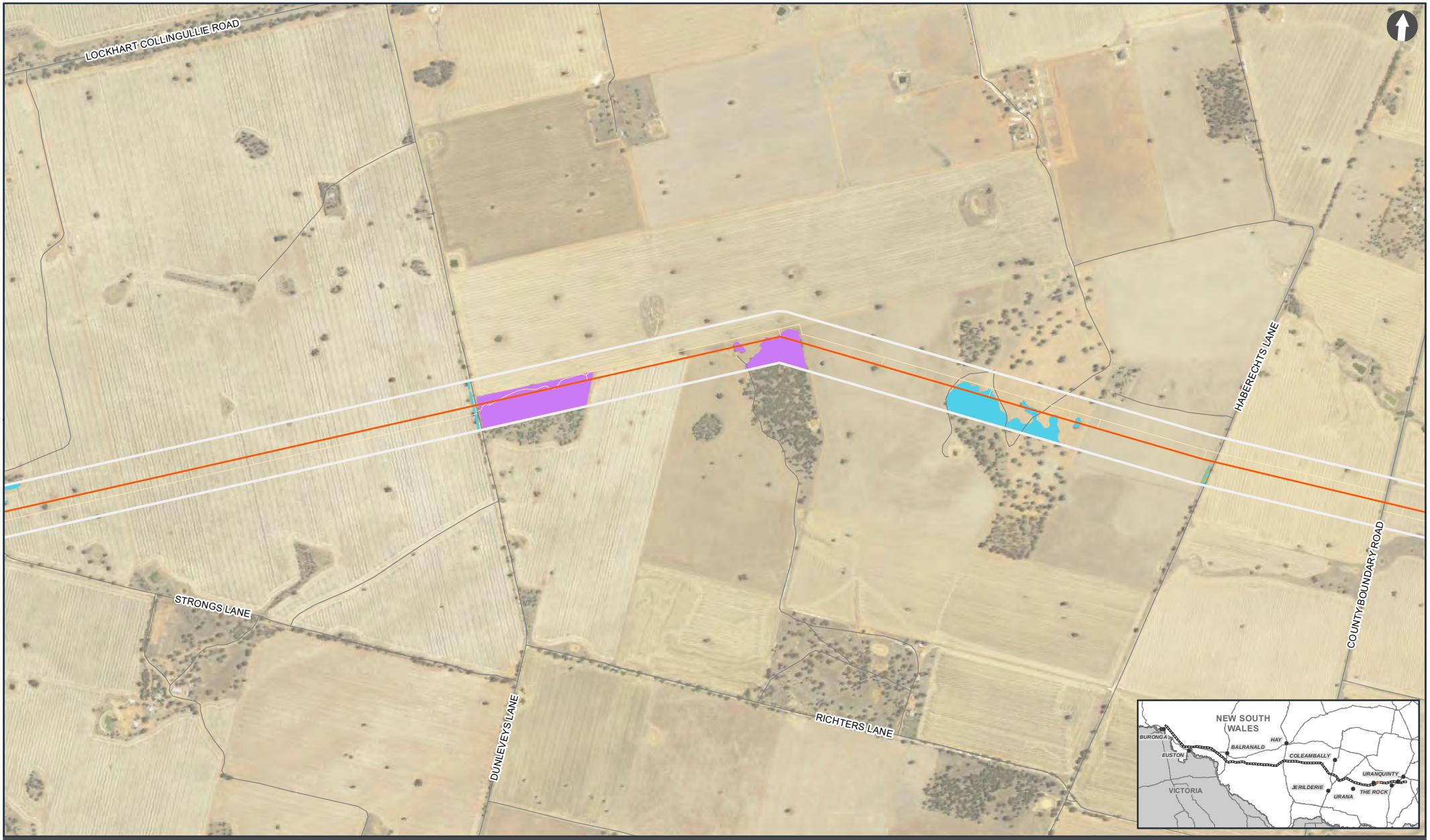
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Ecological Community

- Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions | Endangered
- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland | Critically Endangered

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-6cm

NSW BC Act Threatened Ecological Communities Mapping

(Page 90 of 100)

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Ecological Community

- Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions | Endangered
- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland | Critically Endangered
- State Vegetation Mapping

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-6cn

NSW BC Act Threatened Ecological Communities Mapping

(Page 91 of 100)

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Ecological Community
- Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions | Endangered
- State Vegetation Mapping

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-6co

NSW BC Act Threatened Ecological Communities Mapping

(Page 92 of 100)

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Ecological Community

- Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions | Endangered

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-6cp

NSW BC Act Threatened Ecological Communities Mapping

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Ecological Community

- Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions | Endangered

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure B-6cq

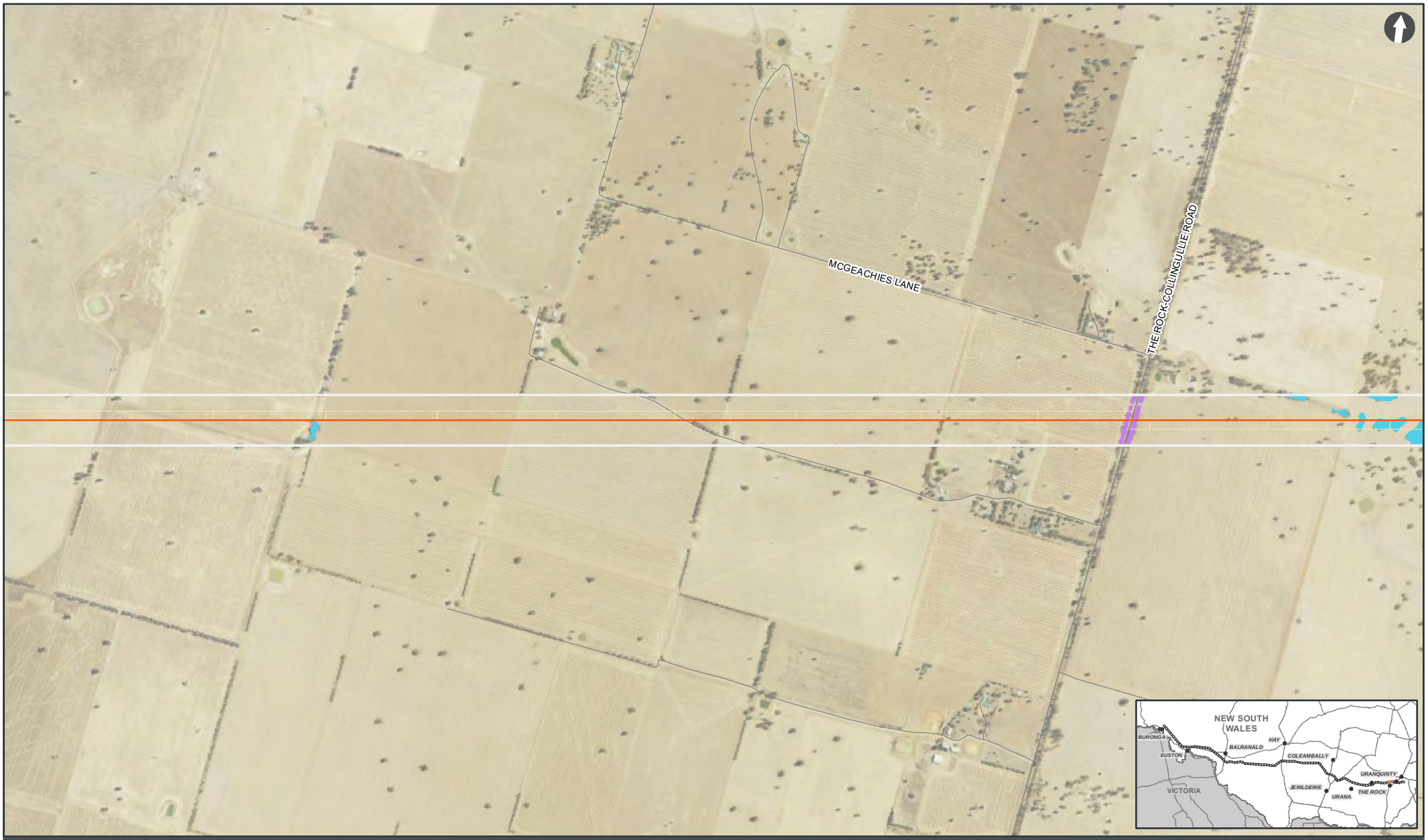
NSW BC Act Threatened Ecological Communities Mapping

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure B-6cr

NSW BC Act Threatened Ecological Communities Mapping

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Ecological Community

- Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions | Endangered
- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland | Critically Endangered

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Ecological Community

- Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions | Endangered

BDAR - Figure B-6cs

NSW BC Act Threatened Ecological Communities Mapping

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Ecological Community
- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland | Critically Endangered

BDAR - Figure B-6ct

NSW BC Act Threatened Ecological Communities Mapping

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure B-6cu

NSW BC Act Threatened Ecological Communities Mapping

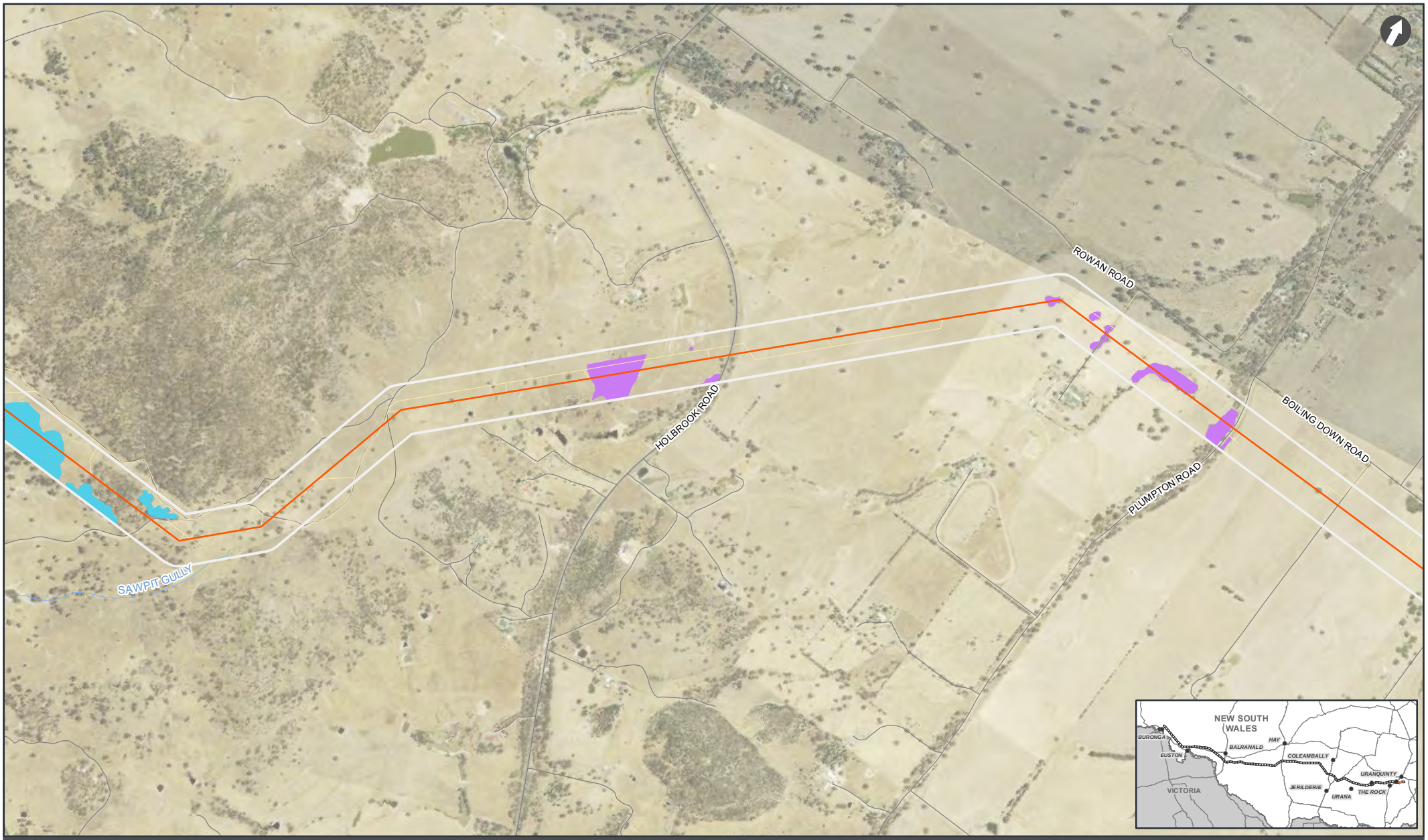
(Page 98 of 100)

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Ecological Community
- Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions | Endangered
- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland | Critically Endangered

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Ecological Community

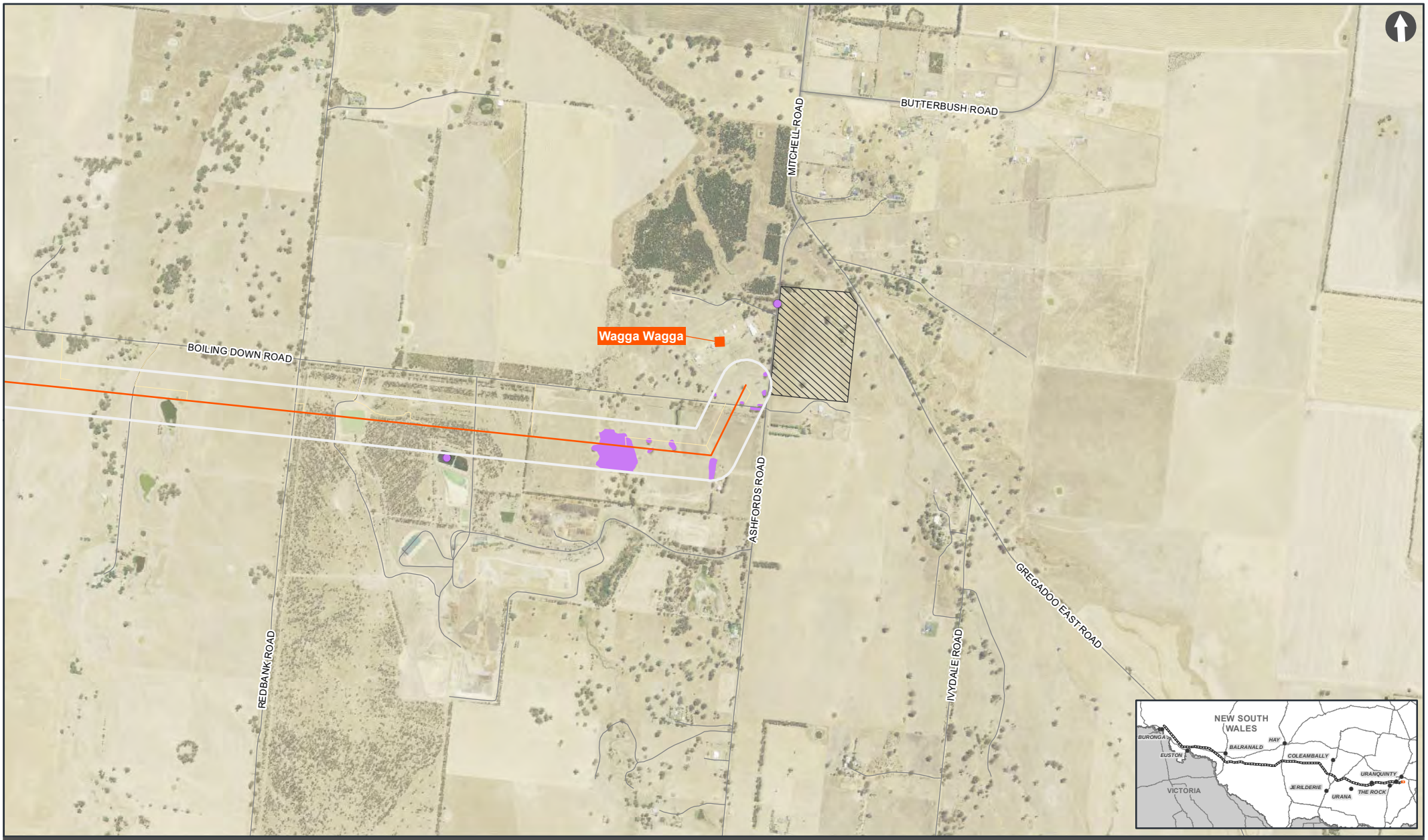
- Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions | Endangered
- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland | Critically Endangered

BDAR - Figure B-6cv

NSW BC Act Threatened Ecological Communities Mapping

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Ecological Community

- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland | Critically Endangered

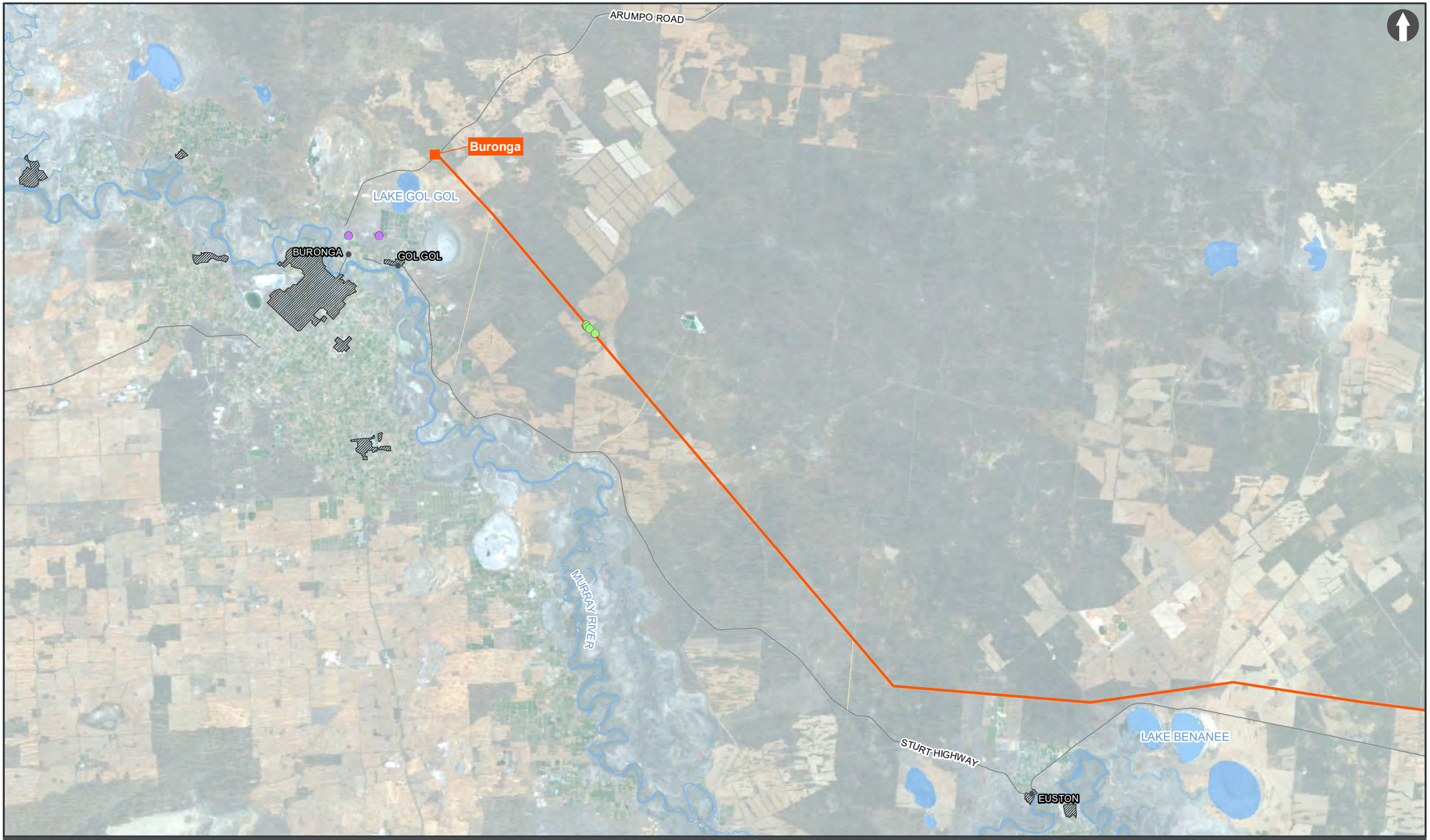
BDAR - Figure B-6CW

NSW BC Act Threatened Ecological Communities Mapping

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Source: NSWSS, ESRI, Transgrid, WSP

APPENDIX B-7
Scattered trees assessment



BDAR - Figure B-7a

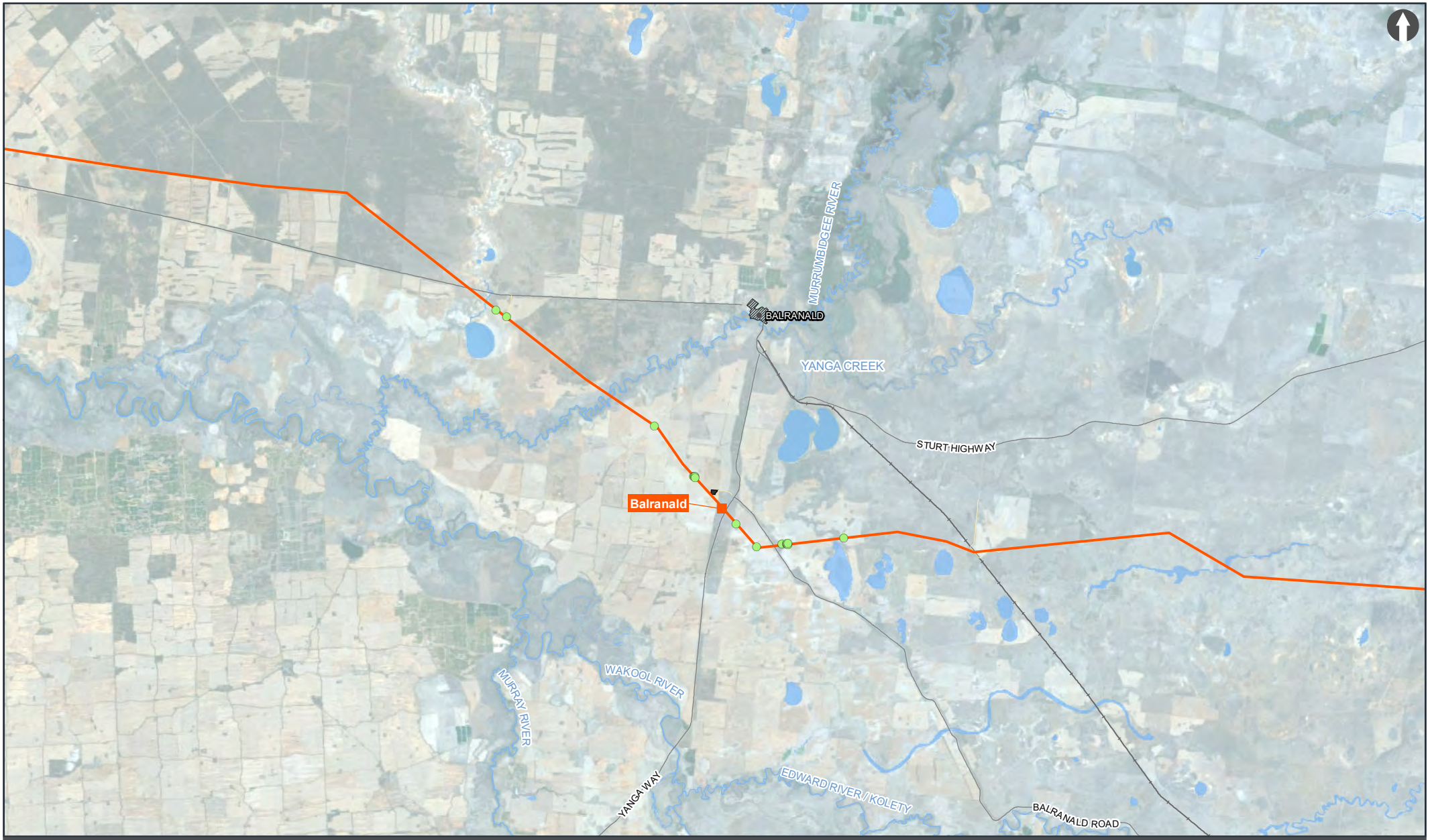
Scattered Trees

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Scattered Trees (5)

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure B-7b

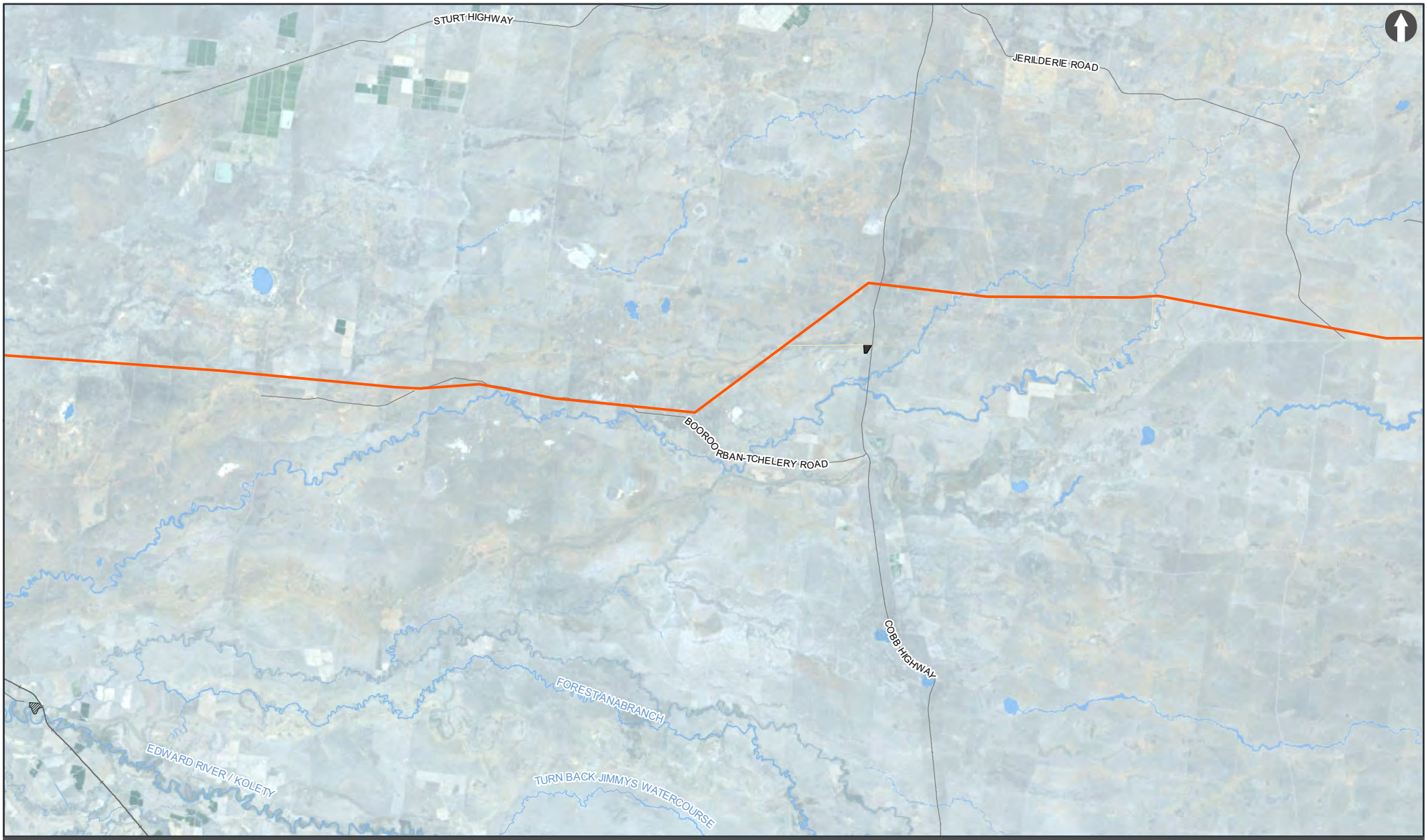
Scattered Trees

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Scattered Trees (17)

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\02_AppendixB\PS117658_BDAR_B007_ScatteredTrees_r1v5.mxd

Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure B-7c

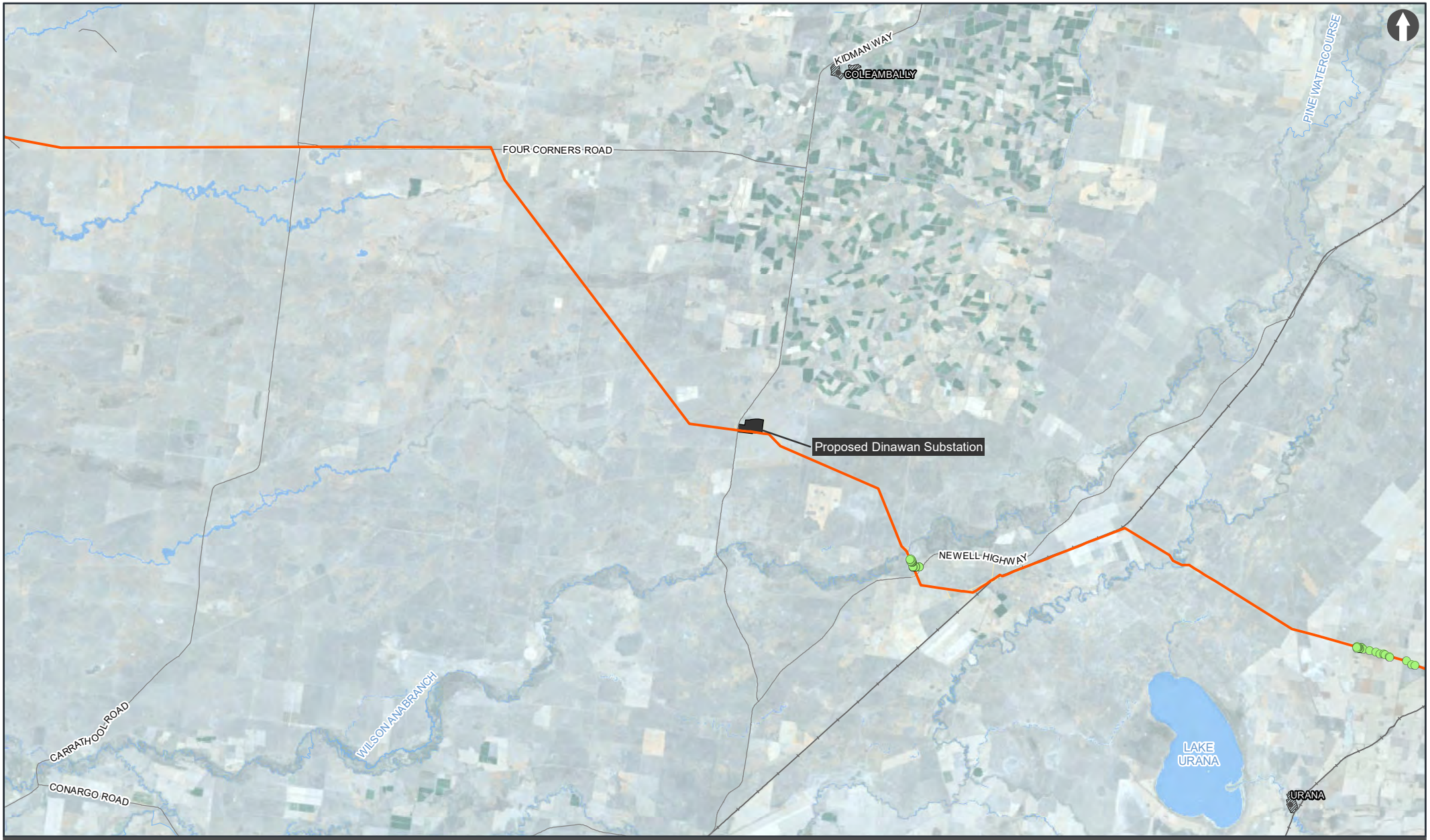
Scattered Trees

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Scattered Trees (0)

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure B-7d

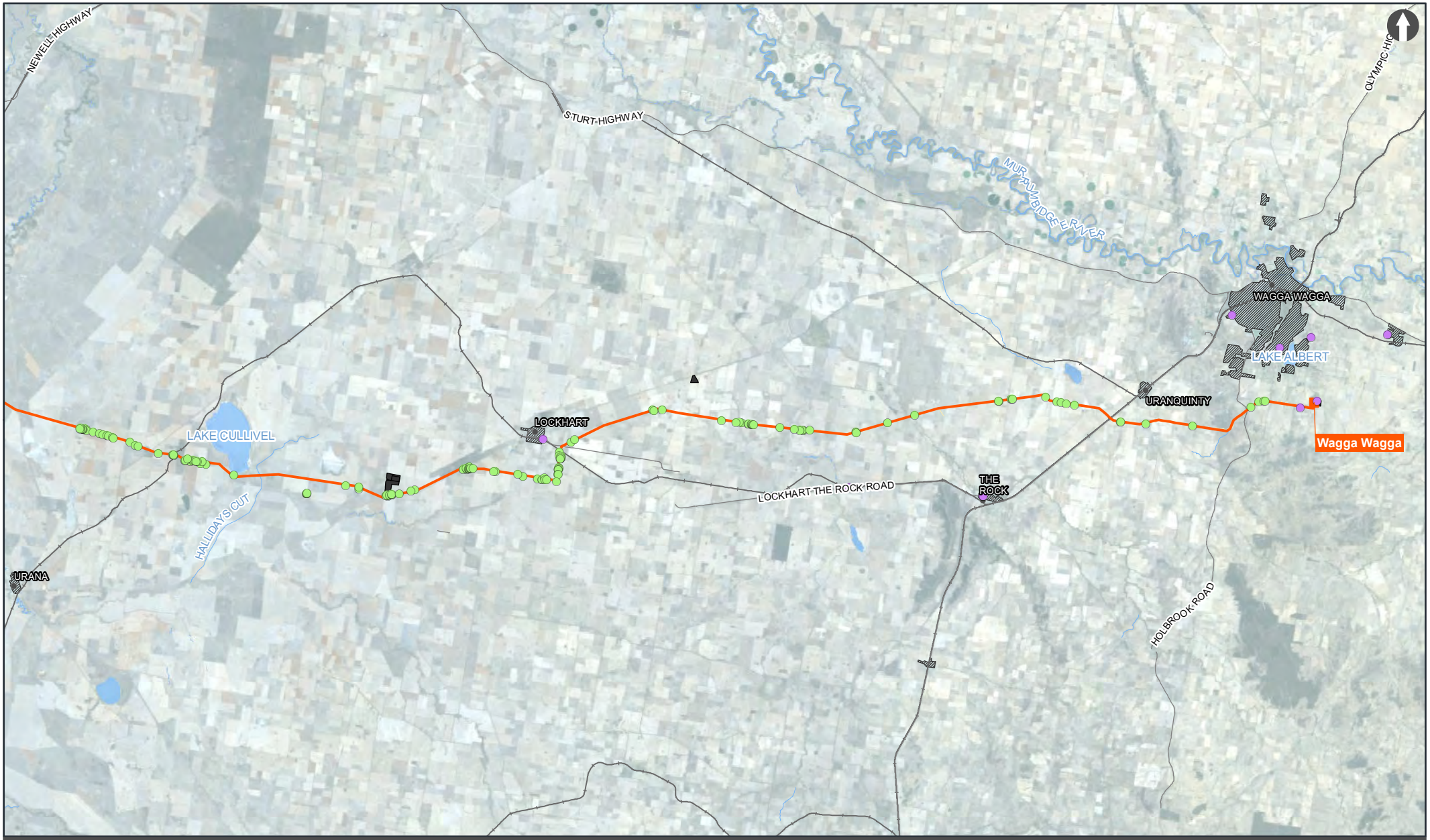
Scattered Trees

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Scattered Trees (45)

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure B-7e

Scattered Trees

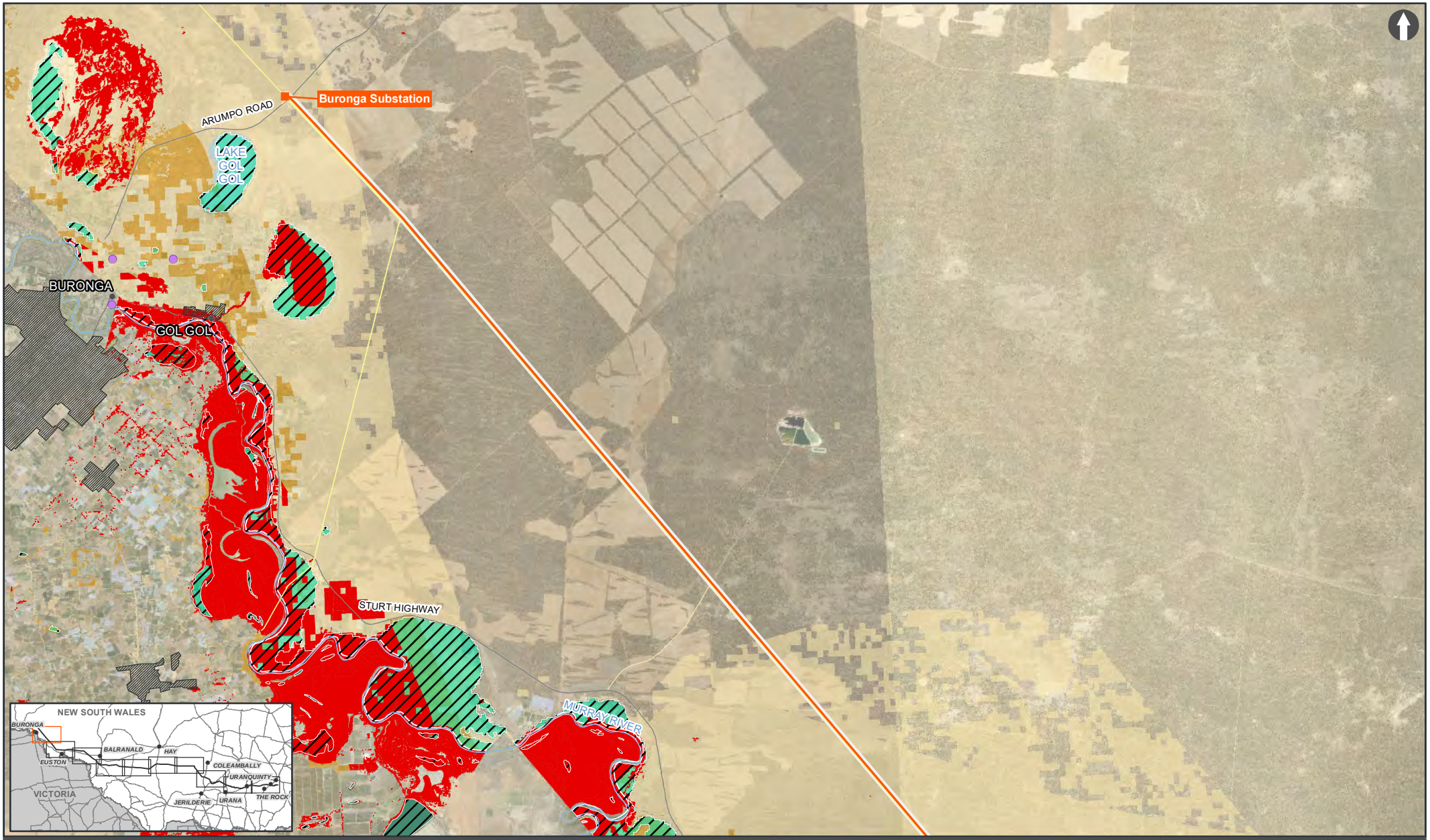
Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Scattered Trees (150)

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Source: NSWSS, ESRI, Transgrid, WSP

APPENDIX B-8
Groundwater Dependent Ecosystem mapping



Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Existing Transmission Line Infrastructure
- Biodiversity Study Area
- Built Up Areas

Terrestrial GDE
- High potential GDE
- Moderate potential GDE
- Low potential GDE

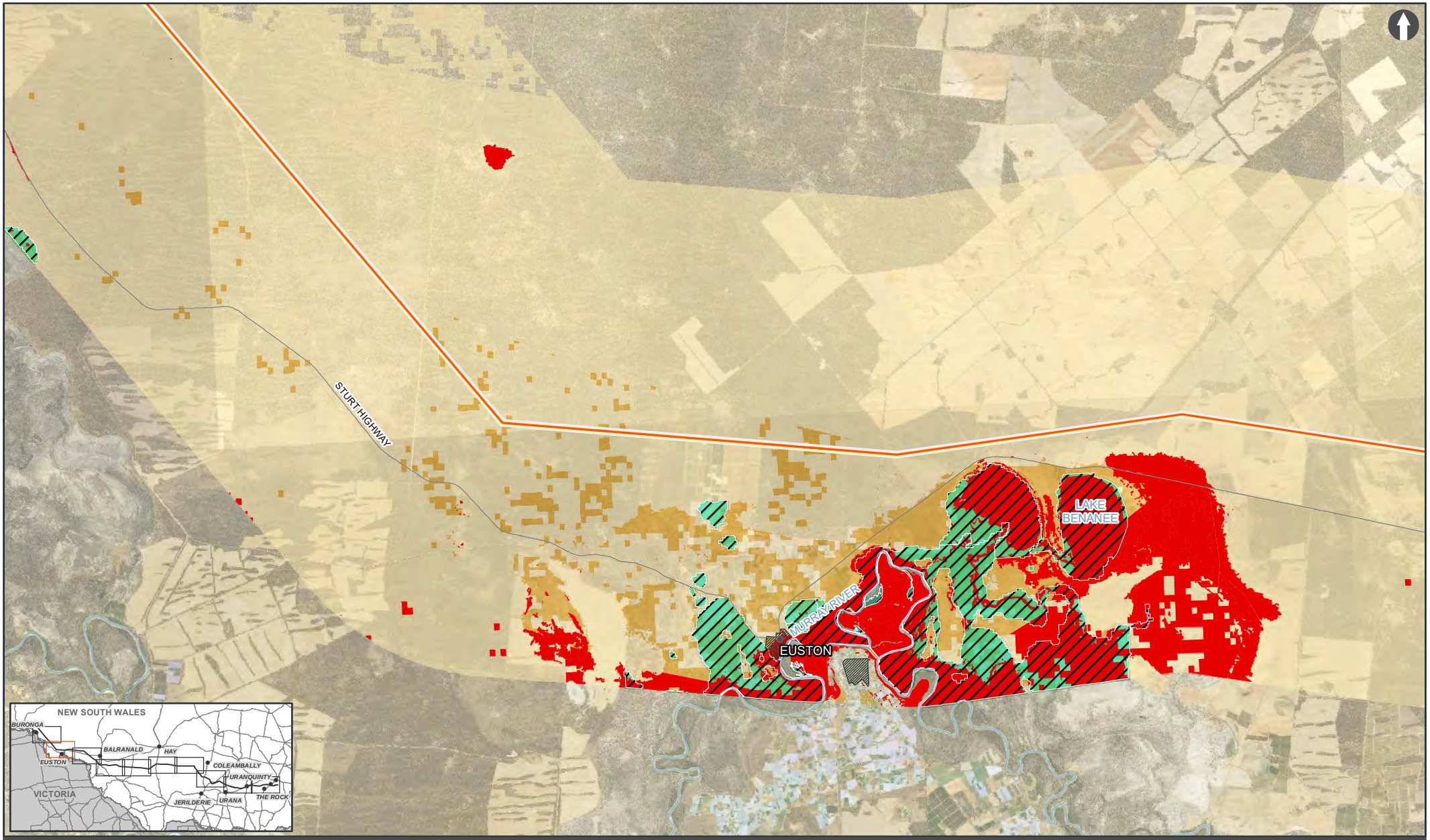
Aquatic GDE
- High potential GDE
- Moderate potential GDE
- Low potential GDE
- Unclassified potential GDE

BDAR - Figure B-8
Groundwater Dependent Ecosystems

Sheet 1 of 10

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Existing Transmission Line Infrastructure
- Biodiversity Study Area
- Built Up Areas

Terrestrial GDE
- High potential GDE
- Moderate potential GDE
- Low potential GDE

Aquatic GDE
- High potential GDE
- Moderate potential GDE
- Low potential GDE
- Unclassified potential GDE

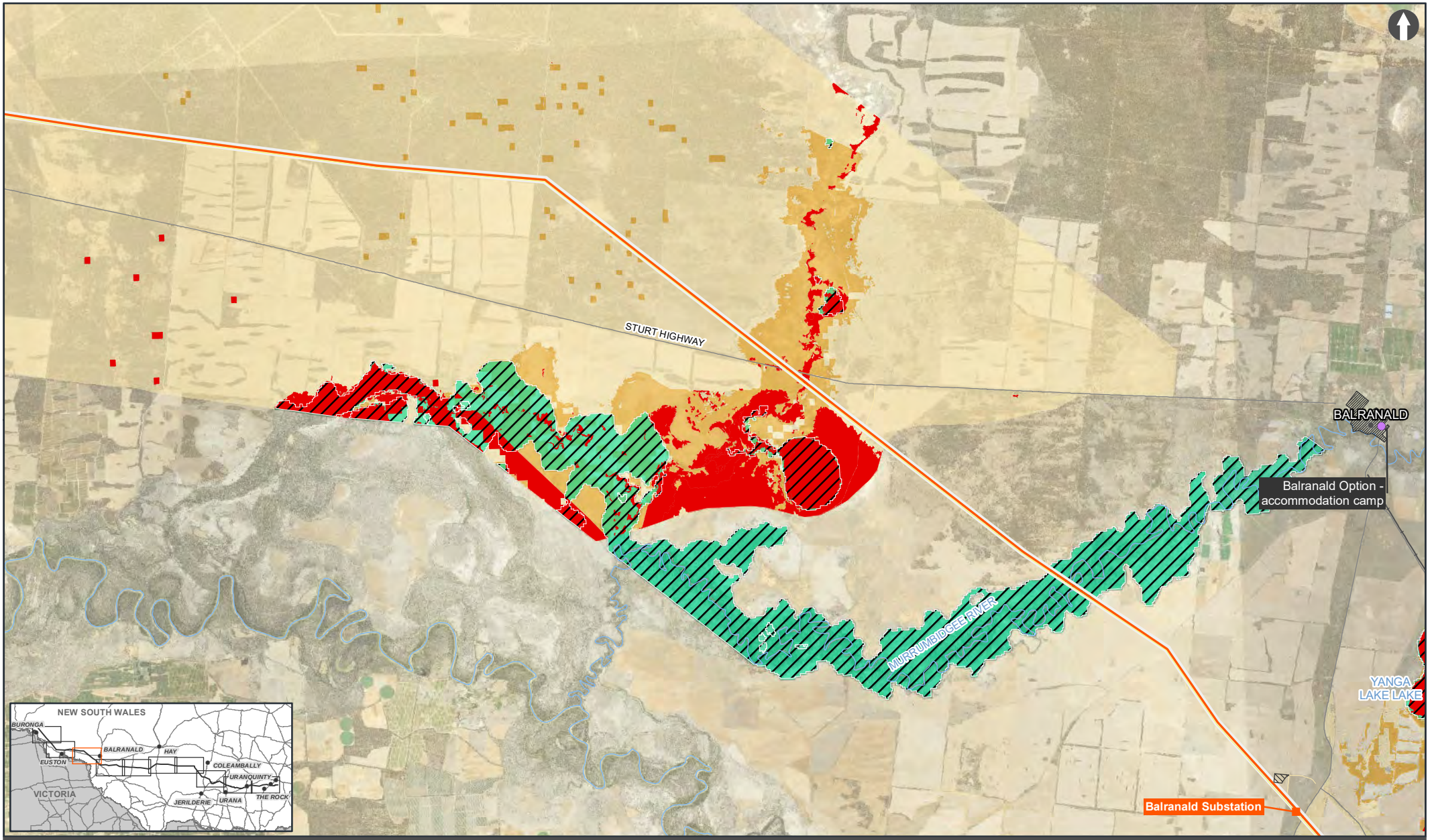
BDAR - Figure B-8

Groundwater Dependent Ecosystems

Sheet 2 of 10

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Existing Transmission Line Infrastructure
- Biodiversity Study Area
- Built Up Areas

Terrestrial GDE
- High potential GDE
- Moderate potential GDE
- Low potential GDE

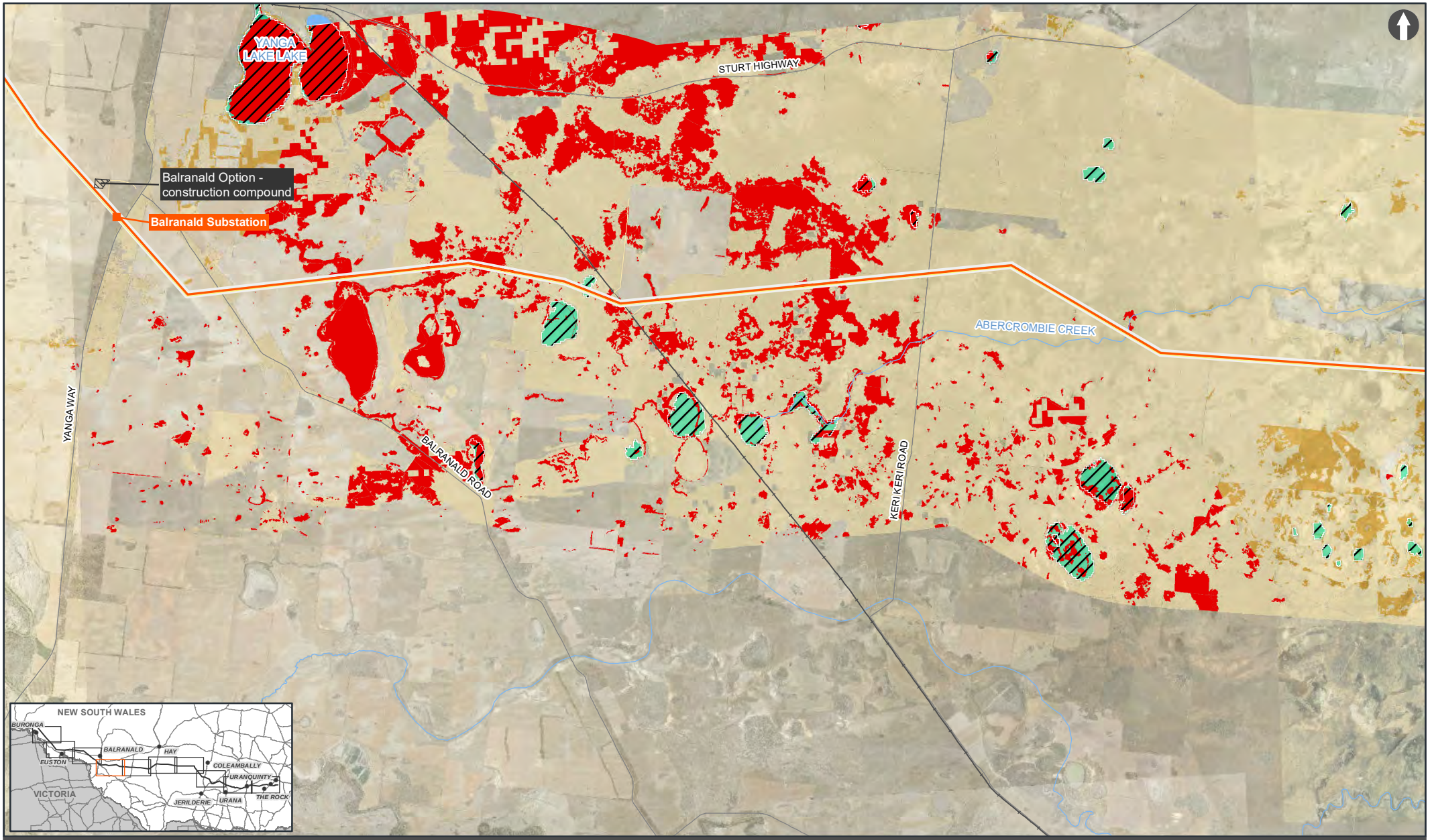
Aquatic GDE
- Moderate potential GDE
- Low potential GDE
- Unclassified potential GDE

BDAR - Figure B-8
Groundwater Dependent Ecosystems

Sheet 3 of 10

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Existing Transmission Line Infrastructure
- Biodiversity Study Area
- Built Up Areas

Terrestrial GDE
- High potential GDE
- Moderate potential GDE
- Low potential GDE

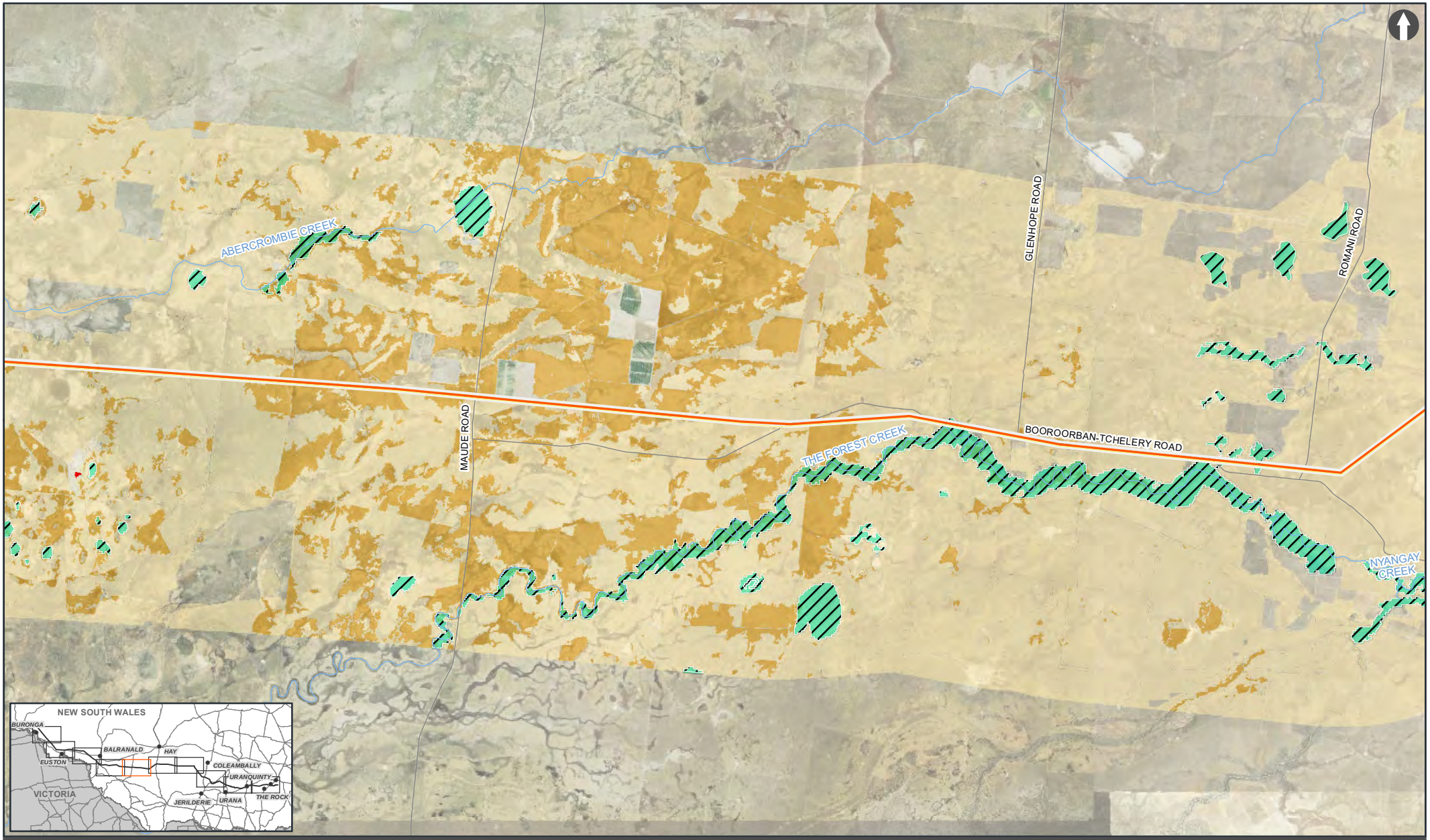
Aquatic GDE
- Moderate potential GDE
- Low potential GDE

BDAR - Figure B-8
Groundwater Dependent Ecosystems

Sheet 4 of 10

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure B-8

Groundwater Dependent Ecosystems

Sheet 5 of 10

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Existing Transmission Line Infrastructure
- Biodiversity Study Area
- Built Up Areas

Terrestrial GDE

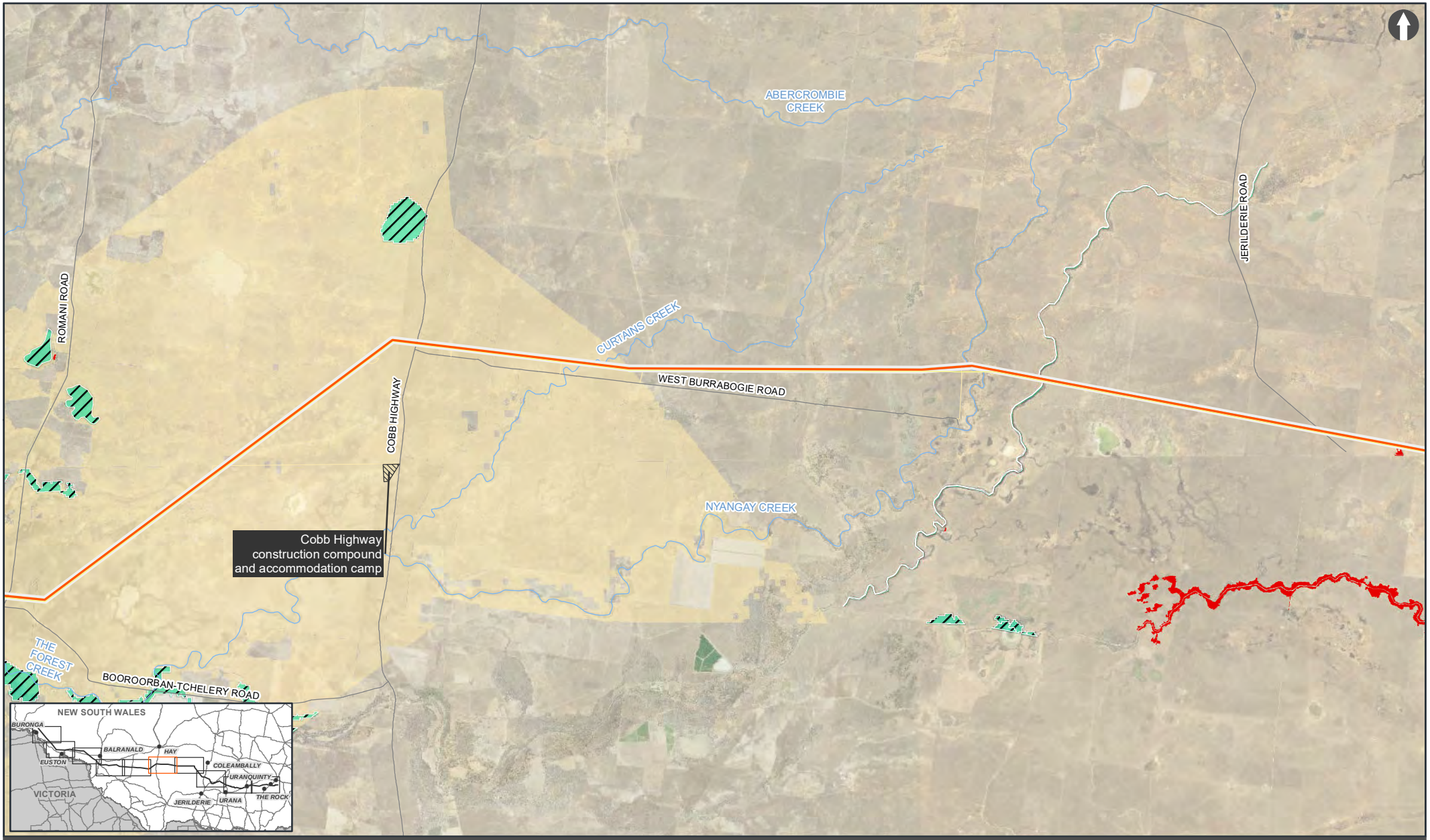
- High potential GDE
- Moderate potential GDE
- Low potential GDE

Aquatic GDE

- Moderate potential GDE
- Low potential GDE

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Existing Transmission Line Infrastructure
- Biodiversity Study Area
- Built Up Areas

Terrestrial GDE

- High potential GDE
- Low potential GDE

Aquatic GDE

- Low potential GDE

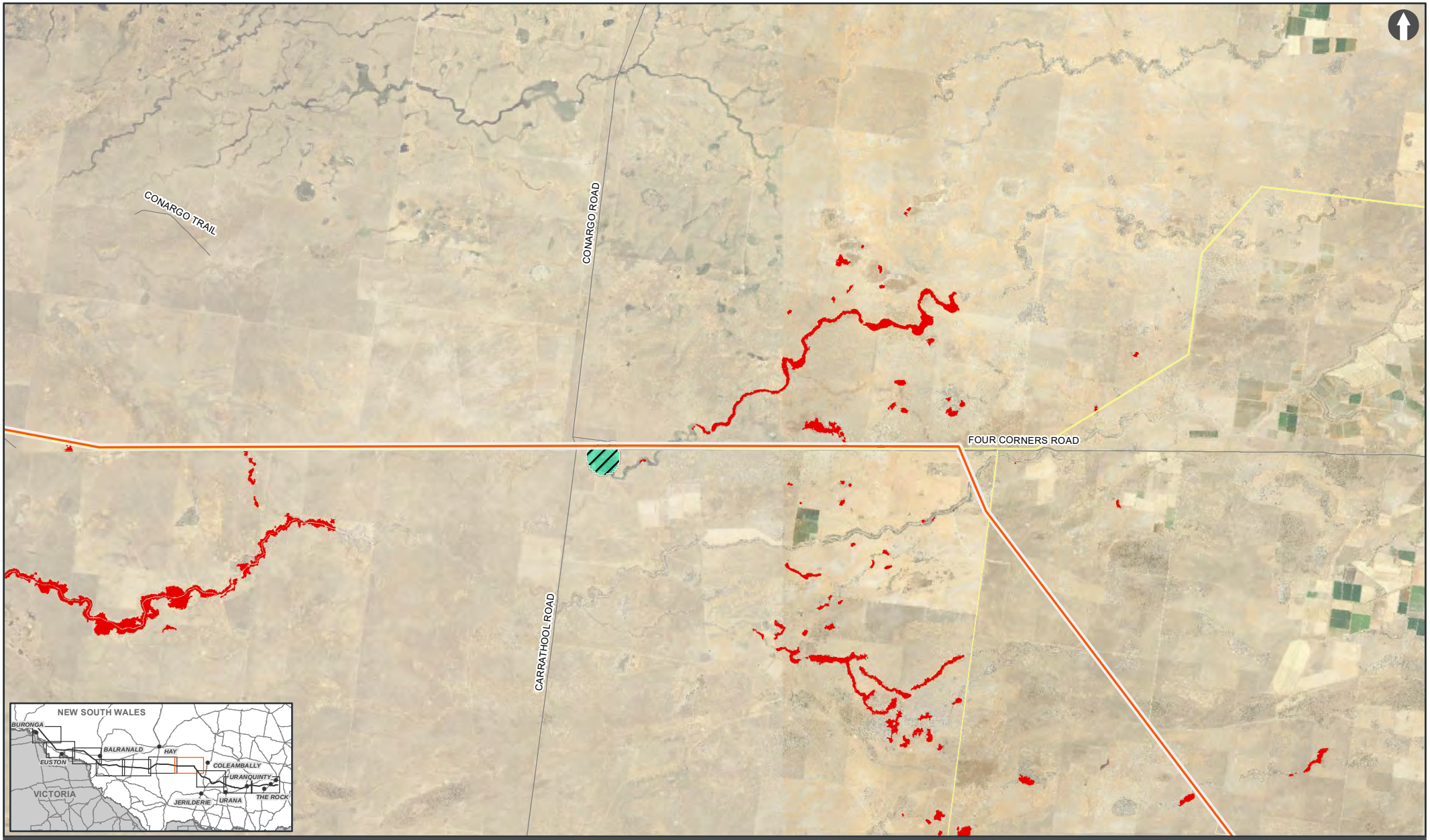
BDAR - Figure B-8

Groundwater Dependent Ecosystems

Sheet 6 of 10

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Existing Transmission Line Infrastructure
- Biodiversity Study Area
- Built Up Areas

Terrestrial GDE

- High potential GDE

Aquatic GDE

- Low potential GDE

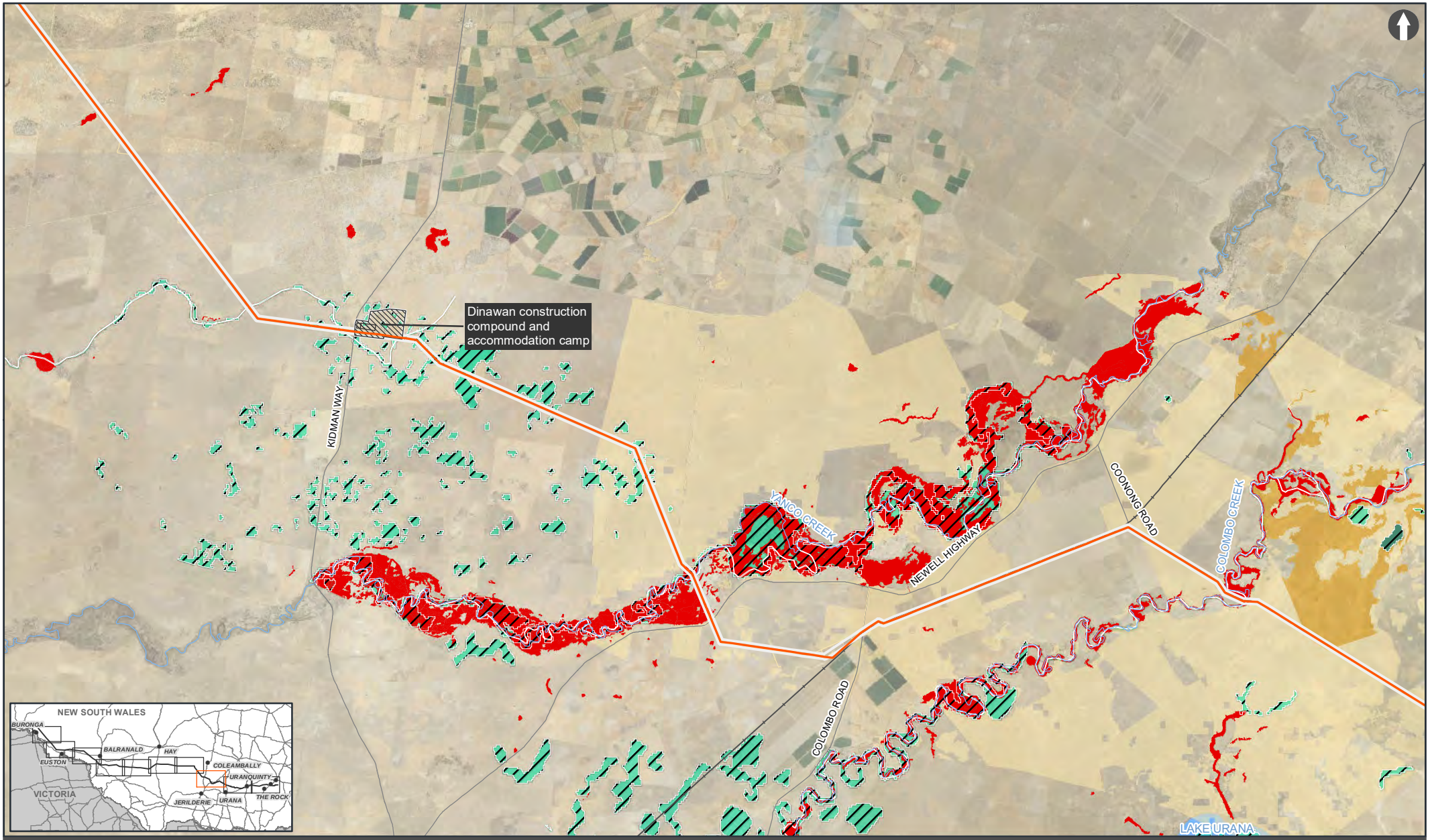
BDAR - Figure B-8

Groundwater Dependent Ecosystems

Sheet 7 of 10

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Existing Transmission Line Infrastructure
- Biodiversity Study Area
- Built Up Areas

Terrestrial GDE
- High potential GDE
- Moderate potential GDE
- Low potential GDE

Aquatic GDE
- High potential GDE
- Moderate potential GDE
- Low potential GDE

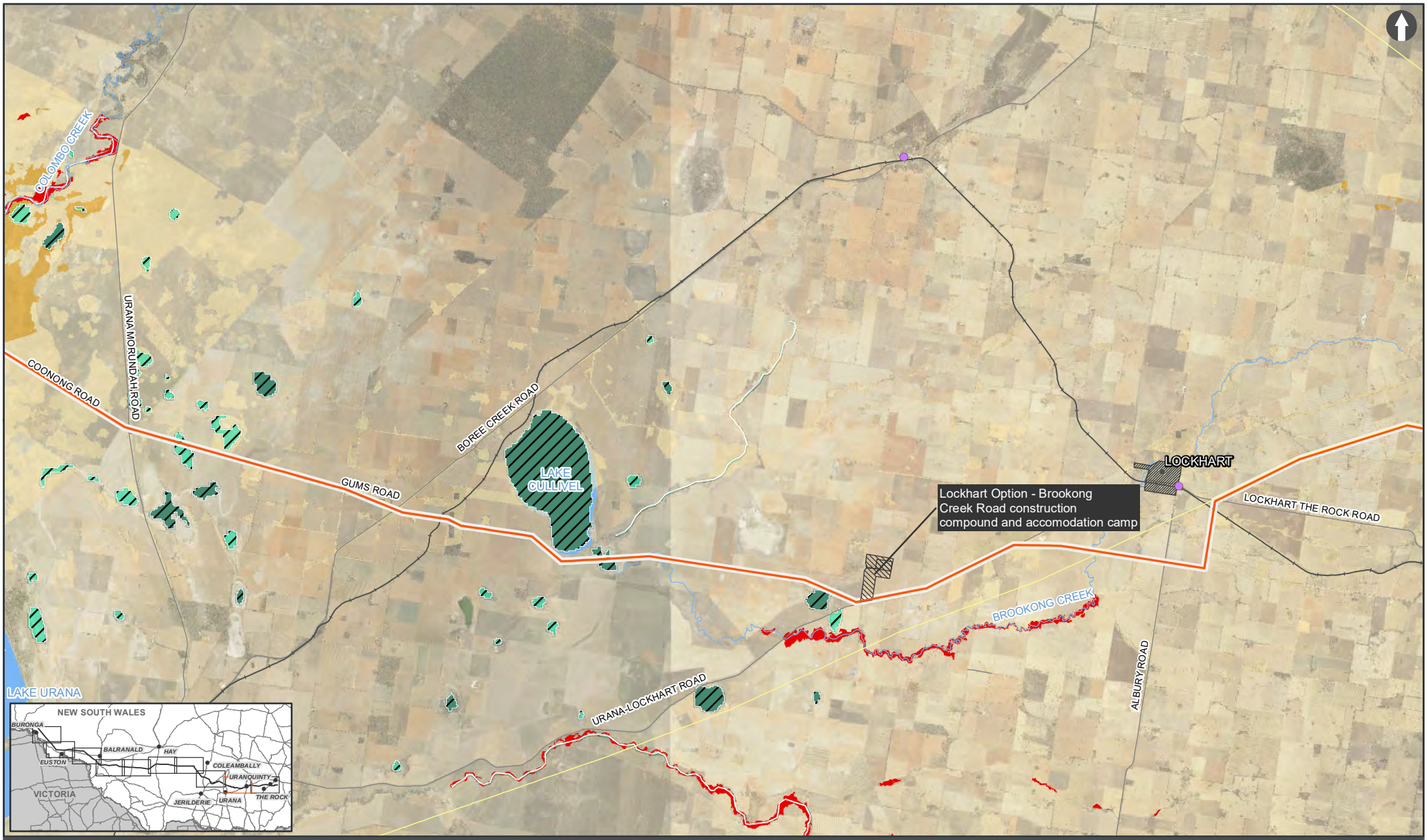
BDAR - Figure B-8

Groundwater Dependent Ecosystems

Sheet 8 of 10

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Existing Transmission Line Infrastructure
- Biodiversity Study Area
- Built Up Areas

Terrestrial GDE

- High potential GDE
- Moderate potential GDE
- Low potential GDE

Aquatic GDE

- High potential GDE
- Moderate potential GDE
- Low potential GDE

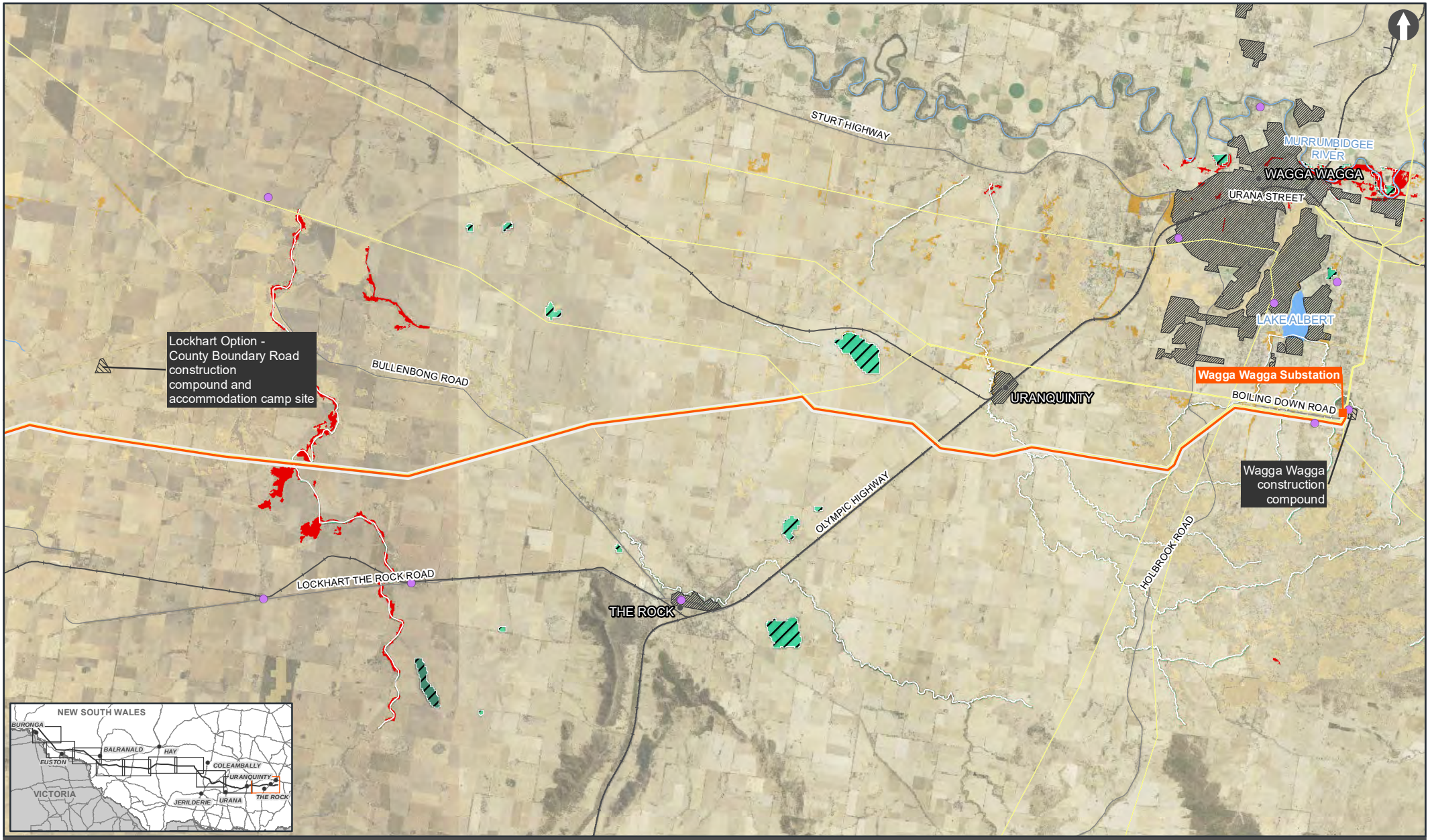
BDAR - Figure B-8

Groundwater Dependent Ecosystems

Sheet 9 of 10

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Existing Transmission Line Infrastructure
- Biodiversity Study Area
- Built Up Areas

Terrestrial GDE

- High potential GDE
- Moderate potential GDE
- Low potential GDE

Aquatic GDE

- High potential GDE
- Moderate potential GDE
- Low potential GDE

BDAR - Figure B-8

Groundwater Dependent Ecosystems

Sheet 10 of 10

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Source: NSWSS, ESRI, Transgrid, WSP

APPENDIX B-9
Rapid point data

Table B-9.1 Rapid data points collected

RAPID DATA POINT NUMBER	DATA COLLECTED
1	*Casuarina pauper; Alectryon oleifolius* subsp. *canescens; Myoporum platycarpum* subsp. *platycarpum; Pittosporum angustifolium; Geijera parviflora*
2	*Eucalyptus gracilis; Eucalyptus socialis; Alectryon oleifolius* subsp. *canescens*; *Allocasuarina luehmannii; Cassytha melantha*
3	*Casuarina pauper; Alectryon oleifolius* subsp. *canescens; Geijera parviflora*
4	PCT 58 derived
5	*Eucalyptus oleosa; Eucalyptus dumosa*
6	*Casuarina pauper; Alectryon oleifolius* subsp. *canescens; Myoporum platycarpum* subsp. *platycarpum; Pittosporum angustifolium; Geijera parviflora; Zygophyllum apiculatum*; *Olearia pimeleoides: Maireana triptera; Sclerolaena patenticuspis*
7	Wheel cactus
8	Cat1
9	Cat1
10	Cat1
11	Cat1
12	PCT 170
13	PCT 170
14	PCT 171 derived
15	Spotted fuchsia run-on depression
16	Habitat for *Swainsona pyrophila*
17	PCT 170 derived
18	*Eucalyptus dumosa; Eucalyptus oleosa; Eucalyptus socialis; Myoporum platycarpum* subsp. *platycarpum; Senna* form taxon 'petiolaris'; *Maireana brevifolia; Maireana triptera*; Zygophyllum *aurantiacum; Zygophyllum apiculatum; Triodia scariosa* subsp. *scariosa*
19	Opuntia (wheel cactus)
20	Australian box thorn
21	Australian box thorn
22	PCT 170 open canopy
23	PCT 170 open canopy
24	PCT 163
25	PCT 163
26	PCT163
27	PCT 163

RAPID DATA POINT NUMBER	DATA COLLECTED
28	*Nitraria billardierei; Rhagodia spinescens; Solanum esuriale; Maireana brevifolia*; *Heliotropium europaeum*; Enteropogon ramosus; Enneapogon avenaceus; Enchylaena tomentosa; Salsola australis*
29	*Maireana pyramidata; Maireana triptera*; *Maireana brevifolia; Enteropogon ramosus; Enchylaena tomentosa; Rhagodia spinescens; Panicum effusum; Rytidosperma caespitosum; Sclerolaena patenticuspis; Enneapogon avenaceus*
30	PCT 163
31	PCT 58
32	*Enteropogon ramosus; Salsola australis; Sida corrugata; Austrostipa scabra; Rytidosperma* sp.; *Medicago polymorpha**
33	Miscellaneous Ecosystem (cropped)
34	*Casuarina pauper; Rhagodia spinescens; Maireana brevifolia; Pittosporum angustifolium; Geijera parviflora; Enchylaena tomentosa; Salsola australis; Enteropogon ramosus*; *Austrostipa* sp.; *Sclerolaena* sp.; *Exocarpos aphyllus*
35	*Eucalyptus socialis; Pittosporum angustifolium; Grevillea huegelii; Enchylaena tomentosa*; Hakea *leucoptera; Geijera parviflora; Salsola australis; Maireana brevifolia; Convolvulus clementii; Chenopodium desertorum; Zygophyllum aurantiacum*
36	*Enteropogon ramosus; Acacia oswaldii; Maireana brevifolia*; Enneapogon sp.; Aristida *behriana; Enchylaena tomentosa; Paspalidium* sp.; *Sclerolaena* sp.; *Vittadinia* sp.; *Rytidosperma caespitosum*
37	*Casuarina pauper; Rhagodia spinescens; Enchylaena tomentosa; Enteropogon ramosus; Sclerolaena patenticuspis; Exocarpos aphyllus; Nitraria billardierei; Lycium australe; Alectryon oleifolius* subsp. *canescens; Maireana pyramidata*
38	*Tecticornia tenuis; Atriplex vesicaria; Maireana aphylla; Sclerolaena brachyptera; Salsola australis; Rhagodia spinescens; Sclerolaena divaricata; Sclerolaena muricata; Atriplex leptocarpa; Atriplex conduplicata*
39	*Maireana aphylla*
40	*Maireana aphylla; Atriplex vesicaria; Nitraria billardierei; Sclerolaena divaricata; Tecticornia tenuis*
41	*Eragrostis australasica; Maireana brevifolia; Maireana erioclada; Chenopodium desertorum*
42	*Atriplex vesicaria; Sclerolaena divaricata; Tecticornia tenuis; Maireana aphylla; Nitraria billardierei; Sclerolaena brachyptera*
43	Cat 1
44	Disturbed black chenopod
45	*Nitraria billardierei; Maireana aphylla; Atriplex vesicaria; Sclerolaena divaricata; Lycium australe*
46	*Maireana aphylla*
47	*Acacia melvillei; Nitraria billardierei;*
48	*Atriplex vesicaria*

RAPID DATA POINT NUMBER	DATA COLLECTED
49	*Eragrostis australasica; Marsilea drummondii; Eleocharis pallens*
50	*Eragrostis australasica; Chenopodium desertorum*
51	*Maireana aphylla*
52	*Acacia melvillei*
53	*Atriplex vesicaria*
54	*Atriplex vesicaria; Atriplex leptocarpa; Atriplex nummularia*
55	*Maireana aphylla*
56	*Eragrostis australasica; Eleocharis pallens*
57	*Atriplex vesicaria*
58	*Maireana aphylla*
59	*Atriplex vesicaria*
60	*Maireana aphylla*
61	*Atriplex vesicaria*
62	*Maireana aphylla*
63	*Eragrostis australasica*
64	*Maireana aphylla*
65	*Atriplex vesicaria*
66	*Eragrostis australasica*
67	*Eragrostis australasica*
68	*Nitraria billardierei*
69	*Maireana aphylla*
70	*Eragrostis australasica*
71	*Nitraria billardierei*
72	*Maireana aphylla*
73	*Atriplex vesicaria*
74	*Atriplex vesicaria*
75	*Maireana aphylla;*
76	*Maireana aphylla*
77	Cotton and *Medicago* sp. and pasture
78	*Nitraria billardierei*
79	Disturbed cotton with pasture
80	Dillon and cotton bush

RAPID DATA POINT NUMBER	DATA COLLECTED
81	*Eragrostis australasica*
82	*Atriplex vesicaria*
83	*Atriplex vesicaria; Maireana aphylla; Nitraria billardierei; Abutilon halophilum; Maireana pentagona; Sclerolaena divaricata*
84	*Eragrostis australasica*
85	*Atriplex vesicaria; Sclerolaena divaricata; Maireana aphylla; Nitraria billardierei*
86	*Atriplex vesicaria; Sclerolaena divaricata; Maireana brevifolia; Sida trichopoda; Portulaca oleracea*
87	Cat 1
88	Pine ridge with rosewood
89	Miscellaneous Ecosystem (exotic)
90	*Maireana aphylla*
91	Miscellaneous Ecosystem (exotic)
92	*Eucalyptus camaldulensis; Chenopodium desertorum*
93	*Chenopodium desertorum; Walwhalleya proluta; Enteropogon ramosus*
94	*Maireana aphylla*
95	*Austrostipa spp*
96	*Austrostipa* spp
97	*Walwhalleya proluta; Rytidosperma sp.; Einadia nutans; Austrostipa sp; Salsola australis; Enteropogon ramosus; Malva sp.*
98	*Austrostipa spp*
99	*Chenopodium desertorum*
100	*Eragrostis australasica*
101	Miscellaneous Ecosystem (exotic)
102	*Acacia pendula; Maireana aphylla; Enteropogon acicularis; Rhagodia spinescens; Salsola australis; Atriplex semibaccata; Austrostipa sp.*
103	PCT 26
104	*Maireana pyramidata;*
105	Miscellaneous Ecosystem (exotic)
106	PCT 26
107	*Acacia pendula; Sclerolaena muricata; Salsola australis; Einadia hastata; Rhagodia spinescens; Maireana decalvans; Atriplex semibaccata*
108	PCT 26
109	*Maireana aphylla*

RAPID DATA POINT NUMBER	DATA COLLECTED
110	*Eucalyptus largiflorens; Chenopodium desertorum; Maireana brevifolia*
111	*Austrostipa nodosa; Chloris truncata*
112	*Maireana aphylla*
113	*Acacia pendula; Rhagodia spinescens; Maireana decalvans*
114	*Chenopodium desertorum*
115	*Acacia pendula; Rhagodia spinescens; Maireana decalvans*
116	*Acacia pendula; Enchylaena tomentosa; Sclerolaena patenticuspis; Sclerolaena stelligera; Rhagodia spinescens*
117	*Eucalyptus largiflorens*
118	*Acacia pendula*
119	*Eucalyptus largiflorens*
120	Miscellaneous Ecosystem (exotic)
121	*Acacia pendula*
122	Cat 1
123	*Callitris glaucophylla*
124	*Acacia pendula*
125	*Eucalyptus largiflorens*
126	*Acacia pendula*
127	*Eucalyptus largiflorens*
128	*Acacia pendula*
129	Miscellaneous Ecosystem (exotic)
130	*Acacia pendula*
131	*Eucalyptus largiflorens*
132	*Callitris glaucophylla*
133	*Eucalyptus largiflorens*
134	*Austrostipa aristiglumis; Walwhalleya proluta; Sporobolus caroli*
135	*Eucalyptus largiflorens*
136	*Eucalyptus camaldulensis* subsp. *camaldulensis*
137	*Eucalyptus melliodora*
138	*Eucalyptus microcarpa; Callitris glaucophylla*
139	*Brachychiton populneus* subsp. *populneus*
140	*Callitris glaucophylla*

RAPID DATA POINT NUMBER	DATA COLLECTED
141	*Austrostipa scabra* subsp. *scabra; Bothriochloa macra; Enteropogon acicularis*
142	*Eucalyptus camaldulensis* subsp. *camaldulensis; Muehlenbeckia florulenta*
143	*Eragrostis australasica*
144	Miscellaneous Ecosystem (exotic)
145	Miscellaneous Ecosystem (exotic)
146	*Eucalyptus melliodora*
147	*Eucalyptus microcarpa; Callitris glaucophylla*
148	*Eucalyptus melliodora; Callitris glaucophylla*
149	*Eucalyptus melliodora; Callitris glaucophylla; Eucalyptus microcarpa; Acacia decora; Bursaria spinosa*
150	*Eucalyptus microcarpa*
151	Miscellaneous Ecosystem (cropped)
152	*Eucalyptus microcarpa; Sida corrugata; Einadia nutans; Glycine tabacina; Cheilanthes sieberi; Dianella revoluta; Oxalis perennans; Wahlenbergia luteola*
153	Miscellaneous Ecosystem (cropped)
154	*Austrostipa aristiglumis*
155	*Eucalyptus microcarpa*
156	*Bothriochloa macra; Chamaesyce drummondii; Cheilanthes sieberi* subsp. *sieberi; Chloris truncata; Enteropogon acicularis; Panicum simile; Elymus scaber var. scaber;*
157	*Austrostipa aristiglumis*
158	*Eucalyptus microcarpa*
159	*Callitris glaucophylla; Brachychiton populneus subsp. populneus; Alectryon oleifolius subsp. canescens*
160	*Eucalyptus melliodora*
161	*Eucalyptus microcarpa; Callitris glaucophylla*
162	*Eucalyptus melliodora*
163	*Bothriochloa macra; Chloris truncata; Enteropogon acicularis; Panicum simile; Elymus scaber var. scaber*
164	Miscellaneous Ecosystem (exotic)
165	*Eucalyptus microcarpa;*
166	*Eucalyptus melliodora*
167	*Eucalyptus camaldulensis subsp. camaldulensis*
168	*Eucalyptus microcarpa*

RAPID DATA POINT NUMBER	DATA COLLECTED
169	Miscellaneous Ecosystem (exotic)
170	*Eucalyptus melliodora*
171	*Eucalyptus melliodora*
172	*Eucalyptus melliodora*
173	*Eucalyptus melliodora; Eucalyptus blakelyi*
174	*Eucalyptus blakelyi*
175	*Eucalyptus melliodora; Eucalyptus blakelyi*
176	*Eucalyptus blakelyi; Eucalyptus albens*
177	*Eucalyptus melliodora; Eucalyptus blakelyi*
178	*Eucalyptus melliodora; Eucalyptus blakelyi*
179	*Eucalyptus melliodora; Eucalyptus sideroxylon*
180	*Eucalyptus melliodora; Eucalyptus albens; Callitris glaucophylla*
181	*Eucalyptus melliodora; Eucalyptus blakelyi*
182	*Eucalyptus melliodora; Eucalyptus albens*

Appendix C

Threatened species



APPENDIX C-1
Threatened flora habitat suitability assessment

Table C-1.1 Threatened flora likelihood of occurrence assessment

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	EPBC ACT[2]	SAII	SOURCE[3]	SOP	LAC	MUR	LS	IS	HABITAT SUITABILITY	OUTCOME
Acacia acanthoclada	Harrow Wattle	E	–	No	BioNet; BAM-C	✓	–	–	–	–	**Habitat description** Grows in mallee communities on ridges and dunes and very occasionally on rocky outcrops; generally, grows in deep, loose, sandy soil. Potentially suitable habitat in the form of PCTs 170, 171 & 172. **Habitat constraints** — Deep silicious sands.	**Candidate Species** South Olary Plain
Acacia ausfeldii	Ausfeld's Wattle	V	-	No	PlantNet; BAM-C, PMST	-	-	-	-	✓	**Habitat description** Grows in eucalypt woodland in sandy soils; often in remnant roadside patches of woodland. Associated with *Eucalyptus albens, E. blakelyi* and *Callitris* spp. with a grassy understorey. Grows on footslopes and low rises on sandstone. Potentially suitable habitat in the form of PCT 267 & 277. **Habitat constraints** — Footslopes and low rises on sandstone. **Geographical limitations** Inland Slopes IBRA subregion – south of Cowra.	**Candidate Species** Inland Slopes

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	EPBC ACT[2]	SAII	SOURCE[3]	SOP	LAC	MUR	LS	IS	HABITAT SUITABILITY	OUTCOME
Acacia carneorum	Purple-wood Wattle	V	V	Yes	PlantNet; BAM-C; SEARs	✓	–	–	–	–	**Habitat description** Grows in grassland and woodland in red, sandy soil; also found in Mulga communities on sand dunes, level sandy sites and alluvial accumulations along watercourses. Detailed targeted surveys are required, and this species can be surveyed for all year. Potentially suitable habitat in the form of PCT 58 and PCT 199.	**Candidate Species** South Olary Plain **EPBC Act Assessment** Although associated habitat occurs within the proposal study area, there no records within 100 km of the proposal with all known occurrences located with mulga vegetation communities to the north of the proposal study area. Therefore, the species is considered unlikely to occur.
Ammobium craspedioides	Yass Daisy	V	V	No	BioNet; PMST; BAM-C; SEARs	–	–	–	–	✓	**Habitat description** Found in moist or dry forest communities, Box-Gum Woodland and secondary grassland derived from clearing of these communities. Associated with PCT 277 within the study area. **Geographical limitations** Inland Slopes IBRA subregion – south of Cowra.	**Candidate Species** Inland Slopes **EPBC Assessment** Listed under Appendix A of the SEARs – associated vegetation types occur within the proposal study area. Further assessment included as candidate species.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	EPBC ACT[2]	SAII	SOURCE[3]	SOP	LAC	MUR	LS	IS	HABITAT SUITABILITY	OUTCOME
Amphibromus fluitans	Floating Swamp Wallaby – grass	V	V	No	BioNet; PMST; BAM-C; SEARs	–	–	–	✓	–	**Habitat description** *Amphibromus fluitans* grows mostly in permanent swamps. The species needs wetlands which are at least moderately fertile and which have some bare ground, conditions which are produced by seasonally-fluctuating water levels. Habitats in south western NSW include swamp margins in mud, dam and tank beds in hard clay and in semi-dry mud of lagoons with Potamogeton and Chamaeraphis species. Potentially suitable habitat in the form of PCT 24 and man-made features such as table drains and farm dams. **Habitat constraints** — Semi-permanent/ephemeral wet area. — Periodically inundated sites (including table drains and farm dams), notably wetlands on riverine floodplain.	**Candidate Species** Lower Slopes **EPBC Assessment** Listed under Appendix A of the SEARs – associated vegetation types occur within the proposal study area. Further assessment included as candidate species.
Atriplex infrequens	A Saltbush	V	V	No	PlantNet; PMST; BAM-C SEARs	✓	–	–	–	–	**Habitat description** *Atriplex infrequens* is associated with broad drainage tracts, clay flats and possibly occasionally inundated habitats. Very little ecological information is available for this species so it's critical habitat components can only be speculated as relatively undisturbed and ungrazed drainage lines and flats. Detailed targeted seasonal surveys are required between Nov – Feb 4 to 6 weeks after above average rainfall. Potentially suitable habitat in the form of PCT 23, 163 & 170.	**Candidate Species** South Olary Plain **EPBC Assessment** Listed under Appendix A of the SEARs – associated vegetation types occur within the proposal study area. Further assessment included as candidate species.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	EPBC ACT[2]	SAII	SOURCE[3]	SOP	LAC	MUR	LS	IS	HABITAT SUITABILITY	OUTCOME
Austrostipa metatoris	A spear-grass	V	V	No	BioNet; BAM-C SEARs	✓	–	–	✓	–	**Habitat description** Grows in sandy areas of the Murray Valley; habitats include sandhills, sandridges, undulating plains and flat open mallee country, with red to red-brown clay-loam to sandy-loam soils. Detailed targeted surveys required in Oct – Nov. Potentially suitable habitat in the form of PCT 28 & 170.	**Candidate Species** South Olary Plain Lower Slopes **EPBC Assessment** Listed under Appendix A of the SEARs – associated vegetation types occur within the proposal study area. Further assessment included as candidate species.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	EPBC ACT[2]	SAII	SOURCE[3]	SOP	LAC	MUR	LS	IS	HABITAT SUITABILITY	OUTCOME
Austrostipa wakoolica	A spear-grass	E	E	No	BioNet; PMST BAM-C	–	–	✓	✓	✓	**Habitat description** Grows on floodplains of the Murray River tributaries, in open woodland on grey, silty clay or sandy loam soils; habitats include the edges of lignum swamps with box and mallee; creek banks in grey, silty clay; mallee and lignum sandy-loam flat; open Cypress Pine forest on low sandy range; and a low, rocky rise. Potentially suitable habitat in the form of PCT 17, 26, 28, 74, 76 & 80. **Habitat constraints** — Alluvial plains and plains. **Geographical limitations** Murrumbidgee IBRA subregion — south of the Murrumbidgee River. Lower Slopes IBRA subregion — south of Narranderra. Inland Slopes IBRA subregion — west of Cowra.	**Candidate Species** Murrumbidgee Lower Slopes Inland Slopes **EPBC Assessment** Listed under Appendix A of the SEARs – associated vegetation types occur within the proposal study area. Further assessment included as candidate species.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	EPBC ACT[2]	SAII	SOURCE[3]	SOP	LAC	MUR	LS	IS	HABITAT SUITABILITY	OUTCOME
Brachyscome muelleroides	Claypan Daisy	V	V	Yes	BioNet; PMST BAM-C	–	–	✓	–	–	**Habitat description** Grows in damp areas on the margins of claypans in moist grassland with *Pycnosorus globosus*, *Agrostis avenacea* and *Austrodanthonia duttoniana*. Also, recorded from the margins of lagoons in mud or water, and in association with *Calotis anthemoides*. The Claypan Daisy occurs in the Wagga Wagga, Narranderra, Tocumwal and Walbundrie areas. Potentially suitable habitat in the form of PCT 44, 45, 46 & 47. **Habitat constraint** — Floodplains on grey-brown or red-brown clays and claypans/semi-permanent/ephemeral wet areas. — Wetland-grassland communities on grey-brown or red-brown clay and claypans. **Geographic limitations** Murrumbidgee IBRA subregion — east of the Cobb Highway and south of Griffith.	**Candidate species** Murrumbidgee **EPBC Assessment** Listed under Appendix A of the SEARs – associated vegetation types occur within the proposal study area. Further assessment included as candidate species.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	EPBC ACT[2]	SAII	SOURCE[3]	SOP	LAC	MUR	LS	IS	HABITAT SUITABILITY	OUTCOME
Brachyscome papillosa	Mossgiel Daisy	V	V	No	PMST; BAM-C; SEARs	✓	✓	✓	✓	–	**Habitat description** Recorded primarily in clay soils on Bladder Saltbush (*Atriplex vesicaria*) and Leafless Bluebush (*Maireana aphylla*) plains, but also in grassland and in Inland Grey Box (*Eucalyptus microcarpa*) – Cypress Pine (*Callitris* spp.) woodland. Potentially suitable habitat in the form of PCT 13, 15, 24, 44, 45, 46, 76, 80, 157, 160, 163, 164 & 216.	**Candidate species** South Olary Plain Lachlan Murrumbidgee Lower Slopes **EPBC Assessment** Listed under Appendix A of the SEARs – associated vegetation types occur within the proposal study area. Further assessment included as candidate species.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	EPBC ACT[2]	SAII	SOURCE[3]	SOP	LAC	MUR	LS	IS	HABITAT SUITABILITY	OUTCOME
Caladenia arenaria	Sand-hill Spider Orchid	E	E	Yes	BioNet; PMST BAM-C; SEARs	–	–	✓	✓	✓	**Habitat description** Occurs in woodland with sandy soil, especially that dominated by White Cypress Pine (Callitris glaucophylla). Sand-hill Spider Orchid is restricted to the Riverina in NSW and only occurs in five locations between Urana and Narranderra that are severely fragmented (ESS, 2020). There are no records within proposed study area. Potentially suitable habitat in the form of PCT 28, 75, 76 & 80. **Geographic restrictions** Murrumbidgee IBRA subregion — east of Jerilderie. Lower Slopes IBRA subregion — west of Lockhart and north of Rand.	**Candidate species** Murrumbidgee Lower Slopes Inland Slopes **EPBC Assessment** Listed under Appendix A of the SEARs – associated vegetation types occur within the proposal study area. Further assessment included as candidate species.
Calotis moorei	A Burr-daisy	E	E	Yes	BAM-C; BioNet; SEARs	✓	–	✓	–	–	**Habitat description** The species grows in sandy soil and appears to be associated with Acacia woodlands and chenopod shrublands. At Mt Mulyah, *Calotis moorei* grows in an area cleared of original *Acacia cambagei* woodland and subsequently invaded by *Dodonaea viscosa* subsp. *angustissima* which repressed the growth of herbaceous species. Potentially suitable habitat in the form of PCT 23, 143, 157, 170 & 199.	**Candidate species** South Olary Plain Murrumbidgee **EPBC Assessment** This species will be subject to targeted surveys and further assessment.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	EPBC ACT[2]	SAII	SOURCE[3]	SOP	LAC	MUR	LS	IS	HABITAT SUITABILITY	OUTCOME
Cratystylis conocephala	Bluebush Daisy	E	–	No	PlantNet; BioNet; BAM-C	✓	–	–	–	–	**Habitat description** Bluebush Daisy grows in mallee with areas of Belah (*Casuarina pauper*) on calcareous red soil. NSW populations are invariably found in Belah-Rosewood woodland or on the edge of sandplain mallee in calcareous soils. Potentially suitable habitat in the form of PCT 58, 170, 171 & 172.	**Candidate Species** South Olary Plain
Convolvulus tedmoorei	Bindweed	E	–	Yes	PlantNet BioNet; BAM-C	–	–	✓	–	–	**Habitat description** This species has been recorded from northern inland areas of South Australia, south-western Queensland and western NSW. There are few known records from NSW: two areas on the Murrumbidgee and Darling River floodplains in central-western NSW (from Toganmain Station, Darlington Point, and from a locality 8 km north-west of Louth); and two other records from east of Broken Hill on the road to Wilcannia, and from the Menindee Road, Scarsdale. Found on the floodplains of the Darling and Murrumbidgee Rivers on self-mulching grey clay soils. Little known from NSW – information based on similar species. Potentially suitable habitat in the form of PCT 17, 24, 26, 44, 45, 46, 157, 160, 163 & 216	**Candidate Species** Murrumbidgee

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	EPBC ACT[2]	SAII	SOURCE[3]	SOP	LAC	MUR	LS	IS	HABITAT SUITABILITY	OUTCOME
Cullen parvum	Small Scurf-pea	E	–	No	BioNet; PlantNet; BAM-C	–	–	✓	✓	✓	**Habitat description** In known populations in Victoria and NSW, plants are found in grassland, River Red Gum (Eucalyptus camaldulensis) Woodland or Box-Gum Woodland, sometimes on grazed land and usually on table drains or adjacent to drainage lines or watercourses, in areas with rainfall of between 450 and 700 mm. Potentially suitable habitat in the form of PCT 5, 7, 44, 74 & 277. **Geographic limit** Murrumbidgee IBRA subregion — Hay Plain and to the east.	**Candidate species** Murrumbidgee Lower Slopes Inland Slopes
Diuris sp. (Oaklands, D.L. Jones 5380)	Oaklands Diuris	E	–	Yes	BioNet; PlantNet; BAM-C	–	–	✓	✓	–	**Habitat description** Grows in White Cypress Pine (Callitris glaucophylla) Woodland, either among dense grasses in flat areas with associated eucalypts, or amongst sparse grasses and forbs on low sandhills. Currently known only from the Oaklands-Urana region of southern NSW. Potentially suitable habitat in the form of PCT 75 & 80.	**Candidate species** Murrumbidgee Lower Slopes

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	EPBC ACT[2]	SAII	SOURCE[3]	SOP	LAC	MUR	LS	IS	HABITAT SUITABILITY	OUTCOME
Diuris tricolor	Pine Donkey Orchid	V	–	No	BioNet; PlantNet; BAM-C	–	–	✓	✓	✓	**Habitat description** The Pine Donkey Orchid grows in sclerophyll forest among grass, often with native Cypress Pine (Callitris spp.). It is found in sandy soils, either on flats or small rises. Also, recorded from a red earth soil in a Bimble Box community in western NSW. Potentially suitable habitat in the form of PCT 75, 76, 80 & 267.	**Candidate species** Murrumbidgee Lower Slopes Inland Slopes
Dodonaea sinuolata subsp. *acrodentata*	A Hopbush	E	–	Yes	BioNet; PlantNet; BAM-C	–	✓	–	–	–	**Habitat description** Grows on stony ridges and sandy 'jump-ups' in arid and semi-arid areas. Substrates are commonly stony red sandy-loams with limonite and quartzite pebbles. In NSW, known from only two locations south-west plains: one near Hillston, and another north of Ivanhoe. Potentially suitable habitat in the form of PCT 58 & 143.	**Candidate species** Lachlan
Dodonaea stenozyga	Desert Hopbush	CE	–	Yes	BioNet; PlantNet; BAM-C	✓	–	–	–	–	**Habitat description** A shrub of semi-arid mallee scrub or open eucalypt woodland, usually on sandy soil. Presumed extinct in NSW (with the only record from the Darling River prior to 1859) until recorded in 1998 from Nanya Station, north west of Wentworth in far south western NSW. Potentially suitable habitat in the form of PCT 170, 171 & 172.	**Candidate species** South Olary Plain

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	EPBC ACT[2]	SAII	SOURCE[3]	SOP	LAC	MUR	LS	IS	HABITAT SUITABILITY	OUTCOME
Eleocharis obicis	Spike-Rush	V	V	No	BioNet, PMST; BAM-C SEARs	–	✓	–	✓	–	**Habitat description** Grows in ephemerally wet situations such as roadside mitre drains and depressions, usually in low-lying grasslands. Found near Condobolin and Hay, as well as being known from an old collection from the Barrier Range near Broken Hill. Potentially suitable habitat in the form of PCT 11, 12, 13, 17, 24, 47, 53, 74, 76, 160, 164 & 216. **Habitat constraint** — Semi-permanent/ephemeral wet areas. — Periodically waterlogged sites (including table drains and farm dams).	**Candidate species** Lachlan Lower Slopes **EPBC Assessment** Listed under Appendix A of the SEARs – associated vegetation types occur within the proposal study area. Further assessment included as candidate species.
Erodiophyllum elderi	Koonamore Daisy	E	E	Yes	BioNet, PMST; BAM-C	✓	–	–	–	–	**Habitat description** Grows in flat open areas on sandy calcareous soils. In central Australia, it grows mainly on alluvial floodplains. Commonly recorded from Mulga shrubland with chenopods in SA and WA. Soils include red sand, brown clay, texture-contrast soil on a scalded floodplain, and red loam to sandy loam with quartz. Potentially suitable habitat in the form of PCT 199.	**Candidate species** South Olary Plain

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	EPBC ACT[2]	SAII	SOURCE[3]	SOP	LAC	MUR	LS	IS	HABITAT SUITABILITY	OUTCOME
Eucalyptus leucoxylon subsp. *pruinosa*	Yellow Gum	V	–	–	BioNet; BAM-C	–	–	✓	–	–	**Habitat description** *Eucalyptus leucoxylon* subsp. *pruinosa* is a tree species which, in New South Wales, occurs at the bases of sandy rises and on loamy clay flats on the floodplains of the Murray River and its tributaries in the Riverina Bioregion. Potentially associated habitat in the form of PCT 11, 13 & 15.	**Candidate Species** Murrumbidgee
Euphrasia arguta	–	CE	CE	Yes	BioNet; BAM-C; PlantNet	–	–	–	–	✓	**Habitat description** Grows in open forest country, on grassy country and in meadows near rivers from Bathurst to Walcha area. *Euphrasia arguta* was rediscovered in the Nundle area of the NSW north western slopes and tablelands in 2008. Prior to this, it had not been collected for 100 years. Historically, *Euphrasia arguta* has only been recorded from relatively few places within an area extending from Sydney to Bathurst and north to Walcha. The Royal Botanic Gardens Specimen Register records an additional location reported and vouchered in 2002 from near the Hastings River; and *Euphrasia arguta* was also recorded from the Barrington Tops in 2012. Potentially suitable habitat in the form of PCT 267 & 277.	**Candidate species** Inland slopes – although is considered unlikely to occur as the nearest know location occurs more than 100 kms away.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	EPBC ACT[2]	SAII	SOURCE[3]	SOP	LAC	MUR	LS	IS	HABITAT SUITABILITY	OUTCOME
Indigofera efoliata	–	E	E	Yes	BAM-C; PlantNet; BioNet	–	–	–	–	✓	**Habitat description** Recorded from stony ground. Associated species include *Allocasuarina luehmannii*, *Exocarpos cupressiformis*, *Alectryon oleifolius*, *Geijera parviflora*, *Eucalyptus melliodora*, *Acacia deanei*, *Acacia buxifolia*, *Acacia hakeoides*, *Acacia spectabilis*, *Acacia lineata*, *Acacia oswaldii*, *Eremophila mitchellii*, *Myoporum platycarpum*, *Hakea leucoptera, Dodonaea viscosa*, *Apophyllum anomalum*, *Cassinia aculeata* and *Lissanthe strigosa*. This species is very rare and has only been recorded from a few collections in the Dubbo area. Potentially suitable habitat in the form of PCT 76 & 267.	**Candidate Species** Lower Slopes **EPBC Assessment** Associated vegetation types occur within the proposal study area. However unlikely, further assessment included as candidate species.
Kippistia suaedifolia	Fleshy Minuria	E	–	–	BAM-C; PlantNet; BioNet	✓	–	–	–	–	**Habitat description** Grows around saline lakes and depressions, often in association with gypsum. Rare in NSW, recorded only from a restricted area on a loamy and highly gypseous soil. Potentially suitable habitat in the form of PCT 143. **Habitat constraints** Saline lakes, depressions and claypans with Gypseous or calcareous soils, gypseous dunes, or within 50 m. Specific habitat constraint was not recorded in the proposal study area.	**Candidate Species** South Olary Plain – although is considered unlikely to occur due to the lack of habitat constraints within the proposal study area.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	EPBC ACT[2]	SAII	SOURCE[3]	SOP	LAC	MUR	LS	IS	HABITAT SUITABILITY	OUTCOME
Lasiopetalum behrii	Pink Velvet Bush	CE	–	Yes	PlantNet; BAM-C; BioNet	✓	–	–	–	–	**Habitat Description** Grows in mallee and red dune and swale country. Pink Velvet Bush is known in NSW from a single record made in 1997 on leasehold land to the south east of Pooncarie in the far south western plains. The species is common in mallee areas of north western Victoria, with an outlier in the whipstick mallee near Bendigo. It is also widespread in south eastern South Australia. Potentially suitable habitat in the form of PCT 170, 171 & 172. **Habitat Constraint** Shallow, sandy soils.	**Candidate Species** South Olary Plain
Lepidium aschersonii	Spiny Peppercress	V	V	No	PlantNet; BioNet; BAM-C SEARs	–	–	–	✓	–	**Habitat description** Found on ridges of gilgai clays dominated by Brigalow (*Acacia harpophylla*), Belah (*Casuarina cristata*), Buloke (*Allocasuarina luehmanii*) and Grey Box (*Eucalyptus microcarpa*). In the south has been recorded growing in Bull Mallee (*Eucalyptus behriana*). Often the understorey is dominated by introduced plants. The species grows as a component of the ground flora, in grey loamy clays. Vegetation structure varies from open to dense, with sparse grassy understorey and occasional heavy litter. Not widespread, occurring in the marginal central-western slopes and north-western plains regions of NSW (and potentially the south western plains). Potentially suitable habitat in the form of PCT 26, 53, 74 & 76.	**Candidate species** Lower Slopes **EPBC Assessment** Listed under Appendix A of the SEARs – associated vegetation types occur within the proposal study area. Further assessment included as candidate species.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	EPBC ACT[2]	SAII	SOURCE[3]	SOP	LAC	MUR	LS	IS	HABITAT SUITABILITY	OUTCOME
Lepidium monoplocoides	Winged Peppercress	E	E	–	BioNet, PMST; PlantNet; BAM-C SEARs	✓	✓	✓	✓	–	**Habitat description** Occurs on seasonally moist to waterlogged sites, on heavy fertile soils, with a mean annual rainfall of around 300–500 mm. Predominant vegetation is usually an open woodland dominated by *Allocasuarina luehmannii* (Bulloak) and/or eucalypts, particularly *Eucalyptus largiflorens* (Black Box) or *Eucalyptus populnea* (Poplar Box). Potentially suitable habitat in the form of 13, 15, 24, 26, 45, 46, 47, 74, 80, 160, 163, 170 & 216.	**Candidate Species** South Olary Plain Lachlan Murrumbidgee Lower Slopes **EPBC Assessment** Listed under Appendix A of the SEARs – associated vegetation types occur within the proposal study area. Further assessment included as candidate species.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	EPBC ACT[2]	SAII	SOURCE[3]	SOP	LAC	MUR	LS	IS	HABITAT SUITABILITY	OUTCOME
Leptorhynchos orientalis	Lanky Buttons	E	–	No	BioNet; PlantNet; BAM-C	–	✓	✓	–	–	**Habitat description** Grows in woodland or grassland, sometimes on the margins of swamps. Communities include a Bimble Box plain red-brown soil, dense *Acacia pendula* woodland with herbaceous understorey on red clay to clay-loam, open grassland areas on red soils, and red clay plains at the edge of a Canegrass swamp. Associated species include *Eucalyptus populnea* subsp. *bimbil*, *Acacia pendula*, *Eragrostis australasica*, *Lepidium monoplocoides*, *Enchylaena tomentosa*, *Minuria leptophylla*, *Rhodanthe floribunda*, *R. pygmaea* and *Ptilotus spathulatus*. This species is listed as data deficient. Potentially suitable habitat in the form of PCT 24, 26, 44, 45, 46 & 47.	**Candidate species** Lachlan Murrumbidgee
Leptorhynchos waitzia	Button Immortelle	E	–	Yes	BAM-C PlantNet; BioNet	✓	–	–	–	–	**Habitat description** Grows on sandy or loamy soils, often in intermittently flooded areas and salt flats. Found in Kinchega NP on an open Bluebush plain with scattered chenopods. Only known in NSW from early records in the Darling River region and a more recent collection from Kinchega National Park. Potentially suitable habitat associated in the form of PCT 170.	**Candidate Species** South Olary Plain

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	EPBC ACT[2]	SAII	SOURCE[3]	SOP	LAC	MUR	LS	IS	HABITAT SUITABILITY	OUTCOME
Maireana cheelii	Chariot Wheels	V	V	No	BAM-C; PlantNet; BioNet; SEARs	–	–	✓	–	–	**Habitat description** Usually found on heavier, grey clay soils with *Atriplex vesicaria* (Bladder Saltbush). Recorded on the Hay Plain in *Atriplex vesicaria*, *Maireana aphylla* and *Acacia homalophylla* shrublands. Soils include heavy brown to red-brown clay-loams, hard cracking red clay, other heavy texture-contrast soils. Tends to grow in shallow depressions, often on eroded or scalded surfaces, and does not extend to the higher soils in the habitat. It has been found on the edges of bare, windswept claypans, in shallow depressions of eroded surfaces where rainwater collects and on a "shelf" in the crabhole complex of heavy grey soils. Associated species include *Atriplex vesicaria*, *Maireana pentagona*, *M. excavata*, *M. ciliata*, *Cressa cretica*, *Avena fatua* and *Acacia homalophylla*. Potentially suitably habitat in the form of PCT 26, 44, 46, 157, 163 & 164. **Habitat constraints** — Heavy grey clay soils and claypans or shallow depressions. **Geographical limitations** Murrumbidgee IBRA subregion — west of Darlington Point, west of Jerilderie.	**Candidate species** Murrumbidgee **EPBC Assessment** Listed under Appendix A of the SEARs – associated vegetation types occur within the proposal study area. Further assessment included as candidate species.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	EPBC ACT[2]	SAII	SOURCE[3]	SOP	LAC	MUR	LS	IS	HABITAT SUITABILITY	OUTCOME
Pilularia novae-hollandiae	Austral Pillwort	E	–	Yes	BAM-C; PlantNet; BioNet	–	–	✓	✓	✓	**Habitat description** Grows in shallow swamps and waterways, often among grasses and sedges. It is most often recorded in drying mud as this is when it is most conspicuous. Widespread but not common in seasonally dry depressions and margins of marshes; may grow submerged. Most of the records in the Albury-Urana area were from table drains on the sides of roads. Potentially suitable habitat in the form of PCT 13, 15, 26, 44, 45, 46, 53, 74 & 249 **Geographic limitations** Murrumbidgee IBRA subregion — east of Deniliquin.	**Candidate species** Murrumbidgee Lower Slopes Inland Slopes
Pimelea serpyllifolia subsp. *serpyllifolia*	Thyme Rice-Flower	E	–	Yes	BioNet; PlantNet; BAM-C	✓	–	–	–	–	**Habitat Description** Grows in scrub and woodland on calcareous soils. Often found in sandy red soils supporting mallee scrub. Associated species include *Eucalyptus oleosa*, *E. leptophylla*, *E. dumosa*, *Melaleuca lanceolata*, *Leptospermum laevigatum*, *Leucopogon parviflorus*, *Olearia axillaris*, *Myoporum insulare, Rhagodia candolleana*, Acacia and Hakea spp., Spinifex and other tall grasses. Potentially suitable habitat in the form of PCT 170, 171 & 172. **Geographic limitations** — Within 50 km of the Murray River.	**Candidate Species** South Olary Plain

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	EPBC ACT[2]	SAII	SOURCE[3]	SOP	LAC	MUR	LS	IS	HABITAT SUITABILITY	OUTCOME
Prasophyllum petilum (Syn. *Prasophyllum* sp. Wybong)	Tarengo Leek Orchid	E	E	No	BioNet; PlantNet; BAM-C; SEARs	–	–	–	–	✓	**Habitat description** Grows in patchy woodland in fertile soils. More specifically, grows in open sites within Natural Temperate Grassland at the Boorowa and Delegate sites. Also grows in grassy woodland in association with River *Tussock Poa labillardieri*, Black Gum *Eucalyptus aggregata* and tea-trees *Leptospermum* spp. near Queanbeyan and within the grassy groundlayer dominated by Kangaroo Grass under Box-Gum Woodland at Ilford (and Hall, ACT). Potentially suitable habitat in the form of PCT 267 & 277. **Geographic limitations** Inland Slopes IBRA subregion — east of Binalong, south and east of Boorowa.	**Candidate species** Inland Slopes – however considered unlikely due to distance from known locations. **EPBC Assessment** Listed under Appendix A of the SEARs – associated vegetation types occur within the proposal study area. Although considered unlikely further assessment included as candidate species.
Prasophyllum sp. Wybong)		–	E	Yes								
Pterostylis cobarensis	Cobar Rustyhood	V	–	–	BAM-C; BioNet	✓	–	–	–	–	**Habitat Description** Habitats are eucalypt woodlands, open mallee or Callitris shrublands on low stony ridges and slopes in skeletal sandy-loam soils. Potentially suitable habitat in the form of PCT 170 & 171.	**Candidate species** South Olary Plain

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	EPBC ACT[2]	SAII	SOURCE[3]	SOP	LAC	MUR	LS	IS	HABITAT SUITABILITY	OUTCOME
Santalum murrayanum	Bitter Quandong	E	–	–	BioNet; PlantNet; BAM-C	✓	–	–	–	–	**Habitat description** Usually grows in mallee communities. Generally, grows in gravely and sandy loam soils on dunes, in open woodland and tall shrubland. Recorded in sand in spinifex-shrub steppe. NSW populations found in mallee habitats on soft linear dune-crests, with deep and well-drained calcareous earths or red and brown sands, loamy sands or clay-loams. Potentially suitable habitat in the form of PCT 170, 171 & 172. **Habitat constraints** — Sandy loam or loamy sand.	**Candidate Species** South Olary Plain

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	EPBC ACT[2]	SAII	SOURCE[3]	SOP	LAC	MUR	LS	IS	HABITAT SUITABILITY	OUTCOME
Sclerolaena napiformis	Turnip Copperburr	E	–	No	BioNet; PlantNet; BAM-C; SEARs	–	–	✓	–	–	**Habitat description** Confined to remnant grassland habitats on clay-loam soils. Grows on level plains in tussock grassland of *Austrostipa nodosa* and *Chloris truncata*, in grey cracking clay to red-brown loamy clay. Sites are roadside travelling stock routes and reserves subject to sheep grazing. Associated species include *Austrodanthonia duttoniana*, *Enteropogon acicularis*, *Austrostipa nodosa*, *Chloris truncata*, *Lolium rigidum*, *Swainsona murrayana*, *S. plagiotropis*, *S. procumbens*, *Rhodanthe corymbiflora*, *Calotis scabiosifolia*, *Microseris lanceolata*, *Acacia pendula* and various chenopods. Potentially suitable habitat in the form of PCT 26, 44 & 46. **Geographical limitation** Geographical limitations: — Hay Plain.	**Candidate species** Murrumbidgee **EPBC Assessment** Listed under Appendix A of the SEARs – associated vegetation types occur within the proposal study area. Further assessment included as candidate species.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	EPBC ACT[2]	SAII	SOURCE[3]	SOP	LAC	MUR	LS	IS	HABITAT SUITABILITY	OUTCOME
Solanum karsense	Menindee Nightshade	V	V	–	BioNet, PMST; PlantNet; BAM-C SEARs	✓	✓	✓	–	–	**Habitat description** Grows in occasionally flooded depressions with heavy soil, including level river floodplains of grey clay with Black Box and Old Man Saltbush, and open treeless plains with solonized brown soils. Habitats are generally lake beds or floodplains of heavy grey clays with a highly self-mulching surface. Also found on sandy floodplains and ridges and in calcareous soils, red sands, red-brown earths and loamy soils. Potentially suitable habitat in the form of PCT 12, 13, 15, 17, 24 & 160. **Habitat constraints** — Semi-permanent/ephemeral wet areas. **Geographic limitations** — West of Maude.	**Candidate Species** South Olary Plain Lachlan Murrumbidgee **EPBC Assessment** Listed under Appendix A of the SEARs – associated vegetation types occur within the proposal study area. Further assessment included as candidate species.
Swainsona colutoides	Bladder Vetch	E	–	No	PlantNet; BAM-C; BioNet	✓	–	–	–	–	**Habitat description** Grows on sandy flats or skeletal hillside soils in mallee woodland. Plants are usually found in large numbers in areas of previous controlled burns and wildfires. Occurs in the south western corner of NSW, with several populations all located within Tarawi Nature Reserve. Potentially suitable habitat in the form of 170, 171 & 172.	**Candidate Species** South Olary Plain

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	EPBC ACT[2]	SAII	SOURCE[3]	SOP	LAC	MUR	LS	IS	HABITAT SUITABILITY	OUTCOME
Swainsona murrayana	Slender Darling Pea	V	V	No	PMST; BioNet; BAM-C; SEARs	–	✓	✓	✓	–	**Habitat description** The species has been collected from clay-based soils, ranging from grey, red and brown cracking clays to red-brown earths and loams. Grows in a variety of vegetation types including bladder saltbush, black box and grassland communities on level plains, floodplains and depressions and is often found with Maireana species. Plants have been found in remnant native grasslands or grassy woodlands that have been intermittently grazed or cultivated. Potentially suitable habitat in the form of PCT 15, 23, 26, 28, 44, 45, 46, 76, 80, 157, 163, 164 & 216.	**Candidate Species** Lachlan Murrumbidgee Lower Slopes **EPBC Assessment** Listed under Appendix A of the SEARs – associated vegetation types occur within the proposal study area. Further assessment included as candidate species.
Swainsona plagiotropis	Red Darling Pea	V	–	No	BioNet; BAM-C; SEARs	–	–	✓	–	–	**Habitat description** Grows on flat grassland and in heavy red soil, often on roadsides and especially in table drains. Soils are derived from quaternary sediments and are usually red-brown clay-loams. The species is absent from black low-lying soils. Recorded from roadsides, rail reserves, stock routes and areas of lightly grazed unimproved pasture comprising *Austrodanthonia, Enteropogon acicularis* and *Austrostipa* grassland communities. Potentially suitable habitat in the form of PCT 26, 44, 45 & 46. **Geographic limitations** — Hay Plain.	**Candidate species** Murrumbidgee **EPBC Assessment** Listed under Appendix A of the SEARs – associated vegetation types occur within the proposal study area. Further assessment included as candidate species.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	EPBC ACT[2]	SAII	SOURCE[3]	SOP	LAC	MUR	LS	IS	HABITAT SUITABILITY	OUTCOME
Swainsona pyrophila	Yellow Swainson-pea	V	V	–	BioNet; PMST; BAM-C; SEARs	✓	–	–	–	–	**Habitat description** Grows in mallee scrub on sandy or loamy soil, usually found only after fire. Sites include cleared and burnt mallee scrub on red loam to sand, previously burnt *Eucalyptus dumosa* mallee, disturbed woodland in sheltered aspects, a bulldozed firebreak adjacent to wheat paddocks, roadsides, claypans and at the edge of fire ash. Potentially suitable habitat in the form of PCT 170, 171 & 172.	**Candidate Species** South Olary Plain **EPBC Assessment** Listed under Appendix A of the SEARs – associated vegetation types occur within the proposal study area. Further assessment included as candidate species.
Swainsona recta	Small Purple-pea	E	–	No		–	–	–	✓	✓	**Habitat description** Before European settlement Small Purple-pea occurred in the grassy understorey of woodlands and open-forests dominated by Blakely's Red Gum *Eucalyptus blakelyi*, Yellow Box *E. melliodora*, Candlebark Gum *E. rubida* and Long-leaf Box *E. goniocalyx*. Grows in association with understorey dominants that include Kangaroo Grass *Themeda australis*, poa tussocks *Poa* spp. and spear-grasses *Austrostipa* spp. Potentially suitable habitat in the form of PCTs 76, 267 & 277.	**Candidate species** Lower Slopes Inland Slopes **EPBC Assessment** Listed under Appendix A of the SEARs – associated vegetation types occur within the proposal study area. Further assessment included as candidate species.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	EPBC ACT[2]	SAII	SOURCE[3]	SOP	LAC	MUR	LS	IS	HABITAT SUITABILITY	OUTCOME
Swainsona sericea	Silky Swainson-pea	V	–	–	PlantNet; BioNet; BAM-C	✓	–	✓	✓	✓	**Habitat Description** Grows in grassland and eucalypt woodland, sometimes with *Callitris* spp. Silky Swainson-pea has been recorded from the Northern Tablelands to the Southern Tablelands and further inland on the slopes and plains. There is one isolated record from the far north-west of NSW. Its stronghold is on the Monaro. Also found in South Australia, Victoria and Queensland. Found in a wide variety of vegetation types in the Southern Tablelands and South West Slopes and Northern Tableland.	**Candidate species** South Olary Plain Murrumbidgee Lower Slopes Inland Slopes

APPENDIX C-2
Threatened fauna habitat suitability assessment

Table C-2.1 Fauna likelihood of occurrence assessment

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Invertebrates													
Synemon plana	Golden Sun Moth	E	CE	BAM-C	Yes	–	–	–	–	✓	**Habitat requirements** The Golden Sun Moth's NSW populations are found in the area between Queanbeyan, Gunning, Young and Tumut. The species' historical distribution extended from Bathurst (central NSW) through the NSW Southern Tablelands, through to central and western Victoria, to Bordertown in eastern South Australia. Occurs in Natural Temperate Grasslands and grassy Box-Gum Woodlands in which groundlayer is dominated by wallaby grasses (*Austrodanthonia* spp.). Grasslands dominated by wallaby grasses are typically low and open - the bare ground between the tussocks is thought to be an important microhabitat feature for the Golden Sun Moth, as it is typically these areas on which the females are observed displaying to attract males. Habitat may contain several wallaby grass species, which are typically associated with other grasses particularly spear-grasses Austrostipa spp. or Kangaroo Grass *Themeda australis*. The flight period is relatively short, typically lasting from six to eight weeks. Males fly only in bright sunshine during the warmest part of the day (1000–1400 hrs). Adults emerge continuously throughout the flying season. Potential habitat occurs within PCT 277.	**Moderate** – Potential habitat occurs within study area.	**Candidate Species** Inland Slopes **Considered further in MNES section**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Amphibians													
Crinia sloanei	Sloane's Froglet	V	E	BAM-C Bionet (8 records), PMST, ALA (3 records)	No	–	–	✓	✓	✓	**Habitat requirements** It is typically associated with periodically inundated areas in grassland, woodland and disturbed habitats. Sloane's Froglet has been recorded from widely scattered sites in the floodplains of the Murray-Darling Basin, with most records in the Darling Riverine Plains, NSW South Western Slopes and Riverina bioregions in New South Wales. Predicted habitat occurs within PCT's Potential habitat occurs within PCT's 5, 74, 76, 80, 249.	**Moderate** - Associated habitat in the form of water bodies recorded, though generally in poor condition.	**Candidate Species** Murrumbidgee Lower Slopes Inland Slopes **Considered further in MNES section**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Litoria booroolongensis	Booroolong Frog	E	E	BAM-C	No	–	–	–	–	✓	**Habitat requirements** The Booroolong Frog is restricted to NSW and north-eastern Victoria, predominantly along the western-flowing streams of the Great Dividing Range. It has disappeared from much of the Northern and Southern Tablelands due to Chytrid, however several populations have recently been recorded in the Namoi catchment in the Central Tablelands. The species is rare throughout most of the remainder of its range. Lives along permanent streams with some fringing vegetation cover such as ferns, sedges or grasses. Adults occur on or near cobble banks and other rock structures within stream margins. Shelter under rocks or amongst vegetation near the ground on the stream edge. Metamorphs can be confused with *Litoria latopalmata* and *Litoria wilcoxii/ Litoria lesueuri* if present. Potential habitat occurs within PCT 277.	**Moderate** – However outside of species known range (no records from locality).	**Candidate Species** Inland Slopes **Considered further in MNES section**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Litoria raniformis	Southern Bell Frog	E	V	BAM-C, Bionet (1548 records), PMST, ALA (49 records)	No	–	✓	✓	✓	–	**Habitat requirements** In NSW, the species was once distributed along the Murray and Murrumbidgee Rivers and their tributaries, the southern slopes of the Monaro district and the central southern tablelands as far north as Tarana, near Bathurst. Currently, the species is known to exist only in isolated populations in the Coleambally Irrigation Area, the Murrumbidgee floodplain and around Lake Victoria. Usually found in or around permanent or ephemeral Black Box/Lignum/Nitre Goosefoot swamps, Lignum/Typha swamps and River Red Gum swamps or billabongs along floodplains and river valleys. They are also found in irrigated rice crops, particularly where there is no available natural habitat. Predicted habitat occurs within PCT's 7, 8, 11, 13, 15, 17, 24, 47, 53, 249. Alternatively potential habitat also includes lakes, swamps and rivers.	**Moderate** - Scattered records within locality. Associated habitat in the form of: Lakes, swamps and rivers	**Candidate Species** Lachlan Murrumbidgee Lower Slopes **Considered further in MNES section**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Neobatrachus pictus	Painted Burrowing Frog	E	–	BAM-C, Bionet (2 records)	No	✓	–	–	–	–	**Habitat requirements** Found at only two locations in NSW. These are Scotia Sanctuary, adjacent to the South Australian border and in an area to the west of Pooncarie. Animals can occur in open grassland, mallee, woodland, farmland and cleared areas and are usually found in or around flooded areas after periods of heavy rainfall, including grassy marshes, lagoons, flooded claypans, temporary roadside pools, ditches, mallee swales and farm dams. Animals burrow beneath the soil surface during periods of water shortage and emerge only after heavy rains to breed. They most likely use leaf litter, fallen logs and ground cover vegetation as shelter whilst above ground. Breeding can occur in summer, autumn or winter and males call whilst floating in still water. Potential habitat occurs within PCT's 15, 58, 163, 170, 171, 172, and floodplains, grasslands and swamps.	**Moderate** – Although predicted habitat types occur all records locally occur on floodplains associated with the Murray River floodplain	**Candidate Species** South Olary Plain

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Reptiles													
Aprasia inaurita	Mallee Worm-Lizard	E	–	BAM-C, Bionet (70 records)	No	✓	–	–	–	–	**Habitat Requirements** Inhabits semi-arid, mallee woodlands on red sands. Often shelters in sand, beneath mallee stumps, in leaf litter or in the nests of ants and other insects; thought to be dependent on Spinifex (*Triodia scariosa*). Predicted habitat occurs within PCT's 170, 171 & 172.	**Recorded** – an individual of this species was observed in mallee habitats at the western end of the study area.	**Predicted ecosystem credit species**
Aprasia parapulchella	Pink-tailed Worm Lizard	V	V	BAM-C, Bionet (1 record), PMST	No	–	–	–	–	✓	**Habitat Requirements** Rocky areas or within 50 m of rocky areas. Occurs in open grassland habitats that have a substantial cover of small rocks. Lizards also show a preference for sunny aspects, avoiding south facing slopes. Some specimens have been collected from grassland sites that appear not to support any native grasses and several animals have been found on the edge of *Callitris endlicheri* woodland and *Eucalyptus macrorhyncha* woodland. A burrowing species, it is usually found under rocks on well- drained soil and in ant nests, occasionally with several individuals found under the same rock. Predicted habitat occurs within PCT's 267, 277 & 319. Habitat also includes grassy woodland on rocky substrates.	**Moderate -** The proposal study area occurs in habitats where this species known distribution is mapped. Potential rocky habitat recorded within study area.	**Candidate Species** Inland Slopes **Considered further in MNES section**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Ctenotus brooksi	Wedgesnout Ctenotus	V	–	BAM-C, Bionet	No	✓	–	–	–	–	**Habitat Requirements** This species occurs in arid and semi-arid habitats. Prefers areas of loose sand interspersed with vegetation on and near the crests of dunes. Potentially restricted to habitats containing spinifex or other clumping grassland communities. Potential habitat in the form of PCT's 143, 171, 172 & 199.	**Low** – species range occurs well west of NSW in western South Australia and Western Australia.	**Predicted ecosystem credit species**.
Cyclodomorphus melanops elongatus	Mallee Slender Blue-tongue Lizard	E	–	BAM-C, Bionet (3 records)	No	✓	–	–	–	–	**Habitat Requirements** In NSW, animals inhabit mallee/spinifex communities on a sandy or mixed sand/gravel substrate (plains, ridges or hillslopes). Triodia habitat. It is assumed that the species seeks refuge in vegetation clumps such as spinifex and in fallen timber and leaf litter. Predicted habitat occurs within PCT's 171 & 172.	**Moderate** - The proposal study area occurs in habitats where this species known distribution is mapped, though no individuals recorded despite targeted ecological surveys	**Predicted ecosystem credit species**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Delma australis	Marble-faced Delma	E	–	BAM-C, Bionet (3 records)	No	✓	–	–	–	–	**Habitat Requirements** Triodia habitat. Typically found in temperate mallee woodlands or spinifex grasslands but also in chenopod shrublands, heathlands and buloke associated with mallee habitats or from eucalypt lined watercourses. The species occupies areas with a sandy substrate but may also utilise cracking red loam soils. Found in deep leaf litter, under rocks, logs, fallen timber or in grass clumps such as spinifex. They are considered to be terrestrial although they may climb into hummock grass and even sleep in the branches of small shrubs. Predicted habitat occurs within PCT's 170, 171 & 172.	**Moderate** - The proposal study area occurs in habitats where this species known distribution is mapped. No individuals recorded despite targeted ecological surveys	**Predicted ecosystem credit species**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Delma impar	Striped Legless Lizard	V	V	BAM-C, PMST	No	–	–	–	–	✓	**Habitat requirements** Occurs in the Southern Tablelands, the South West Slopes, the Upper Hunter and possibly on the Riverina. Populations are known in the Goulburn, Yass, Queanbeyan, Cooma, Muswellbrook and Tumut areas. Also occurs in the ACT, Victoria and south-eastern South Australia. Found mainly in Natural Temperate Grassland but has also been captured in grasslands that have a high exotic component. Also found in secondary grassland near Natural Temperate Grassland and occasionally in open Box-Gum Woodland. Habitat is where grassland is dominated by perennial, tussock-forming grasses such as Kangaroo Grass *Themeda triandra*, spear-grasses *Austrostipa spp*. and poa tussocks *Poa spp*., and occasionally wallaby grasses *Austrodanthonia spp*. Sometimes present in modified grasslands with a significant content of exotic grasses. Also sometimes found in grasslands with significant amounts of surface rocks, which are used for shelter PCT 277 and grassy woodland on rocky substrates.	**Moderate** - The proposal study area occurs in habitats where this species known distribution is mapped.	**Candidate Species** Inland Slopes **Considered further in MNES section**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Echiopsis curta	Bardick	E	–	BAM-C, Bionet (1 record)	No	✓	–	–	–	–	**Habitat requirements** Known only in the Balranald and Mildura areas of NSW. Inhabits hummock grasslands and mallee areas on sandy or loamy soils and is usually associated with run-off slopes and drainage from local rises. The species is particularly common in areas of *Triodia* (spinifex). A terrestrial and partly nocturnal species which shelters under fallen timber and rocks, in leaf litter and dense, matted vegetation and in spinifex hummocks and sometimes basks near clumps of spinifex. Predicted habitat occurs within PCT's 171 & 172.	**Moderate** - The proposal study area occurs in habitats where this species known distribution is mapped.	**Predicted ecosystem credit species**
Lerista xanthura	Yellow-tailed Plain Slider	V	–	BAM-C Bionet (12 records)	No	✓	–	–	–	–	**Habitat requirements** Occurs in a variety of semi-arid and arid habitats. Occurs on grassed alluvial sands and sand dunes, including dry open woodlands and spinifex- dominated red sand plains. The species is fossorial and usually found in loose soil or sand beneath stones, logs and other surface debris. Predicted habitat occurs within PCT's 58, 143, 170, 171 & 199.	**Moderate** – Although known distribution does not occur within the project study area	**Predicted ecosystem credit species**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Lucasium stenodactylum	Crowned Gecko	V	–	BAM-C	No	✓	–	–	–	–	**Habitat requirements** Habitat preferences largely unknown. In NSW, the species has been reported from red sand habitats and elsewhere from savannah woodland and stony areas with shrubs. Predicted habitat occurs within PCT's 143, 153, 170 and 199. Species typically associated with sand hill habitats.	**Moderate –** The proposal study area occurs outside of mapped distribution and the species was not recorded despite the presence of two other closely related species.	**Candidate Species** South Olary Plain
Pseudonaja modesta	Ringed Brown Snake	E	–	BAM-C, Bionet, ALA	No	✓	–	–	–	–	**Habitat Requirements** This species occupies drier areas in a number of vegetation types including woodlands, shrublands, mallee and grasslands. Can be found in rocky outcrops and dry creek beds. Until recently, records restricted with species to the north-western corner of NSW, however, recent surveys have identified a large population in the Scotia Sanctuary-Tarawi NR region – approximately 150 kms away from the far western end of the proposal. Given the distance from the proposal to known records it is considered unlikely for this species to occur within the study area. However, potential habitat occurs within PCT's 58, 143, 170, 171, 172 & 199.	**Low –** the proposal occurs at the far south eastern boundary of the known range for this species and there is a lack of records in the locality.	**Predicted ecosystem credit species**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Ramphotyphlops endoterus	Interior Blind Snake	E	–	BAM-C, Bionet, ALA	No	✓	–	–	–	–	**Habitat Requirements** The species is typically found in red sandy soils in spinifex, Mitchell grassland or shrubland, and until recently was only known from the far north western corner of NSW around Mutawintji and Sturt NP. However, recent surveys have identified this species in the state's south-west in the Pooncarie region – approximately 100 kms away from the far western end of the proposal. Given the distance from the proposal to nearest known location it is considered unlikely for this species to occur within the study area. However, potential habitat occurs within PCT's 143, 163 & 199.	**Low –** the proposal occurs at the far south eastern boundary of the known range for this species and there is a lack of records in the locality	**Predicted ecosystem credit species**
Strophurus elderi	Jewelled Gecko	V	–	BAM-C, Bionet (27 records)	No	✓	–	–	–	–	**Habitat Requirements** Restricted to habitats containing spinifex on red sandy plains or dunes and to a lesser extent stony hills. Spinifex may occur as a dominant groundcover with little to no overstorey vegetation or in association with mallee, cypress pine or acacia woodlands. Animals are nocturnal, foraging at night within or on the exterior portion of a clump of spinifex. They are also observed in the matrix between spinifex clumps, especially during stormy conditions, presumably seeking new refuge. Predicted habitat occurs within PCT's 170, 171 and 172.	**Low** - The proposal study area does not fall within the mapped distribution of this species.	**Predicted ecosystem credit species**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Tiliqua occipitalis	Western Blue-tongued Lizard	V	–	BAM-C, Bionet (8 records)	No	✓	–	–	–	–	**Habitat Requirements** Scattered records across central western and western NSW. Inhabits plains, swales, ranges and sometimes dunes of loamy or clayey/sandy soils vegetated by woodlands, especially mallee, shrublands (including chenopods), heaths or hummock grasslands. Preferred vegetation type appears to be mixed mallee/*Triodia* communities. Diurnally forages for insects, snails, native vegetation, and carrion. Predicted habitat occurs within PCT's 170, 171 & 172.	**Moderate** - The proposal study area occurs in habitats where this species known and predicted distribution is mapped, though no individuals recorded despite targeted ecological surveys	**Predicted ecosystem credit species**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Birds													
Actitis hypoleucos	Common Sandpiper	–	M	PMST	No	–	–	–	–	–	**Habitat requirements** Frequents a wide range of coastal wetlands and some inland wetlands, with varying levels of salinity. It is mostly encountered along muddy margins or rocky shores and rarely on mudflats. It has been recorded in estuaries and deltas of streams, banks farther upstream; around lakes, pools, billabongs, reservoirs, dams and claypans, and occasionally piers and jetties. The muddy margins utilised by the species are often narrow and may be steep. The species is often associated with mangroves, and sometimes found in areas of mud littered with rocks or snags. Roost sites are typically on rocks or in roots or branches of vegetation, especially mangroves.	**Moderate –** The Common Sandpiper extends its habitat preferences to freshwater habitats in inland Australia. There are records for this species throughout the region and elsewhere across inland Australia. This species may occasionally use habitats in Lake Cullivel and flooded plains for foraging purposes. During long-distance migratory movements birds are considered likely to cross the disturbance area on a seasonal basis between southern coastal habitats and north Australian coastlines.	**Considered further in MNES section**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Amytornis striatus	Striated Grasswren	V	–	BAM-C, Bionet (75 records)	Yes	✓	–	–	–	–	**Habitat requirements** This species is widely distributed through the arid and semi-arid regions of mainland Australia, with three subspecies currently recognised. Confined to areas with mature spinifex (*Triodia irritans*), usually in association with mallee eucalypts and sandy soils. Is known to reoccupy burnt vegetation 6 to 8 years following fire and prefers areas with large hummocks of spinifex which is greatest 25 to 40 years post-fire. Predicted habitat occurs within PCT's 171 & 172.	**Moderate** - recorded within locality and available habitat within study area.	**Candidate Species** South Olary Plain
Anseranas semipalmata	Magpie Goose	V	–	BAM-C, Bionet (68 records)	No	–	✓	✓	✓	–	**Habitat requirements** A vagrant to NSW, normally following food sources to south-eastern NSW. Mainly found in shallow wetlands (less than 1 m deep) with dense growth of rushes or sedges. Activities are centred on wetlands, mainly those on floodplains of rivers and large shallow wetlands formed by run-off; breeding can occur in both summer and winter dominated rainfall areas and is strongly influenced by water level; most breeding now occurs in monsoonal areas; nests are formed in trees over deep water; breeding is unlikely in south-eastern NSW. Predicted habitat occurs within PCT's 15, 24, 45, 47, 53, 160, 163, 182 & 249.	**Moderate** – records within locality, may occur intermittently in wetlands and floodplains when conditions are good	**Predicted ecosystem credit species**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Anthochaera phrygia	Regent Honeyeater	CE	CE	BAM-C, Bionet (13 records), PMST, ALA (6 records)	Yes	–	–	✓	✓	✓	**Habitat requirements** Species inhabits temperate woodlands and open forests of the inland slopes of south-east Australia. The species inhabits dry open forest and woodland, particularly Box-Ironbark forests and woodland and prefers wet, fertile sites such as along creek flats, broad river valleys and foothills. Regent Honeyeaters inhabit woodlands that support a significantly high abundance and species richness of bird species. These woodlands have significantly large numbers of mature trees, high canopy cover and abundance of mistletoes. Riparian forests with *Casuarina cunninghamiana* and *Amyema cambagei* are important for feeding and breeding. Important food trees include *Eucalyptus sideroxylon* (Mugga Ironbark), *E. albens* (White Box), *E. melliodora* (Yellow Box) and *E. leucoxylon* (Yellow Gum) Breeding habitat: as per mapped areas. Note: dual credit species, mapped important areas are a species credit, these areas do not require survey and any impact from development could be potentially serious and irreversible. Ecosystem credit areas are unlikely to be potential serious and irreversible impacts. Predicted habitat occurs within PCT's 5, 7, 74, 75, 267, 277 & 319.	**Moderate** – species is uncommon, though some records and available habitat within study area. No important mapped areas will be impacted.	Not considered a candidate species as no important mapped habitat occurs within the proposal study area. **Predicted ecosystem species credit.** **Considered further in MNES section**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Apus pacificus	Fork-tailed Swift	–	M	PMST	No	–	–	–	–	–	**Habitat requirements** Breeds in the northern hemisphere, wintering south to Australia. It is almost exclusively aerial, flying from less than 1 m to at least 300 m above ground. It mostly occurs over inland plains but sometimes above foothills or in coastal areas over cliffs, beaches, islands and well out to sea. It also occurs over towns and cities. It mostly occurs over dry and/or open habitats, including riparian woodland and tea-tree swamps, low scrub, heathland or saltmarsh, grassland, spinifex sandplains, farmland and sand-dunes. It sometimes occurs above forests. It probably roosts aerially but has occasionally been observed to land.	**Moderate** - May occur in aerial habitats over the proposal study area on a seasonal basis.	**Considered further in MNES section**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Ardeotis australis	Australian Bustard	E	–	BAM-C, Bionet (15 records)	No	✓	✓	✓	–	–	**Habitat requirements** The Australian Bustard mainly occurs in inland Australia and is now scarce or absent from southern and south-eastern Australia. In NSW, they are mainly found in the north-west corner and less often recorded in the lower western and central west plains regions. Occasional vagrants are still seen as far east as the western slopes and Riverine plain. Mainly inhabits tussock and hummock grasslands, though prefers tussock grasses to hummock grasses; also occurs in low shrublands and low open grassy woodlands; occasionally seen in pastoral and cropping country, golf courses and near dams. Roosts on ground among shrubs and long grasses or under trees. Forages on insects, young birds, lizards, mice, leaves, seeds and fruit. Dispersive, with irregular widespread movements over long distances; movements are thought to be in response to habitat and climatic conditions; known to converge on areas with high mice numbers and in recently burnt areas. Potential habitat occurs in PCT's 11, 15, 22, 23, 24, 26, 28, 44, 45, 46, 47, 53, 58, 143, 157, 160, 163, 164, 166, 199 & 216. Species typically associated with chenopod shrublands and grassy plains.	**Moderate** – The proposal study area occurs in habitats where this species known distribution is mapped. Historical records throughout study area, although recent records are relatively rare.	**Candidate Species** South Olary Plain Lachlan Murrumbidgee

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Artamus cyanopterus cyanopterus	Dusky Woodswallow	V	–	BAM-C, Bionet (581 records)	No	✓	✓	✓	✓	✓	**Habitat requirements** Primarily inhabit dry, open eucalypt forests and woodlands, including mallee associations, with an open or sparse understorey of eucalypt saplings, acacias and other shrubs, and ground-cover of grasses or sedges and fallen woody debris. It has also been recorded in shrublands, heathlands and very occasionally in moist forest or rainforest. Also found in farmland, usually at the edges of forest or woodland. Potential habitat associated with PCT's 5, 7, 8, 11, 13, 15, 17, 22, 23, 24, 26, 28, 44, 45, 47, 53, 58, 74, 75, 76, 80, 110, 143, 157, 160, 163, 164, 166, 170, 171, 172, 182, 199, 216, 249, 267, 277 & 319.	**Recorded** – Likely to occur sparsely where woodland habitats are of sufficient quality.	**Predicted ecosystem credit species**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Botaurus poiciloptilus	Australasian Bittern	E	E	BAM-C, Bionet (212 records), PMST, ALA (39 records)	No	–	✓	✓	✓	–	**Habitat requirements** In NSW they may be found over most of the state except for the far north-west. Favours permanent freshwater wetlands with tall, dense vegetation, particularly bullrushes (*Typha spp*.) and spikerushes (*Eleocharis spp*.). Breeding occurs in summer from October to January; nests are built in secluded places in densely vegetated wetlands on a platform of reeds. Brackish or freshwater wetlands Potential habitat associated with PCT's 8, 11, 13, 17, 24, 53, 160, 182 & 249	**High** – the project study area does not contain breeding habitat for this species, but this species will occasionally cross the disturbance area during seasonal movements and may be at risk of powerline strike. Although wetland habitats associated with the study area are unlikely to be used for breeding purposes, bitterns may occasionally use those wetlands during migratory movements when they hold water	**Predicted ecosystem credit species** **Considered further in MNES section**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Burhinus grallarius	Bush Stone-curlew	E	–	BAM-C, Bionet (64 records)	No	✓	✓	✓	✓	✓	**Habitat requirements** The Bush Stone-curlew is found throughout Australia except for the central southern coast and inland, the far south-east corner, and Tasmania. Only in northern Australia is it still common and, in the south-east, it is either rare or extinct throughout its former range. Inhabits open forests and woodlands with a sparse grassy ground layer and fallen timber. Largely nocturnal, being especially active on moonlit nights. Potential habitat occurs in PCT's 5, 7, 8, 11, 13, 15, 22, 23, 26, 28, 58, 74, 75, 76, 80, 249, 267 & 277. Species typically associated with grassy woodlands.	**Moderate** – rare in area, regional records largely limited to riparian habitats in reserves and land holders report records in habitats along Colombo Creek south of the Ski Club. Elsewhere, there are few records south and north of the disturbance area in riparian woodlands, which are over 25 years old	**Candidate Species** South Olary Plain Lachlan Murrumbidgee Lower Slopes Inland Slopes

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Calidris acuminata	Sharp-tailed Sandpiper	–	M	PMST	No	–	–	–	–	–	**Habitat requirements** Occurs in a variety of habitats: tidal mudflat, mangrove swamps, saltmarshes, shallow fresh, brackish, salt inland swamps and lakes; flooded and irrigated paddocks, sewage farms and commercial saltfields.	**Moderate –** The Sharp-tailed Sandpiper extends its habitat preferences to freshwater habitats in inland Australia. There are records for this species throughout the region and elsewhere across inland Australia. This species may occasionally use habitats in Lake Cullivel and flooded plains for foraging purposes. During long-distance migratory movements birds are considered likely to cross the disturbance area on a seasonal basis between southern coastal habitats and north Australian coastlines.	**Considered further in MNES section**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Calidris canutus	Red Knot	–	E, M	Bionet (6 records)	No	✓	–	✓	✓		**Habitat requirements** In Australasia the Red Knot mainly inhabit intertidal mudflats, sandflats and sandy beaches of sheltered coasts, in estuaries, bays, inlets, lagoons and harbours; sometimes on sandy ocean beaches or shallow pools on exposed wave-cut rock platforms or coral reefs. They are occasionally seen on terrestrial saline wetlands near the coast, such as lakes, lagoons, pools and pans, and recorded on sewage ponds and saltworks, but rarely use freshwater swamps. They rarely use inland lakes or swamps. Foraging habitat: as per mapped areas.	**Low** - Lack of preferred habitat within study area due to a preference for estuarine habitats.	Not considered further.

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Calidris ferruginea	Curlew Sandpiper	E	CE, M	Bionet (135 records), PMST, ALA (33 records)	Yes	–	✓	✓	–	–	**Habitat requirements** Occur around the coasts and are also quite widespread inland, though in smaller numbers. Records occur in all states during the non-breeding period, and also during the breeding season when many non-breeding one year old birds remain in Australia rather than migrating north. mainly occur on intertidal mudflats in sheltered coastal areas, such as estuaries, bays, inlets and lagoons, and also around non-tidal swamps, lakes and lagoons near the coast, and ponds in saltworks and sewage farms. They are also recorded inland, though less often, including around ephemeral and permanent lakes, dams, waterholes, and bore drains, usually with bare edges of mud or sand. They occur in both fresh and brackish waters. Occasionally they are recorded around floodwaters. Foraging habitat: as per mapped areas. Note: migratory species, key threats occurring overseas. Note that it does not breed in NSW or elsewhere in Australia but relies on successful feeding here to migrate >10,000 km back to its breeding grounds.	**Moderate –** The Curlew Sandpiper extends its habitat preferences to freshwater habitats in inland Australia. There are records for this species throughout the region and elsewhere across inland Australia. This species may occasionally use habitats in Lake Cullivel and flooded plains for foraging purposes. During long-distance migratory movements birds are considered likely to cross the disturbance area on a seasonal basis between southern coastal habitats and north Australian coastlines.	Species is not considered a candidate species as there is no mapped important habitat within the proposal study area. **Predicted ecosystem credit species.** **Considered further in MNES section**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
											The species is a dual credit species, with the species credit component mapped as an important area. These mapped areas do NOT require survey as it is presumed that the species is present. Any impact from development could potentially be serious and irreversible. Ecosystem credit areas are unlikely to have potential serious and irreversible impacts. Note that whilst this is a partnership species in NSW it is listed nationally and therefore retained as a potential SAII species.		
Calidris melanotos	Pectoral Sandpiper	–	M	PMST	No	–	–	–	–	–	**Habitat requirements** In Australasia, the Pectoral Sandpiper prefers shallow fresh to saline wetlands. The species frequents coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands. It is usually found in coastal or near coastal habitat but occasionally further inland. It prefers wetlands that have open fringing mudflats and low, emergent or fringing vegetation, such as grass or samphire. It has also been recorded in swamp overgrown with lignum. They forage in shallow water or soft mud at the edge of wetlands.	**Low –** Some records within locality but lack of preferred habitat within study area.	Not considered further.

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Calidris tenuirostris	Great Knot	V	CE	Bionet (2 records), ALA (5 records)	Yes	–	–	–	–	–	**Habitat requirements** In NSW, the species has been recorded at scattered sites along the coast down to about Narooma. It has also been observed inland at Tullakool, Armidale, Gilgandra and Griffith. Occurs within sheltered, coastal habitats containing large, intertidal mudflats or sandflats, including inlets, bays, harbours, estuaries and lagoons. Often recorded on sandy beaches with mudflats nearby, sandy spits and islets and sometimes on exposed reefs or rock platforms. Migrates to Australia from late August to early September, although juveniles may not arrive until October-November. Most birds return north in March and April, however some individuals may stay over winter in Australia. Foraging habitat: as per mapped areas. Note: Migratory species, key threats occurring overseas. Note that it does not breed in NSW or elsewhere in Australia but relies on successful feeding here to migrate >10,000km back to its breeding grounds.	**Low** – No recent records, lack of preferred habitat within study area.	Not considered further.

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Callocephalon fimbriatum	Gang-gang Cockatoo	V	–	BAM-C Bionet (8 records)	No	–	–	–	✓	✓	**Habitat requirements** Distributed through south- and central-eastern New South Wales. Occurs from the south-east coast to the Hunter region, and inland to the Central Tablelands and south-west slopes. It is rare at the extremities of its range, with isolated records known from as far north as Coffs Harbour and as far west as Mudgee. In spring and summer, generally found in tall mountain forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests. In autumn and winter, the species often moves to lower altitudes in drier more open eucalypt forests and woodlands, particularly box-gum and box-ironbark assemblages, or in dry forest in coastal areas and often found in urban areas. May also occur in sub-alpine Snow Gum (*Eucalyptus pauciflora*) woodland and occasionally in temperate rainforests. Favours old growth forest and woodland attributes for nesting and roosting. Nests are located in hollows that are 10 cm in diameter or larger and at least 9 m above the ground in eucalypts. Breeding habitat: Eucalypt tree species with hollows greater than 9 cm diameter. Note: dual credit species. The identification of breeding habitat will require survey or an expert report. For clearing or development assessments, presence can be assumed. Potential habitat occurs in PCT's 5, 74, 75, 267 & 277.	**Moderate** - few records, though some available habitat in east of study area.	**Candidate Species** Lower Slopes Inland Slopes **Predicted ecosystem credit species.**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Calyptorhynchus lathami	Glossy Black-cockatoo	V	–	BAM-C Bionet (128 records)	No	–	–	–	✓	✓	**Habitat requirements** Glossy Black-cockatoos are uncommon although widespread throughout suitable forest and woodland habitats, from the central Queensland coast to East Gippsland in Victoria, and inland to the southern tablelands and central western plains of NSW, with a small population in the Riverina. Feeds almost exclusively on the seeds of several species of she-oak (*Casuarina* and *Allocasuarina* species), shredding the cones with the massive bill. Inhabits open forest and woodlands of the coast and the Great Dividing Range where stands of sheoak occur. Black Sheoak (*Allocasuarina littoralis*) and Forest Sheoak (*A. torulosa*) are important foods. Inland populations feed on a wide range of sheoaks, including Drooping Sheoak, *A. diminuta*, and *A. gymnathera*. Belah (*Casuarina cristata*) is also utilised and may be a critical food source for some populations. In the Riverina, birds are associated with hills and rocky rises supporting Drooping Sheoak, but also recorded in open woodlands dominated by Belah. Dependent on large hollow-bearing eucalypts for nest sites. Breeding habitat: living or dead tree with hollows greater than 15 cm diameter and greater than 8 m above ground. Foraging habitat: presence of Allocasuarina and casuarina species	**Moderate** - some records within locality, study area falls within known distribution though little available habitat is study area.	**Candidate Species** Lower Slopes Inland Slopes **Predicted ecosystem credit species.**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
											Note: this is a dual credit species. The identification of breeding habitat will require survey or an expert report. For clearing or development assessments, presence can be assumed. Potential habitat occurs in PCT's 74, 75, 76, 80 & 110.		
Calyptorhynchus lathami	Glossy Black-Cockatoo, Riverina population	E	–	BAM-C Bionet (128 records)	No	–	–	✓	✓	–	**Habitat requirements** The Riverina population of the Glossy Black-Cockatoo is largely restricted to hills and low ridges where suitable stands of its food plant, Drooping She-Oak (Allocasuarina verticillata), remain within the Narrandera Range and to the north-west in the Brobenah Hills, McPhersons Range, Cocoparra Range, Lachlan Range and Jimberoo State Forests, and the Naradhan Range. This population now occurs west of longitude 146º 40' E, within Cobar, Carrathool, Narrandera and Leeton local government areas. Potential habitat occurs in PCT's 74, 75, 76, 80 & 110.	**Moderate** - some records within locality, study area falls within known distribution though little available habitat in study area.	**Candidate Species** Murrumbidgee Lower Slopes

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Certhionyx variegatus	Pied Honeyeater	V	–	BAM-C Bionet (58 records)	No	✓	–	✓	✓	–	**Habitat requirements** Widespread throughout acacia, mallee and spinifex scrubs of arid and semi-arid Australia. Inhabits wattle shrub, primarily Mulga (*Acacia aneura*), mallee, spinifex and eucalypt woodlands, usually when shrubs are flowering; feeds on nectar, predominantly from various species of emu-bushes (*Eremophila* spp.); also, from mistletoes and various other shrubs (e.g. *Grevillea* spp.); also eats saltbush fruit, berries, seed, flowers and insects. Highly nomadic, following the erratic flowering of shrubs; can be locally common at times. Potential habitat in the form of PCT's 8, 11, 13, 15, 22, 23, 24, 26, 28, 58, 80, 143, 163, 170, 171, 172, 199 & 249.	**Moderate** - Records and available habitat within locality.	**Predicted ecosystem credit species**
Chthonicola sagittata	Speckled Warbler	V	–	BAM-C Bionet (418 records)	No	–	–	✓	✓	✓	**Habitat requirements** Lives in a wide range of Eucalyptus dominated communities that have a grassy understorey, often on rocky ridges or in gullies. Typical habitat would include scattered native tussock grasses, a sparse shrub layer, some eucalypt regrowth and an open canopy. Large, relatively undisturbed remnants are required for the species to persist in an area. Potential habitat in the form of PCT's 74, 75, 76, 80, 110, 249, 267, 277 & 319.	**Moderate** – very sparse records and habitat available in east of study area.	**Predicted ecosystem credit species**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Cinclosoma castanotum	Chestnut Quail-thrush	V	–	BAM-C Bionet (248 records)	No	✓	✓	–	–	–	**Habitat requirements** Throughout its distribution it occurs in a wide range of arid and semi-arid habitats, mainly in the low shrubs and undergrowth of mallee scrub, but also in Acacia scrubs, dry sclerophyll woodland, heath, and native pine. However, in NSW it seems to occur almost exclusively in mallee habitats, with understorey dominated by spinifex, chenopods or other shrubs including *Acacia* species. Potential habitat in the form of 170, 171 & 172.	**Recorded** – Recorded in two locations in western mallee habitats and considered likely to occur throughout the mallee habitats west of Balranald to the western limit of the study area.	**Predicted ecosystem credit species**
Circus assimilis	Spotted Harrier	V	–	BAM-C Bionet (205 records)	No	✓	✓	✓	✓	✓	**Habitat requirements** Occurs throughout the Australian mainland, except in densely forested or wooded habitats of the coast, escarpment and ranges, and rarely in Tasmania. Occurs in grassy open woodland including Acacia and mallee remnants, inland riparian woodland, grassland and shrub steppe. It is found most commonly in native grassland, but also occurs in agricultural land, foraging over open habitats including edges of inland wetlands. Preys on terrestrial mammals (e.g. bandicoots, bettongs, and rodents), birds and reptile, occasionally insects and rarely carrion. Potential habitat in the form of PCT's 5, 7, 8, 11, 13, 15, 17, 22, 23, 24, 26, 28, 44, 45, 46, 47, 53, 58, 74,75, 143, 157, 163, 164, 166, 170, 171, 172, 182, 199, 216, 249 & 277.	**Recorded** - scattered records and available habitat throughout study area and recorded along Bundure Road and The Gums TSR.	**Predicted ecosystem credit species**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Climacteris affinis	White-browed Treecreeper population in Carrathool LGA	E	–	BAM-C, Bionet (38 records)	No	–	✓	✓	✓	–	**Habitat requirements** In NSW, occupies a broad area of western NSW, west from a line from Balranald to Lake Cargelligo then Lightning Ridge. Absent in the far north west. A small population, now recognised as isolated, occurs in Carrathool local government area south of the Lachlan River and Griffith local government areas**.** Occupies a variety of habitats including Mulga, Brigalow, Gidgee, Belah, Bulloke and White Cypress. The species may also occur in habitats adjacent to these habitats, including Coolibah, River Red Gum and Black Box. Forages arboreally in shrubs and on tree trunks and branches. It will also feed on the ground through litter and fallen branches and across bare ground. Diet is insectivorous and may include vegetation such as chenopod fruit. PCT's PCT's 58, 80 Endangered population in Carrathool local government area south of the Lachlan River and Griffith local government area	**Low –** Little habitat in study area, only records north of study area in Binya State Forest.	**Candidate Species** Lachlan Murrumbidgee Lower Slopes

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)	V	–	BAM-C, Bionet (2035 records)	No	–	–	–	✓	✓	**Habitat requirements** Found in eucalypt woodlands (including Box-Gum Woodland) and dry open forest of the inland slopes and plains inland of the Great Dividing Range; mainly inhabits woodlands dominated by stringybarks or other rough-barked eucalypts, usually with an open grassy understorey, sometimes with one or more shrub species; also found in mallee and River Red Gum (*Eucalyptus camaldulensis*) Forest bordering wetlands with an open understorey of acacias, saltbush, lignum, cumbungi and grasses; usually not found in woodlands with a dense shrub layer; fallen timber is an important habitat component for foraging; also recorded, though less commonly, in similar woodland habitats on the coastal ranges and plains. Potential habitat in the form of PCT's 74, 76, 249, 267 & 277.	**Low** – Brown Treecreepers of the nominate race *C. p. picumnus* were relatively regularly encountered within the study area, but not the threatened eastern subspecies *C. p. victoriae*, which occurs east of Wagga Wagga.	**Predicted ecosystem credit species**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Daphoenositta chrysoptera	Varied Sittella	V	–	BAM-C, Bionet (295 records)	No	✓	✓	✓	✓	✓	**Habitat requirements** Sedentary and inhabits most of mainland Australia except the treeless deserts and open grasslands. Distribution in NSW is nearly continuous from the coast to the far west. Inhabits eucalypt forests and woodlands, especially those containing rough- barked species and mature smooth-barked gums with dead branches, mallee and Acacia woodland. Potential habitat in the form of PCT's 5, 7, 8, 11, 13, 15, 22, 23, 26, 28, 58, 74, 75, 76, 80, 110, 170, 171, 172, 249, 267, 277 & 319.	**Recorded** – recorded at one location within the study area and available habitat within study area.	**Predicted ecosystem credit species**
Drymodes brunneopygia	Southern Scrub-robin	V	–	BAM-C, Bionet (56 records)	No	✓	–	–	–	–	**Habitat requirements** This species is restricted to mallee and shrublands across southern Australia and in NSW is confined to two main areas. The first is in central NSW and is centred on Round Hill and Nombinnie Nature Reserves. The other population occurs in the far south west of NSW, mainly within the Scotia mallee centred on Tarawi NR and Scotia Sanctuary. Inhabits mallee and acacia scrub, particularly with dense sub-shrubs in the understorey, including Broombush and other dry shrubs. Occupies vegetation with a post fire age of 4-80 years but is most abundant in areas with a post fire age of 26-40 years as dependent on a well-developed shrub layer. Potential habitat in the form of PCT 171.	**Low** – habitat with insufficient quality to support species.	**Predicted ecosystem credit species**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Falco hypoleucos	Grey Falcon	E	V	BAM-C, Bionet (18 records), PMST	No	✓	✓	✓	✓	–	**Habitat requirements** Sparsely distributed in NSW, chiefly throughout the Murray-Darling Basin, with the occasional vagrant east of the Great Dividing Range. The breeding range has contracted since the 1950s with most breeding now confined to arid parts of the range. Usually restricted to shrubland, grassland and wooded watercourses of arid and semi-arid regions, although it is occasionally found in open woodlands near the coast. Also occurs near wetlands where surface water attracts prey. Potential habitat in the form of PCT's 8, 11, 13, 15, 17, 22, 23, 24, 26, 28, 44, 45, 46, 47, 53, 58, 76, 80, 143, 157, 160, 163, 164, 166, 170, 171, 172, 182, 199, 216 & 249.	**Moderate –** Scattered records throughout study area, available habitat within study area	**Predicted ecosystem credit species**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Falco subniger	Black Falcon	V	–	BAM-C, Bionet (172 records)	No	✓	✓	✓	✓	✓	**Habitat requirements** Widely, but sparsely, distributed in New South Wales, mostly occurring woodland, shrubland and grassland in the arid and semi-arid zones, especially wooded watercourses and agricultural land with scattered remnant trees. It is usually associated with streams or wetlands, visiting them in search of prey and often using standing dead trees as lookout posts. Habitat selection is generally influenced more by prey densities than by specific aspects of habitat floristics or condition, although in agricultural landscapes it tends to nest in healthy, riparian woodland remnants with a diverse avi-fauna. Potential habitat in the form of PCT's 5, 7, 8, 11, 13, 15, 17, 23, 24, 26, 28, 44, 45, 46, 47, 53, 58, 74, 75, 76, 80, 110, 143, 157, 160, 163, 164, 166, 170, 171, 182, 199, 216, 267 & 277.	**High** – species known to occur within locality, similar species sighted during surveys.	**Predicted ecosystem credit species**
Gallinago harwickii	Latham's Snipe	–	M	PMST	No	–	–	–	–	–	**Habitat requirements** Occurs in freshwater or brackish wetlands generally near protective vegetation cover. This species feeds on small invertebrates, seeds and vegetation. It migrates to the northern hemisphere to breed.	**Moderate –** scattered records within locality may occur intermittently in wetland habitats.	**Considered further in MNES section**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Glossopsitta porphyrocephala	Purple-crowned Lorikeet	V	–	Bionet (6 records)	No	✓	–	–	✓	✓	**Habitat requirements** It is uncommon in NSW, with records scattered across the box-ironbark woodlands of the Riverina and south west slopes, the River Red Gum forests and mallee of the Murray Valley as far west as the South Australian border, and, more rarely, the forests of the South Coast. The species is nomadic and most, if not all, records from NSW are associated with flowering events. Found in open forests and woodlands, particularly where there are large flowering eucalypts. Also recorded from mallee habitats. Feed primarily on nectar and pollen of flowering Eucalypts, including planted trees in urban areas. Breeds away from feeding areas, utilising hollow branches or holes in trees. Also roosts in dense vegetation up to several kilometres away from feeding areas. Potential habitat in the form of PCT's 5, 74, 170, 171, 172 & 249.	**Recorded** – rarely recorded within region, a bird heard in Mallee in the west of the study area. Although the study area falls at the edge of known or predicted distribution, there are records much further north. May occur intermittently during favourable conditions	**Predicted ecosystem credit species**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Glossopsitta pusilla	Little Lorikeet	V	–	Bionet (28 records)	No	–	–	–	✓	✓	**Habitat requirements** The Little Lorikeet is distributed widely across the coastal and Great Divide regions of eastern Australia from Cape York to South Australia. NSW provides a large portion of the species' core habitat, with lorikeets found westward as far as Dubbo and Albury. Forages primarily in the canopy of open Eucalyptus forest and woodland, yet also finds food in Angophora, Melaleuca and other tree species. Riparian habitats are particularly used, due to higher soil fertility and hence greater productivity. Isolated flowering trees in open country, e.g. paddocks, roadside remnants and urban trees also help sustain viable populations of the species. Potential habitat in the form of PCT's 5, 74, 75, 267, 277 & 319.	**Moderate** - Potential habitat in the east of study area, particularly open eucalypt and riparian communities	**Predicted ecosystem credit species**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Grantiella picta	Painted Honeyeater	V	V, M	Bionet (202 records), PMST, ALA (49 records)	No	✓	✓	✓	✓	✓	Mistletoes present at a density of greater than five mistletoes per hectare. **Habitat requirements** The Painted Honeyeater is nomadic and occurs at low densities throughout its range. The greatest concentrations of the bird and almost all breeding occurs on the inland slopes of the Great Dividing Range in NSW, Victoria and southern Queensland. During the winter it is more likely to be found in the north of its distribution. Inhabits Boree/ Weeping Myall (*Acacia pendula*), Brigalow (*A. harpophylla*) and Box-Gum Woodlands and Box-Ironbark Forests. A specialist feeder on the fruits of mistletoes growing on woodland eucalypts and acacias. Prefers mistletoes of the genus Amyema. Nest from spring to autumn in a small, delicate nest hanging within the outer canopy of drooping eucalypts, she-oak, paperbark or mistletoe branches. Potential habitat in the form of PCT's 5, 7, 8, 11, 13, 15, 23, 26, 28, 58, 74, 75, 76, 80, 110, 143, 249, 267, 277 & 319.	**High** - Records and available habitat occurs within locality.	**Predicted ecosystem credit species** **Considered further in MNES section.**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Grus rubicunda	Brolga	V	–	BAM-C, Bionet (174 records)	No	✓	✓	✓	✓	–	**Habitat requirements** Formerly found across Australia, except for the south-east corner, Tasmania and the south-western third of the country. It is still abundant in the northern tropics, but very sparse across the southern part of its range. Often feed in dry grassland or ploughed paddocks or even desert claypans, they are dependent on wetlands too, especially shallow swamps, where they will forage with their head entirely submerged. Potential habitat in the form of PCT's 7, 8, 11, 13, 15, 17, 24, 26, 45, 47, 53, 160, 163, 166, 182 & 249.	**Recorded** – A pair of Brolgas were recorded breeding in a farm dam about 2.5 km south of the disturbance area along Federation Way south of the Gums TSR. Brolgas are well documented as making north-south movements through the inland NSW to central-western Victoria.	**Predicted ecosystem credit species**
Haliaeetus leucogaster	White-bellied Sea Eagle	V	-	BAM-C, Bionet	No	✓	✓	✓	✓	✓	**Habitat requirements** In NSW it is widespread along the east coast, and along all major inland rivers and waterways. Habitats are characterised by the presence of large areas of open water including larger rivers, swamps, lakes, and the sea. Occurs in vicinity of freshwater swamps, lakes, reservoirs, billabongs and saltmarsh. Terrestrial habitats include coastal dunes, tidal flats, grassland, heathland, woodland, and forest (including rainforest). Breeding habitat consists of mature tall open forest, open forest, tall woodland, and swamp sclerophyll forest close to foraging habitat.	**High** - scattered records and available habitat within locality.	**Candidate Species** South Olary Plain Lachlan Murrumbidgee Lower Slopes Inland Slopes **Predicted ecosystem credit species.**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
											Note: The species is highly selective in nesting locations. Breeding habitat is live large old trees within 1 km of a rivers, lakes, large dams or creeks, wetlands and coastlines AND the presence of a large stick nest within tree canopy; or an adult with nest material; or adults observed duetting within breeding period. Due to the similarities in nest structure and use of the same nests by White-bellied Sea Eagles and Wedge-tailed Eagles, where a nest is observed without a bird present, searches for prey remains/feathers below the structure should be undertaken. The differing diets of both species and distinctive adult feathers, should provide evidence of nest use, however; where prey items/feathers are absent, repeat visits to the nest until a bird is observed should be undertaken. Potential habitat occurs in PCT's 5, 7, 8, 11, 13, 15, 17, 23, 24, 26, 28, 44, 45, 46, 47, 53, 58, 74, 75, 76, 80, 110, 143, 157, 160, 163, 164, 166, 170, 171, 182, 216, 249, 267, 277, 319.		

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Hamirostra melanosternon	Black-breasted Buzzard	V	–	BAM-C	No	✓	✓	–	✓	–	Breeding habitat: waterbodies - land within 40 m of riparian woodland on inland watercourses/waterholes containing dead or dying eucalypts. Note: species is known to breed in sites with cropping, but also requires retained vegetation. **Habitat requirements** Found sparsely in areas of less than 500 mm rainfall. Lives in a range of inland habitats, especially along timbered watercourses which is the preferred breeding habitat. Also hunts over grasslands and sparsely timbered woodlands. Breeds from August to October near water in a tall tree. The stick nest is large and flat and lined with green leaves. Potential habitat occurs in PCT's 15, 23, 24, 58, 143, 163, 170, 171, 172, 199. Typically associated with semi-arid zone – open country.	**Moderate** - potential foraging habitat in west of the disturbance area, although there are no suitable opportunities for breeding.	**Candidate species** South Olary Plain Lachlan Lower Slopes **Predicted ecosystem credit species.** The disturbance area will remove foraging habitats for this species and may rarely represent a collision risk for this species.

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Hieraaetus morphnoides	Little Eagle	V	–	Bionet (351 records)	No	✓	✓	✓	✓	✓	Breeding habitat: nest trees - live (occasionally dead) large old trees within vegetation. Note: breeding habitat is live (occasionally dead) large old trees within suitable vegetation AND the presence of a male and female; or female with nesting material; or an individual on a large stick nest in the top half of the tree canopy. **Habitat requirements** Found throughout the Australian mainland excepting the most densely forested parts of the Dividing Range escarpment. Occupies open eucalypt forest, woodland or open woodland. Sheoak or Acacia woodlands and riparian woodlands of interior NSW are also used. Nests in tall living trees within a remnant patch, where pairs build a large stick nest in winter. Preys on birds, reptiles and mammals, occasionally adding large insects and carrion. Potential habitat in PCT's 5, 7, 8, 11, 13, 15, 17, 22, 23, 24, 26, 28, 44, 45, 46, 47, 53, 58, 74, 75, 76, 80, 110, 143, 157, 160, 163, 164, 166, 170, 171, 172, 182, 199, 216, 249, 267, 277, 319. Species typically occurs in woodlands with associated grasslands.	**Recorded –** recorded at one location within study area and available habitat within study area	**Candidate species** South Olary Plain Lachlan Murrumbidgee Lower Slopes Inland Slopes **Predicted ecosystem credit species.** The disturbance area will remove foraging and potential breeding habitats for this species and may represent a collision risk for this species. It may rarely use transmission towers as nest sites.

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Hirundapus caudacutus	White-throated Needletail	–	V, M	Bionet (25 records), PMST	No	–	–	✓	✓	✓	**Habitat requirements** Widespread in eastern and south-eastern Australia. In eastern Australia, it is recorded in all coastal regions of Queensland and NSW, extending inland to the western slopes of the Great Divide and occasionally onto the adjacent inland plains. It is almost exclusively aerial, from heights of less than 1 m up to more than 1000 m above the ground. Because they are aerial, it has been stated that conventional habitat descriptions are inapplicable, but there are, nevertheless, certain preferences exhibited by the species. Although they occur over most types of habitat, they are probably recorded most often above wooded areas, including open forest and rainforest, and may also fly between trees or in clearings, below the canopy, but they are less commonly recorded flying above woodland. They also commonly occur over heathland, but less often over treeless areas, such as grassland or swamps. When flying above farmland, they are more often recorded above partly cleared pasture, plantations, or remnant vegetation at the edge of paddocks.	**Moderate** - Although local records are sparse, due to wide ranging habitats may occur in aerial habitats over the proposal study area on a seasonal basis.	**Predicted ecosystem credit species.** **Considered further in MNES section.**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Hylacola cauta	Shy Heathwren	V	–	Bionet (183 records)	No	✓	–	–	–	–	**Habitat requirements** Inhabits mallee woodlands with a relatively dense understorey of shrubs and heath plants. The central NSW population (for example in Cocoparra NP) also occurs at low densities in rocky hilltop vegetation with a thick shrub layer such as Broombush or Tea-tree. Appears to occur in all age classes of vegetation, though believed to prefer either one to five years following fire when the resprouting eucalypts provide dense vegetation cover or in long unburnt (greater than 40 years) areas which have a well-developed shrub layer. Potential associated habitat in the form of PCT's 170, 171 & 172.	**Low** – habitat with insufficient quality to support species.	**Predicted ecosystem credit species**
Lathamus discolor	Swift Parrot	E	CE	Bionet (93 records), PMST	Yes	-	-	✓	✓	✓	Breeding habitat: as per mapped areas. This species does not breed in mainland Australia it breeds exclusively in Tasmania. Note: species is a dual credit species, with the species credit component mapped as an important area. These mapped areas do NOT require survey as it is presumed that the species is present. Any impact from development could potentially be serious and irreversible. Ecosystem credit areas are unlikely to have potential serious and irreversible impacts.	**Moderate** – some potential foraging habitat available throughout study area's eastern woodlands, including River Red Gum riparian communities and Box Gum in the east.	Species is not considered a candidate species as no mapped important habitat occurs within the proposal study area. **Predicted ecosystem credit species.** The disturbance area is likely to represent and incremental loss of woodland habitat for this species.

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
											Habitat requirements Breeds in Tasmania during spring and summer, migrating in the autumn and winter months to south- eastern Australia from Victoria and the eastern parts of South Australia to south-east Queensland. In NSW mostly occurs on the coast and south west slopes. On the mainland they occur in areas where eucalypts are flowering profusely or where there is abundant lerp (from sap-sucking bugs) infestations. Favoured feed trees include winter flowering species such as Swamp Mahogany (*Eucalyptus robusta)*, Spotted Gum (*Corymbia maculata*), Red Bloodwood (*C. gummifera*), Mugga Ironbark (*E. sideroxylon*), and White Box (*E. albens*). Commonly used lerp infested trees include Inland Grey Box (*E. macrocarpa*), Grey Box (*E. moluccana*) and Blackbutt (*E. pilularis*). Potential habitat in the form of PCT's 5, 7, 8, 11, 74, 75, 76, 80, 110, 249, 267 & 277.		**Considered further in MNES section.**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Leipoa ocellata	Malleefowl	E	V, M	Bionet (338 records), PSMT, ALA (148 records)	No	✓	✓	–	–	✓	**Habitat requirements** The stronghold for this species in NSW is the mallee in the south west centred on Mallee Cliffs NP and extending east to near Balranald and scattered records as far north as Mungo NP. West of the Darling River a population also occurs in the Scotia mallee including Tarawi NR and Scotia Sanctuary and is part of a larger population north of the Murray River in South Australia. Predominantly inhabit mallee communities, preferring the tall, dense and floristically-rich mallee found in higher rainfall (300 – 450 mm mean annual rainfall) areas. Utilises mallee with a spinifex understorey, but usually at lower densities than in areas with a shrub understorey. Less frequently found in other eucalypt woodlands, such as Inland Grey Box, Ironbark or Bimble Box Woodlands with thick understorey, or in other woodlands such dominated by Mulga or native Cypress Pine species. Prefers areas of light sandy to sandy loam soils and habitats with a dense but discontinuous canopy and dense and diverse shrub and herb layers. Potential habitat in the form of PCT's 110, 170, 171 & 172.	**High –** Abundance of records throughout locality, available habitat within study area. Potential nest mounds sighted.	**Predicted ecosystem credit species.** **Considered further in MNES section.**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Lichenostomus cratitius	Purple-gaped Honeyeater	V	–	Bionet (2 records)	No	✓	–	–	–	–	**Habitat requirements** Occurs in disjunct populations across southern Australia east from southern Western Australia, with the eastern population largely occurring south of the Murray River. NSW forms the extreme north- east of its range, with occasional sightings in the far south west. Inhabits mallee heathlands and less commonly in associated mallee with a more open understorey (such as Spinifex associations). Is also occasionally recorded in River Red Gums bordering waterways. Generally thought to be sedentary, moving only locally in response to flowering. They may gather in large numbers where flowering is prolific. Potential habitat in the form of PCT's 170, 171 & 172.	**Moderate –** no recent records within locality, though study area occurs at the fringe of species known distribution. May occur intermittently in available habitat in west of study area.	**Predicted ecosystem credit species.** The disturbance area will remove potential mallee woodland habitats for this species.

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Limosa lapponica	Bar-tailed Godwit	–	M	PMST	N/A	–	–	–	–	–	**Habitat requirements** Recorded in the coastal areas of all Australian states. It is widespread in the Torres Strait and along the east and south-east coasts of Queensland, NSW and Victoria, including the offshore islands. Found mainly in coastal habitats such as large intertidal sandflats, banks, mudflats, estuaries, inlets, harbours, coastal lagoons and bays. It is found often around beds of seagrass and, sometimes, in nearby saltmarsh. It has been sighted in coastal sewage farms and saltworks, salt-lakes and brackish wetlands near coasts, sandy ocean beaches, rock platforms, and coral reef-flats. It is rarely found on inland wetlands or in areas of short grass, such as farmland, paddocks and airstrips, although it is commonly recorded in paddocks at some locations overseas. Foraging habitat as per mapped important habitat areas.	**Moderate** - outside of species known foraging range. While there are no records within locality and a lack of preferred estuarine foraging habitat in the study area this species is a long-distance migrant and some birds are considered likely to cross the disturbance area during seasonal movements between southern coastal habitats and north Australian coastlines. This species doesn't always follow coastline during migration as strongly suggested by records in central Australia.	The disturbance area may seasonally represent an increased powerline collision risk for this species. **Considered further in the MNES section.**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Limosa lapponica baueri	Bar-tailed Godwit (baueri), Western Alaskan Bar-tailed Godwit	–	V, M	PMST	N/A	–	–	–	–	–	**Habitat requirements** The Bar-tailed Godwit (both subspecies combined) has been recorded in the coastal areas of all Australian states. The migratory Bar-tailed Godwit (western Alaskan) does not breed in Australia. Occurs mainly in coastal habitats in coastal habitats which include large intertidal sandflats, banks, mudflats, estuaries, inlets, harbours, coastal lagoons and bays. It also has been recorded in coastal sewage farms and saltworks, salt-lakes and brackish wetlands near coasts, sandy ocean beaches, rock platforms and coral reef-flats.	**Moderate** - outside of species known foraging range. While there are no records within locality and a lack of preferred estuarine foraging habitat in the study area this species is a long-distance migrant and some birds are considered likely to cross the disturbance area during seasonal movements between southern coastal habitats and north Australian coastlines. This species doesn't always follow coastline during migration as strongly suggested by records in central Australia.	The disturbance area may seasonally represent an increased powerline collision risk for this species. **Considered further in the MNES section.**
Limosa lapponica menzbieri	Northern Siberian Bar-tailed Godwit	–	CE	SEARs, Bionet, ALA	N/A	–	–	–	–	–	This species has only been recorded in Western Australia, mainly around the Broome region. It is considered highly unlikely to occur within the proposal study area.	**Low-** this species has only been recorded on the cost of Western Australia.	Species not considered further.

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Limosa limosa	Black-tailed Godwit	V	M	Bionet (77 records)	No	–	–	✓	–	–	Foraging habitat: as per mapped areas. Note - migratory species, key threats occurring overseas. Note that it does not breed in NSW or elsewhere in Australia but relies on successful feeding here to migrate >10,000 km back to its breeding grounds. The species is a dual credit species, with the species credit component mapped as an important area. These mapped areas do NOT require survey as it is presumed that the species is present. **Habitat requirements** The Black-tailed Godwit is a migratory wading bird that breeds in Mongolia and Eastern Siberia and flies to Australia for the southern summer, arriving in August and leaving in March. In NSW, it is most frequently recorded at Kooragang Island (Hunter River estuary), with occasional records elsewhere along the coast, and inland. Records in western NSW indicate that a regular inland passage is used by the species, as it may occur around any of the large lakes in the western areas during summer, when the muddy shores are exposed. The species has been recorded within the Murray-Darling Basin, on the western slopes of the Northern Tablelands and in the far north-western corner of the state. Primarily a coastal species and usually found in sheltered bays, estuaries and lagoons with large intertidal mudflats and/or	**Moderate** – Unlike the Bar-tailed Godwit the Black-tailed Godwit extends its habitat preferences to freshwater habitats in inland Australia. There are records for this species north of the study area at Lake Cargelligo, Narrandera and elsewhere across inland Australia. This species may occasionally use habitats in Lake Cullivel and flooded plains for foraging purposes. During long-distance migratory movements birds are considered likely to cross the disturbance area on a seasonal basis between southern coastal habitats and north Australian coastlines.	Not considered a candidate species as no important mapped habitat occurs within the proposal study area. **Predicted ecosystem credit species.** The disturbance area may represent an increased powerline collision risk for this species. **Considered further in MNES section.**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
											sandflats. Further inland, it can also be found on mudflats and in water less than 10 cm deep, around muddy lakes and swamps. Potential habitat in the form of PCT's 53 & 166.		
Lophochroa leadbeateri	Major Mitchell's Cockatoo	V	–	BAM-C Bionet	No	✓	✓	✓	✓	✓	Breeding habitat: living or dead tree with hollows greater than 10cm diameter **Habitat requirements** In NSW it is found regularly as far east as about Bourke and Griffith, and sporadically further east than that. Inhabits a wide range of treed and treeless inland habitats, always within easy reach of water. Feeds mostly on the ground, especially on the seeds of native and exotic melons and on the seeds of species of saltbush, wattles and cypress pines. Nesting, in tree hollows, occurs throughout the second half of the year; nests are at least 1 km apart, with no more than one pair every 30 square kilometres. Breeding habitat occurs in the form of living or dead tree with hollows greater than 10 cm diameter. Potential habitat associated with PCT's, 7, 8, 11, 13, 15, 22, 23, 26, 28, 58, 74, 76, 80, 110, 143, 163, 166, 170, 171, 172, 199 & 249. Typically associated with Callitris and mallee – arid riverine.	**High** - Available habitat occurs throughout study area, scattered records throughout locality.	**Candidate species** South Olary Plain Lachlan Murrumbidgee Lower Slopes Inland Slopes **Predicted ecosystem species credit.** Potential habitat for this species will be removed within the disturbance area.

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Lophoictinia isura	Square-tailed Kite	V	–	BAM-C, Bionet (15 records)	No	✓	✓	✓	✓	✓	Breeding habitat: nest trees. Note: The species is allocated to dual credit because they tend to be sensitive to disturbance around nests. It will be difficult to identify a Kite nest (there are lots of comparable sized stick nests built by other species), especially given Kites have large territories and other stick nesters will undoubtedly also be nesting where Kites might be recorded. Kites will need be in attendance to confirm breeding sites. Breeding habitat is live large old trees within suitable vegetation AND the presence of a male and female; or female with nesting material; or an individual on a large stick nest in the top half of the tree canopy. **Habitat requirements** Ranges along coastal and subcoastal areas from south-western to northern Australia, Queensland, NSW and Victoria. In NSW, scattered records of the species throughout the state indicate that the species is a regular resident in the north, north-east and along the major west-flowing river systems. It is a summer breeding migrant to the south-east, including the NSW south coast, arriving in September and leaving by March. Found in a variety of timbered habitats including dry woodlands and open forests. Shows a particular preference for timbered watercourses. In arid north-western NSW, has	**High** – species known to occur within locality, similar species sighted during surveys.	**Candidate species** South Olary Plain Lachlan Murrumbidgee Lower Slopes Inland Slopes **Predicted ecosystem species credit.** Potential habitat for this species will be removed within the disturbance area.

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
											been observed in stony country with a ground cover of chenopods and grasses, open acacia scrub and patches of low open eucalypt woodland. Is a specialist hunter of passerines, especially honeyeaters, and most particularly nestlings, and insects in the tree canopy, picking most prey items from the outer foliage. Potential habitat in the form of PCT's 5, 7, 8, 11, 13, 15, 22, 23, 26, 28, 45, 58, 74, 76, 80, 110, 143, 163, 166, 170, 171, 172, 249, 267 & 277. Species typically associated with woodlands – Mallee, floodplain and riverine.		

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Manorina melanotis	Black-eared Miner	CE	E; M	Bionet (23 records), ALA (3 records)	Yes	✓	–	–	–	–	**Habitat requirements** In NSW, it is restricted to old growth mallee in the Scotia region. Prior to European settlement, the species may have been present in suitable mallee habitat throughout south-west NSW. Birds are restricted to large tracts (30,000 ha or greater) of mature, unregimented mallee on the more fertile soils. Occupies vegetation with a post fire age of greater than 25 years but is most abundant in areas with a post fire age of 50 years or more. Their diet consists of arthropods (including grasshoppers, bugs, lerps, beetles, weevils, flies, caterpillars, bees, wasps, ants, and spiders) obtained by gleaning and probing loose and hanging bark of mallee trunks. The diet also includes nectar, pollen, plant material, seeds and fruit. They breed communally and use a cup-shaped nest constructed from grasses and sticks within mallee eucalypts located in a fork or mistletoe clump. Potential habitat in the form of PCT's 170, 171 & 172. Species typically associated with Mallee.	**Low** - habitat within study area is not of sufficient quality to support this species.	**Candidate Species** South Olary Plain

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Melanodryas cucullata cucullata	Hooded Robin (south-eastern form)	V	–	Bionet (416 records)	No	✓	✓	✓	✓	✓	**Habitat requirements** The south-eastern form (subspecies *cucullata*) is found from Brisbane to Adelaide and throughout much of inland NSW, with the exception of the extreme north-west, where it is replaced by subspecies *picata*. Prefers lightly wooded country, usually open eucalypt woodland, acacia scrub and mallee, often in or near clearings or open areas. Requires structurally diverse habitats featuring mature eucalypts, saplings, some small shrubs and a ground layer of moderately tall native grasses. Potential habitat in the form of PCT's 5, 7, 8, 11, 13, 15, 22, 23, 26, 28, 58, 74, 75, 76, 80, 110, 143, 170, 171, 172, 199, 249, 267, 277 & 319.	**Moderate** - scattered records throughout study area, available habitat within study area, though little high-quality habitat available.	**Predicted ecosystem credit species.** Potential habitat for this species will be removed within the disturbance area.

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Melithreptus gularis gularis	Black-chinned Honeyeater (eastern subspecies)	V	–	Bionet (98 records)	No	–	–	✓	✓	✓	**Habitat requirements** In NSW it is widespread, with records from the tablelands and western slopes of the Great Dividing Range to the north-west and central-west plains and the Riverina. Occupies mostly upper levels of drier open forests or woodlands dominated by box and ironbark eucalypts, especially Mugga Ironbark (*Eucalyptus sideroxylon*), White Box (*E. albens*), Inland Grey Box (*E. microcarpa*), Yellow Box (*E. melliodora*), Blakely's Red Gum (*E. blakelyi*) and Forest Red Gum (*E. tereticornis*). Also inhabits open forests of smooth-barked gums, stringybarks, ironbarks, river sheoaks (nesting habitat) and tea-trees. Potential habitat in the form of PCT's 5, 7, 8, 11, 74, 80, 110, 249, 267, 277 & 319.	**Moderate** – one record from Brookong State Forest from 2012 otherwise there are no records associated with the study area, but it may occur in extensive riparian habitats. The majority of records regionally are from reserved lands not occurring close to the study area. Habitat within Brookong State Forest is not extensive, and a resident population is considered unlikely.	**Predicted ecosystem credit species.** Potential habitat for this species will be removed within the disturbance area.
Motacilla flava	Yellow Wagtail	–	M	PMST	No	–	–	–	–	–	**Habitat requirements** This species occurs in a range of habitats including estuarine habitats such as sand dunes, mangrove forests and coastal saltmarshes. This species also occurs in open grassy areas including disturbed sites such as sports grounds and has been recorded on the edges of wetlands, swamps, lakes and farm dams. This species migrates from Asia to Australia in spring-summer. It has been recorded in the estuarine areas of the Hunter River in Newcastle NSW and in QLD and the north of NT and WA.	**Low –** outside of species known distribution, lack of preferred habitat in study area.	Not considered further.

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Myiagra cyanoleuca	Satin Flycatcher	–	M	PMST	No	–	–	–	–	–	**Habitat requirements** In NSW, they are widespread on and east of the Great Divide and sparsely scattered on the western slopes, with very occasional records on the western plains. Inhabit heavily vegetated gullies in eucalypt-dominated forests and taller woodlands, and on migration, occur in coastal forests, woodlands, mangroves and drier woodlands and open forests. Mainly recorded in eucalypt forests, often near wetlands or watercourses. Also occur in moister, taller forests, often occurring in gullies. In addition, can occur in eucalypt woodlands with open understorey and grass ground cover, and are generally absent from rainforest. In south-eastern Australia, they occur at elevations of up to 1400 m above sea level, and in the ACT, they occur mainly between 800 m above sea level and the tree line.	**Low** - no records within locality and lack of preferred habitat	Not considered further.

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Neophema pulchella	Turquoise Parrot	V	–	Bionet (100 records)	No	–	–	✓	✓	✓	**Habitat requirements** The Turquoise Parrot's range extends from southern Queensland through to northern Victoria, from the coastal plains to the western slopes of the Great Dividing Range. Lives on the edges of eucalypt woodland adjoining clearings, timbered ridges and creeks in farmland. Usually seen in pairs or small, possibly family, groups and have also been reported in flocks of up to thirty individuals. Prefers to feed in the shade of a tree and spends most of the day on the ground searching for the seeds or grasses and herbaceous plants or browsing on vegetable matter. Potential habitat in the form of PCT's 5, 74, 75, 76, 80, 110, 249, 267, 277 & 319.	**Moderate –** suitable woodland habitat in the east of the study area near Wagga Wagga.	**Predicted ecosystem credit species.** The disturbance area is likely to represent and incremental loss of woodland habitat for this species.
Neophema splendida	Scarlet-chested Parrot	V	–	BAM-C, Bionet	No	✓	–	–	–	–	**Habitat requirements** Species inhabits semi-arid areas with mallee and mulga scrublands/open woodlands wit spinifex and saltbush ground covers. Notes: The species is allocated to full ecosystem credit given hollows are on the credit profile. It is a nomadic species that can turn up in odd places and not for decades at a time so typically difficult to survey for on edge of its range as dependent on conditions within core of its distribution. Potential habitat in the form of PCT's 170, 171 & 172.	**Low** – species rarely recorded in NSW. More typically occurs west of the proposal study area.	**Predicted ecosystem credit species**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Numenius madagascariensis	Eastern Curlew	–	CE; M	PMST, Bionet, ALA	Yes	–	–	–	–	–	**Habitat requirements** This species occurs as a migratory species in all states including Tasmania. The Eastern Curlew prefers coastal habitats and estuaries such as the Hunter River, Port Stephens, Clarence Rive and Richmond River. This species is rarely found inland.	**Low –**this species is considered unlikely to occur within the proposal study area.	This species is not considered further.
Ninox connivens	Barking Owl	V	–	BAM-C, Bionet (69 records)	No	✓	✓	✓	✓	✓	**Habitat requirements** Breeding habitat: living or dead trees with hollows greater than 20 cm diameter and greater than 4m above the ground. Potential habitat in the form of PCT's 5, 7, 8, 11, 13, 15, 24, 26, 53, 74, 75, 76, 80, 110, 267, 277, 249 & 319. Species typically associated with woodlands (not mallee) and riparian areas.	**Moderate** – sparse distribution throughout NSW but individuals may disperse over long distances. Available foraging and roosting habitat within study area.	**Candidate species** South Olary Plain Lachlan Murrumbidgee Lower Slopes Inland Slopes **Predicted ecosystem species credit.** The disturbance area will remove woodland habitats and may represent an increased powerline collision risk for this species.

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Ninox strenua	Powerful Owl	V	–	BAM -C	No	–	–	–	–	✓	**Habitat requirements** Species can inhabit a range of vegetation types including fragmented landscapes. Typically, this species utilizes open or closed sclerophyll forest and woodlands for hunting and breeding. Breeding: Living or dead trees with hollow greater than 20 cm diameter Note: The species can breed and forage in very small patches of vegetation, although this is hugely variable across their range. Potential habitat in the form of PCT 5	**Low** – closest records occur in Canberra or south of Albury.	**Candidate species** Inland Slopes **Predicted ecosystem credit species.**
Oxyura australis	Blue-billed Duck	V	–	Bionet (249 records)	No	–	✓	✓	–	–	**Habitat requirements** Endemic to south-eastern and south-western Australia. It is widespread in NSW, but most common in the southern Murray-Darling Basin area. Birds disperse during the breeding season to deep swamps up to 300 km away. It is generally only during summer or in drier years that they are seen in coastal areas. Prefers deep water in large permanent wetlands and swamps with dense aquatic vegetation. The species is completely aquatic, swimming low in the water along the edge of dense cover. Potential habitat in the form of PCT's 17, 24, 53, 160 & 182.	**Moderate** – many scattered records within the wider locality and considered likely to cross the disturbance area on a somewhat regular basis during movements between regional wetland resources.	**Predicted ecosystem credit species.** The disturbance area may represent an increased powerline collision risk for this species.

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Pachycephala inornata	Gilbert's Whistler	V	–	BAM-C, Bionet	No	✓	✓	✓	✓	✓	**Habitat requirements** Occurs in ranges, plains and foothills in arid and semi-arid timbered habitats. In NSW it occurs mostly in mallee shrubland, but also in box-ironbark woodlands, Cypress Pine and Belah woodlands and River Red Gum forests. Within the mallee the species is often found in association with an understorey of spinifex and low shrubs including acacia, hakea, senna and grevillea. In woodland habitats, the understorey comprises dense patches of shrubs. Potential habitat in the form of PCT's 5, 11, 13, 17, 22, 28, 58, 80, 110, 170, 171, 172 & 267.	**Recorded –** Four individuals recorded in mallee habitats within the Sunshine conservation lands.	**Predicted ecosystem credit species.** The disturbance area will remove mallee woodland habitats used by this species.

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Pachycephala rufogularis	Red-lored Whistler	CE	V	BAM-C	Yes	✓	–	–	–	–	**Habitat requirements** Found in mallee woodland with a shrub layer, usually of Broombush and native pine such as Mallee Pine (*Callitris verrucosa*), with occasional patches of spinifex and emergent mallee, forming a relatively dispersed canopy. Occupies vegetation with a post fire age of 4-40 years but is most abundant in areas with a post fire age of 21-40 years. Feeds mainly on the ground, eating invertebrates (airborne and ground-dwelling, including caterpillars, weevils, grasshoppers, beetles, larvae), and some berries and seeds. A substantial cup nest is constructed by these birds, mainly of coarse bark and mallee leaves, neatly woven around the rim, located within low shrubs (e.g. Broombush). Potential habitat in the form of PCT's 171 & 172. Species typically associated with mallee vegetation.	**Moderate** - Lack of associated habitat with sufficient quality. Although it is considered unlikely that this species persists in the locality its presence cannot be entirely discounted.	**Candidate species** South Olary Plain The disturbance area will remove mallee woodland habitats used by this species **Considered further in the MNES section.**
Pedionomus torquatus	Plains-wanderer	E	CE	BAM-C, Bionet (1323 records), PMST, ALA (384 records)	Yes	–	–	✓	–	–	Breeding habitat: as per mapped areas. Note: species is a dual credit species, mapped important areas are a species credit, these areas do not require survey and any impact from development could be potentially serious and irreversible. Ecosystem credit are areas are unlikely to be potential serious and irreversible impacts. Mapped areas are	**Recorded** – Three birds recorded at Bundure TSR. Preferred habitat patchy throughout the area between the Cobb Highway in the west to beyond the Gums TSR in the east.	**Candidate species** Murrumbidgee **Predicted ecosystem credit species.** **Considered further in the MNES section.**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
											primary habitat only. Contact DPIE for more information. **Habitat requirements** The vast majority (>99%) of records of Plains-wanderers in NSW over the past 30 years come from an area of the western Riverina bounded by Hay and Narrandera on the Murrumbidgee River in the north, the Cobb Highway in the west, the Billabong Creek in the south, and Urana in the east. Even within its western Riverina stronghold, the Plains-wanderer has a very patchy distribution. It is effectively extinct in eastern NSW, south-western Victoria, and south-eastern South Australia. Its current stronghold is the western Riverina of southern NSW. Plains-wanderers live in semi-arid, lowland native grasslands that typically occur on hard red-brown soils. Habitat structure appears to play a more important role than plant species composition. Preferred habitat of the Plains-wanderer typically comprises 50% bare ground, 10% fallen litter, and 40% herbs, forbs and grasses. Most of the grassland habitat of the Plains-wanderer is <5 cm high, but some vegetation up to a maximum of 30 cm is important for concealment, as long as grass tussocks are spaced 10–20 cm apart. The species is a dual credit species, with the species credit component mapped as an important area. These mapped areas do NOT		

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						SOP	LAC	MUR	LS	IS			
											require survey as it is presumed that the species is present. Potential habitat in the form of PCT's 44 & 46. Habitat constraint – candidate species: As per important mapped areas.		

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Petroica boodang	Scarlet Robin	V	–	Bionet (99 records)	No	–	–	✓	✓	✓	**Habitat Requirements** The scarlet robin is found from south east Queensland to south east South Australia and also in Tasmania and south west western Australia. In NSW, it occurs from the coast to the inland slopes. After breeding, some scarlet robins disperse to the lower valleys and plains of the tablelands and slopes. Some birds may appear as far west as the eastern edges of the inland plains in autumn and winter. The scarlet robin lives in dry eucalypt forests and woodlands. The understorey is usually open and grassy with few scattered shrubs. This species lives in both mature and regrowth vegetation. It occasionally occurs in Mallee or wet forest communities, or in wetlands and tea-tree swamps. Scarlet robin habitat usually contains abundant logs and fallen timber: these are important components of its habitat. The scarlet robin breeds on ridges, hills and foothills of the western slopes, the Great Dividing Range and eastern coastal regions; this species is occasionally found up to 1000 metres in altitude. Potential habitat in the form of PCT's 5, 7, 11, 23, 26, 74, 75, 76, 80, 110, 249, 267, 277 & 319.	**Moderate** - some available habitat and scattered records in east of study area	**Predicted ecosystem credit species.** The disturbance area will remove potential habitat for this species.

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Petroica phoenicea	Flame Robin	V	–	Bionet (236 records)	No	–	–	✓	✓	✓	**Habitat requirements** In NSW the Flame Robin breeds in upland moist eucalypt forests and woodlands, often on ridges and slopes, in areas of open understorey. It migrates in winter to more open lowland habitats. In winter lives in dry forests, open woodlands and in pastures and native grasslands, with or without scattered trees. In winter, occasionally seen in heathland or other shrublands in coastal areas. Occasionally occurs in temperate rainforest, and also in herbfields, heathlands, shrublands and sedgelands at high altitudes. Potential habitat in the form of PCT's 5, 7, 74, 76, 80, 110, 249 & 277.	**High –** An altitudinal migrant that breeds in the ranges and moves out into the lowlands during winter. Numerous winter records around Wagga Wagga with a couple of records extending as far west as the Cobb Highway. No records around Wagga Wagga during the summer breeding season. Uses open habitats with some woodland for cover to retire to. Often seen a long way from cover.	**Predicted ecosystem credit species.** The disturbance area will likely remove some woodland habitats seasonally used by this species.

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Pezoporus occidentalis	Night Parrot	EX	E	PMST	No	–	–	–	–	–	**Habitat requirements** The distribution of the Night Parrot has not been well documented, but it is known to be restricted to arid and semi-arid Australia. Is known to occur within Spinifex grasslands in stony or sandy areas and samphire and chenopod associations on floodplains, salt lakes and clay pans. Suitable habitat is characterized by the presence of large and dense clumps of Spinifex, and it may prefer mature spinifex that is long and unburnt. The Night Parrot is a nocturnal bird that forages on the ground, becoming active during dusk and, generally flies to water to drink prior to foraging. During the day it rests within clumps of spinifex. Appears to be highly nomadic, moving in response to availability of food and water. After periods of heavy rain with abundant seeding of spinifex, the species was often locally common.	**Low** - Considered extinct in NSW with no sightings for 124 years.	Not considered further.
Polytelis anthopeplus monarchoides	Regent Parrot (eastern subspecies)	E	V	BAM-C, Bionet (818 records), PMST, ALA (216 records)	No	✓	✓	✓	–	–	Breeding habitat: Living or dead *E. camaldulensis* with hollows greater than 5 cm diameter, greater than 5 m above the ground OR trees with DBH of greater than 40 cm, within 1 km of watercourses or billabongs. Trees can be isolated but within 20 km of mallee.	**Recorded** - recorded at several locations over the 2019-2021 survey period from the Murrumbidgee crossing in the east to Monak and Red Cliff in the west associated with riparian or mallee habitats.	**Candidate species** South Olary Plain Lachlan Murrumbidgee **Predicted ecosystem credit species.**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
											Note: breeding habitat can be identified by the presence of habitat features and observed nest OR two or more birds seen on site. Paddock trees can be important for this species as they can link remnant foraging habitat **Habitat requirements** In NSW it occurs along the Murray River downstream of Tooleybuc (though there are few records between Mildura and the South Australian border), the Wakool River downstream of Kyalite and the Murrumbidgee River immediately upstream from the junction with the Murray River and adjoining areas of mallee. There are scattered records along the Darling River as far north as Menindee, but at this stage the species has not been confirmed to breed along this river. The species nests within River Red Gum forests along the Murray, Wakool and lower Murrumbidgee Rivers, and possibly the Darling River downstream of Pooncarie. Typical nest trees are large, mature, healthy trees with many spouts (though dead trees are used) and are usually located close to a watercourse. Principal foraging habitat is mallee woodlands, though foraging also occurs in riverine forests and woodlands. Mallee woodland within 20 kilometres of nesting sites is critical foraging habitat for breeding birds. Potential habitat in the form of PCT's 8, 11, 13, 15, 22, 58, 170, 171 & 172.		The disturbance area will remove potential mallee woodland habitats for this species and potential breeding habitats in riparian habitat near the Murrumbidgee River. **Considered further in MNES section**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
											Species typically associated with mallee, floodplain and riparian vegetation. Species occurs only within 30 km of the Murray and Murrumbidgee Rivers.		
Polytelis swainsonii	Superb Parrot	V	V	BAM-C, PMST, ALA (3 records)	No	–	✓	✓	✓	✓	Breeding habitat: Living or dead *E. blakelyi, E. melliodora, E. albens, E. camaldulensis, E. microcarpa, E. polyanthemos, E. mannifera, E. intertexta* with hollows greater than 5 cm diameter; greater than 4 m above ground or trees with a DBH of greater than 30 cm. Note: breeding habitat can be identified by the presence of habitat features and observed nest OR two or more birds seen on site. **Habitat requirements** The Superb Parrot is found throughout eastern inland NSW. On the South-western Slopes their core breeding area is roughly bounded by Cowra and Yass in the east, and Grenfell, Cootamundra and Coolac in the west. Inhabit Box-Gum, Box-Cypress-pine and Boree Woodlands and River Red Gum Forest. In the Riverina the birds nest in the hollows of large trees (dead or alive) mainly in tall riparian River Red Gum Forest or Woodland. On the South West Slopes nest trees can be in open Box-Gum Woodland or isolated paddock trees. Species known to be used are Blakely's Red Gum, Yellow Box, Apple Box and Red Box. Nest in small colonies, often with more than one nest in a single tree. Breed between September and January. May forage up to	**Recorded** – recorded at a number of locations within the box/gum woodlands in the east of the study area.	**Candidate species** Lachlan Murrumbidgee Lower Slopes Inland Slopes **Predicted ecosystem credit species.** The disturbance area is likely to represent and incremental loss of woodland habitat for this species, including the risk of losing breeding hollows. **Considered further in MNES section**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
											10 km from nesting sites, primarily in grassy box woodland. Feed in trees and understorey shrubs and on the ground and their diet consists mainly of grass seeds and herbaceous plants. Also eaten are fruits, berries, nectar, buds, flowers, insects and grain. Potential habitat in the form of PCT's 5, 7, 11, 13, 23, 26, 28, 45, 46, 74, 75, 76, 80, 110, 249, 267 & 277.		
Pomatostomus temporalis temporalis	Grey-crowned Babbler (eastern subspecies)	V	–	Bionet (1199 records)	No	✓	✓	✓	✓	✓	**Habitat requirements** In NSW, the eastern sub-species occurs on the western slopes of the Great Dividing Range, and on the western plains reaching as far as Louth and Balranald. It also occurs in woodlands in the Hunter Valley and in several locations on the north coast of NSW. It may be extinct in the southern, central and New England tablelands. Inhabits open Box-Gum Woodlands on the slopes, and Box-Cypress-pine and open Box Woodlands on alluvial plains. Woodlands on fertile soils in coastal regions. Potential habitat in the form of PCT's 13, 15, 22, 23, 26, 28, 58, 74, 75, 76, 80, 110, 143, 249, 267, 277 & 319.	**Recorded –** recorded at several locations within study area and available habitat within study area	**Predicted ecosystem credit species.**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Pyrrholaemus brunneus	Redthroat	V	–	BAM-C	No	✓	✓	✓	–	–	**Habitat requirements** In NSW, species mainly recorded from chenopod shrublands, but also known Canegrass and Lignum swamps and depressions, floodplains and from A*cacia* shrublands, especially, near Broken Hill. Species rarely occurs in mallee vegetation. Potential habitat in the form of PCT's 17, 24 & 163.	**Moderate** – potential habitat in the proposal study area in the form of chenopod shrublands. Records occur within the Balranald area.	**Predicted ecosystem credit species.**
Rostratula australis	Australian Painted Snipe	E	E	Bionet (39 records), PMST, ALA (11 records)	No	–	✓	✓	✓	✓	**Habitat requirements** Most records are from the south east, particularly the Murray Darling Basin, with scattered records across northern Australia and historical records from around the Perth region in Western Australia. In NSW many records are from the Murray-Darling Basin including the Paroo wetlands, Lake Cowal, Macquarie Marshes, Fivebough Swamp and more recently, swamps near Balldale and Wanganella. Prefers fringes of swamps, dams and nearby marshy areas where there is a cover of grasses, lignum, low scrub or open timber. Nests on the ground amongst tall vegetation, such as grasses, tussocks or reeds. Potential habitat in the form of PCT's 5, 7, 8, 11, 13, 17, 24, 47, 53, 160, 182 & 249.	**Moderate** - potential habitat in locality. Ephemeral wetlands associated with the disturbance area may be intermittently used by this species under suitable conditions.	**Predicted ecosystem credit species.** The project may impact habitats use by this species on an intermittent basis. **Considered further in MNES section.**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Stagonopleura guttata	Diamond Firetail	V	–	Bionet (529 records)	No	✓	✓	✓	✓	✓	**Habitat requirements** Endemic to south-eastern Australia, extending from central Queensland to the Eyre Peninsula in South Australia. It is widely distributed in NSW, with a concentration of records from the Northern, Central and Southern Tablelands, the Northern, Central and South Western Slopes and the North West Plains and Riverina. Not commonly found in coastal districts, though there are records from near Sydney, the Hunter Valley and the Bega Valley. This species has a scattered distribution over the rest of NSW, though is very rare west of the Darling River. Found in grassy eucalypt woodlands, including Box-Gum Woodlands and Snow Gum (*Eucalyptus pauciflora*) Woodlands. Also occurs in open forest, mallee, Natural Temperate Grassland, and in secondary grassland derived from other communities. Potential habitat in the form of PCT's 5, 7, 8, 11, 13, 22, 23, 26, 28, 44, 45, 46, 58, 74, 75, 76, 80, 110, 170, 249, 267, 277 & 319.	**Recorded** – A single bird was recorded in grassy woodland southwest of Wagga Wagga in habitat associated with the disturbance area. It may occur in other patches of woodland to the west in low numbers where sufficient cover is provided.	**Predicted ecosystem credit species.** The disturbance area is likely to represent and incremental loss of woodland habitat for this species.

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Stictonetta naevosa	Freckled Duck	V	–	Bionet (336 records)	No	–	✓	✓	✓	✓	**Habitat requirements** Found primarily in south-eastern and south-western Australia, occurring as a vagrant elsewhere. It breeds in large temporary swamps created by floods in the Bulloo and Lake Eyre basins and the Murray-Darling system, particularly along the Paroo and Lachlan Rivers, and other rivers within the Riverina. The duck is forced to disperse during extensive inland droughts when wetlands in the Murray River basin provide important habitat. The species may also occur as far as coastal NSW and Victoria during such times. Prefer permanent freshwater swamps and creeks with heavy growth of Cumbungi, Lignum or Tea-tree. During drier times they move from ephemeral breeding swamps to more permanent waters such as lakes, reservoirs, farm dams and sewage ponds. Potential habitat in the form of PCT's 5, 7, 8, 11, 13, 17, 24, 53, 74, 160, 182, 249, 267 & 277.	**Moderate** – many scattered records within the wider locality and considered likely to cross the disturbance area on a somewhat regular basis during movements between regional wetland resources.	**Predicted ecosystem credit species.** The disturbance area may represent an increased powerline collision risk for this species.

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Stipiturus mallee	Mallee Emu-wren	–	E	SEARs, ALA	N/A	–	–	–	–	–	**Habitat requirements** This species is found in open mallee woodland with a spinifex understorey. Typically, the Mallee Emu-wren is found sheltering in spinifex clumps and is not a proficient flier. Potential habitat within the proposal would occur in the form of PCT 171 and PCT 172. However, this species primarily occurs in north-western Victoria and south-eastern South Australia with the closest records occurring in Hattah-Kulkyne National Park – approximately 50 kms to the south of the proposal.	**Low –** Lack of records within the locality and given that this species is not a proficient flier, it is considered unlikely to be able to make the journey from the known records to the proposal study area.	This species is not considered further.

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Tringa nebularia	Common Greenshank	–	M	PMST	No	–	–	–	–	–	**Habitat requirements** Occurs in a range of inland and coastal environments. Inland, it occurs in both permanent and temporary wetlands, billabongs, swamps, lakes floodplains, sewage farms, saltworks ponds, flooded irrigated crops. On the coast, it occurs in sheltered estuaries and bays with extensive mudflats, mangrove swamps, muddy shallows of harbours and lagoons, occasionally rocky tidal ledges. It generally prefers wet and flooded mud and clay rather than sand.	**Moderate –** The Common Greenshank extends its habitat preferences to freshwater habitats in inland Australia. There are records for this species throughout the region and elsewhere across inland Australia. This species may occasionally use habitats in Lake Cullivel and flooded plains for foraging purposes. During long-distance migratory movements birds are considered likely to cross the disturbance area on a seasonal basis between southern coastal habitats and north Australian coastlines.	The disturbance area may represent an increased powerline collision risk for this species. **Considered further in the MNES section.**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Tyto novaehollandiae	Masked Owl	V	–	Bionet (2 records)	No	–	✓	✓	✓	✓	Breeding habitat: living or dead trees with hollows greater than 20 cm diameter. **Habitat requirements** Extends from the coast where it is most abundant to the western plains. Overall records for this species fall within approximately 90% of NSW, excluding the most arid north-western corner. There is no seasonal variation in its distribution. Lives in dry eucalypt forests and woodlands from sea level to 1100 m. A forest owl, but often hunts along the edges of forests, including roadsides. The typical diet consists of tree-dwelling and ground mammals, especially rats. Pairs have a large home-range of 500 to 1000 hectares. Roosts and breeds in moist eucalypt forested gullies, using large tree hollows or sometimes caves for nesting. Potential habitat in the form of PCT's 7, 11, 13, 24, 26, 53, 74, 76, 80, 110, 249, 267 & 277. Species typically associated with open forest and woodlands.	**Low –** few records within locality, lack of appropriate habitat within study area.	**Candidate species** Lachlan Murrumbidgee Lower Slopes Inland Slopes

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Mammals													
Antechinomys laniger	Kultarr	E	-	Bionet (1 record)	No	✓	–	–	–	–	**Habitat Requirements** A terrestrial insectivore that inhabits open country, especially claypans among Acacia woodlands. Nocturnal, sheltering by day in hollow logs or tree- stumps, beneath saltbush and spinifex tussocks, in deep cracks in the soil and in the burrows of other animals. Potential habitat in the form of PCT's 23, 58, 143, 163, 170, 171 & 199.	**Low** – no records within locality for >100 years. Study area falls outside species known distribution.	**Predicted ecosystem credit species**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Cercartetus concinnus	Western Pygmy Possum	E	-	Bionet (352 records)	No	✓	–	–	–	–	**Habitat Requirements** In NSW, has been found in mallee shrubland either dominated by spinifex (*Triodia* spp.) or with an understorey of tea-tree (*Leptospermum* spp.) and also in Belah (*Casuarina pauper*) in a mixed woodland with a well-developed understorey of saltbush. In other states is also frequently found in woodlands with dense heath understorey (particularly Proteaceae species such as Banksia and Hakea species). Shelters during the day in a leaf- lined nest in tree-hollows or in disused birds' nests, leaf clumps on the ground, under stumps or in mallee lignotubers at the base of live trees; shelters also include spinifex hummocks, shrubs, piles of dead branches and bark strips, ground depressions and in the tree canopy. Frequently enters torpor, particularly when temperatures are lower. Potential habitat in the form of PCT's 58, 170, 171 & 172.	**Moderate –**records within locality and available habitat, particularly in west of study area.	**Predicted ecosystem credit species.**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Cercartetus nanus	Eastern Pygmy-possum	V	–	BAM-C	No	–	–	–	✓	✓	**Habitat requirements** The Eastern Pygmy-possum is found in south-eastern Australia, from southern Queensland to eastern South Australia and in Tasmania. In NSW it extends from the coast inland as far as the Pilliga, Dubbo, Parkes and Wagga Wagga on the western slopes. Found in a broad range of habitats from rainforest through sclerophyll (including Box-Ironbark) forest and woodland to heath, but in most areas woodlands and heath appear to be preferred, except in north-eastern NSW where they are most frequently encountered in rainforest. Potential habitat in the form of PCT's 74, 80 & 110.	**Low –** No records and lack of available habitat within study area – lack of heath or regenerative understorey in wooded areas.	**Candidate species** Lower Slopes Inland Slopes
Chaeropus ecaudatus	Pig-footed Bandicoot	EX	X	Bionet (1 record), ALA (2 records)	No	✓	–	–	–	–	**Habitat Requirements** Native to western New South Wales and Victoria, the southern part of the Northern Territory as well as South Australia and Western Australia. It inhabited a wide range of habitat types: from grassy woodland and grassland plains to the spinifex country and arid flats of central Australia. Despite its wide range, the species had a sparse distribution and was never abundant.	**Low –** Considered extinct in NSW, unlikely to occur.	Not considered further.

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Chalinolobus dwyeri	Large-eared Pied Bat	V	V	BAM-C, Bionet (1 record)	Yes	–	–	–	–	✓	Cliffs: within two kilometres of rocky areas containing caves, overhangs, escarpments, outcrops, or crevices, or within two kilometres of old mines or tunnels. Note: species is a full species credit because it cannot be reliably predicted to occur on a site based on vegetation and other landscape features (either foraging or breeding). This species usually gives birth to twins. **Habitat requirements** Found mainly in areas with extensive cliffs and caves, from Rockhampton in Queensland south to Bungonia in the NSW Southern Highlands. It is generally rare with a very patchy distribution in NSW. There are scattered records from the New England Tablelands and North West Slopes. Roosts in caves (near their entrances), crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the Fairy Martin, frequenting low to mid-elevation dry open forest and woodland close to these features. Females have been recorded raising young in maternity roosts (c. 20-40 females) from November through to January in roof domes in sandstone caves and overhangs. They remain loyal to the same cave over many years. Found in well-timbered areas containing gullies. Potential habitat in the form of PCT's 267 & 277.	**Moderate** – few records within study area, though falls within species known distribution. Predicted habitat within many PCTs in the Inland Slopes subregion. Nevertheless, the disturbance area is located considerable distances from potential preferred roosting sites.	**Candidate species** Inland Slopes **Considered further in MNES section.**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Chalinolobus picatus	Little Pied Bat	V	–	Bionet (482 records)	No	✓	✓	✓	✓	✓	**Habitat Requirements** Recorded in dry open forest, open woodland, Mulga woodlands, chenopod shrublands, Callitris forest and mallee. The species roosts and breeds in tree hollows, fissures or cracks, buildings, power poles, fenceposts, caves, cliff crevices, mine shafts and tunnels. Roost sites in caves are usually warm and dry but the species can tolerate roost temperatures of more than 40°C. Potential habitat in the form of PCT's 5, 7, 8, 11, 13, 15, 17, 22, 23, 24, 26, 28, 53, 58, 76, 110, 143, 157, 160 163, 164, 166, 170, 171, 172, 182, 199, 216, 267 & 249.	**Recorded** - multiple records throughout locality. Habitat available within study area.	**Predicted ecosystem credit species.**
Dasyurus geoffroii	Chuditch	EX	V	ALA (2 records)	No	✓	–	–	–	–	**Habitat requirements** Previously known from most of Australia, occurring in every Mainland State and Territory, it underwent a drastic decline and contraction and went extinct in New South Wales in the 1940s. It is now largely restricted to the south-west of Western Australia, with small numbers in the Midwest, Wheatbelt and South Coast Regions. Historically, Chuditch inhabited a wide range of habitats, but today it survives mostly in Jarrah *Eucalyptus marginata* forests and woodlands, mallee shrublands and heathlands.	**Low –** Considered extinct in NSW, unlikely to occur.	Not considered further.

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Dasyurus maculatus maculatus	Spotted-Tailed Quoll (southern subspecies)	V	E	Bionet (9 records), PMST	No	–	–	–	✓	✓	**Habitat Requirements** Found in eastern NSW, eastern Victoria, south-east and north-eastern Queensland, and Tasmania. Recorded across a range of habitat types, including rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline. Individual animals use hollow-bearing trees, fallen logs, small caves, rock outcrops and rocky-cliff faces as den sites. Females occupy home ranges up to about 750 hectares and males up to 3500 hectares. Are known to traverse their home ranges along densely vegetated creeklines. Potential habitat in the form of PCT's 5, 110, 249, 267 & 277.	**Moderate –** occurs within species known distribution, though few records and a of paucity of preferred habitat available.	**Predicted ecosystem credit species.** **Considered further in MNES section.**
Falsistrellus tasmaniensis	Eastern False Pipistrelle	V	-	Bionet (1 record)	No	–	–	–	–	✓	**Habitat requirements** The Eastern False Pipistrelle is found on the south-east coast and ranges of Australia, from southern Queensland to Victoria and Tasmania. It prefers moist habitats, with trees taller than 20 m. It generally roosts in eucalypt hollows but has also been found under loose bark on trees or in buildings. Potential habitat in the form of PCT 277.	**Low –** no recent records within locality, lack of available habitat.	**Predicted ecosystem credit species**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Lagorchestes leporides	Eastern Hare-Wallaby	EX	X	Bionet (1 record)	–	✓	–	–	–	–	**Habitat Requirements** This species once inhabited the interior of New South Wales, Victoria and the Murray River region of South Australia. It was common in the level country between the Murray and Darling rivers, as well as the Liverpool Plains. Prefers habitat that consisted of open plains and grasslands.	**Low –** Considered extinct in NSW, unlikely to occur.	Not considered further.
Lasiorhinus latifrons	Southern Hairy-nosed Wombat	E	-	BAM-C	No	✓	–	–	–	–	**Habitat Requirements** Distribution has become fragmented and contracted in the last 200 years. Once regarded as common in south-western NSW but the current size of this population is unknown. Warrens, used by 5 to 10 individuals, are confined to soils with sufficient structural strength. The burrows provide a humid resting place during the day. Forages close to the warren. Diet almost entirely restricted to grasses. Habitat is semi-arid grasslands and open woodlands. Potential habitat in the form of PCTs 58, 170, 171 & 172.	**Low -** Considered unlikely that this species persists in the locality.	**Candidate species** South Olary Plain
Leporillus conditor	Greater Stick-nest Rat	EX	V	Bionet (1 record), ALA (3 records)	No	✓	–	–	–	–	**Habitat Requirements** Inhabits semi-arid to arid perennial shrublands where there is little or no fresh water, particularly with succulent and semi-succulent plant species. Is presumed to be extinct in NSW.	**Low –** Considered extinct in NSW, unlikely to occur.	Not considered further.

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Macrotis lagotis	Bilby	EX	V	Bionet (4 records), ALA (2 records)	No	✓	✓	-	✓	✓	**Habitat Requirements** Is presumed extinct in NSW. They now occur in fragmented populations in mulga shrublands and spinifex grasslands in the Tanami Desert of the Northern Territory; in the Gibson and Great Sandy Deserts and the Pilbara and Kimberley regions of Western Australia; and the Mitchell Grasslands of southwest Queensland. Once widespread in arid, semi-arid and relatively fertile areas. The Bilby prefers arid habitats because of the spinifex grass and acacia shrub.	**Low –** Considered extinct in NSW, unlikely to occur.	Not considered further.

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Miniopterus orianae oceanensis	Large Bent-winged Bat	V	–	BAM-C, Bionet (2 records)	Yes (breeding)	–	–	–	–	✓	Breeding habitat: Cave, tunnel, mine, culvert or other structure known or suspected to be used for breeding including species records with microhabitat code "IC – in cave;" observation type code "E nest-roost;" with numbers of individuals >500. **Habitat requirements** Found mainly in areas with extensive cliffs and caves, from Rockhampton in Queensland south to Bungonia in the NSW Southern Highlands. It is generally rare with a very patchy distribution in NSW. There are scattered records from the New England Tablelands and North West Slopes. Roosts in caves (near their entrances), crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the Fairy Martin, frequenting low to mid-elevation dry open forest and woodland close to these features. Females have been recorded raising young in maternity roosts (c. 20-40 females) from November through to January in roof domes in sandstone caves and overhangs. They remain loyal to the same cave over many years. Found in well-timbered areas containing gullies. Potential habitat in the form of PCT 277.	**Moderate –** Very few records within study area, though study area falls within fringe of mapped distribution.	**Candidate species.** Inland Slopes **Predicted ecosystem credit species.**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Myotis macropus	Southern Myotis	V	–	BAM-C, Bionet (26 records)	No	–	–	✓	✓	✓	Hollow-bearing trees: within 200 m of riparian zone. Waterbodies: this includes rivers, creeks, billabongs, lagoons, dams and other waterbodies on or within 200 m of the site. **Habitat Requirements** The Southern Myotis is found in the coastal band from the north-west of Australia, across the top-end and south to western Victoria. They generally roost in groups of 10–15 close to water in caves, mine shafts, hollow-bearing trees, storm water channels, road culverts, buildings, under bridges and in dense foliage. Potential habitat in the form of PCT's 5, 7, 8, 11, 74, 182 & 249.	**Recorded** – available habitat along Murrumbidgee river system. Recorded at one site just outside of study area.	**Candidate species** Murrumbidgee Lower Slopes Inland Slopes
Ningaui yvonneae	Southern Ningaui	V	-	BAM-C	No	✓	–	–	–	–	**Habitat Requirements** Species typically occurs in spinifex mallee where it uses spinifex clumps for shelter. It will also utilize logs, dense vegetation and potentially dig its own burrow. Potential habitat in the form of PCT's 170, 171 & 172.	**Moderate –** potential habitat within the proposal study area. Records within the locality.	**Predicted ecosystem credit species.**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Notomys mitchellii	Mitchell's Hopping Mouse	EX	–	Bionet (2 records)	No	✓	–	–	–	–	**Habitat Requirements** Species inhabits areas of mallee vegetation which lack a significant understorey. Mallee shrubland associations are the typical habitat, especially areas with sandy soils and slight sand dune formations. It has been reported that it is no longer found in the semi-arid region of New South Wales where the species was first identified.	**Low –** Considered extinct in NSW, unlikely to occur.	Not considered further.
Nyctophilus corbeni	Corben's Long-eared Bat	V	V	Bionet (59 records), PMST	No	✓	✓	–	✓	✓	**Habitat Requirements** Overall, the distribution of the south eastern form coincides approximately with the Murray Darling Basin with the Pilliga Scrub region being the distinct stronghold for this species. Inhabits a variety of vegetation types, including mallee, bulloke (*Allocasuarina leuhmannii*) and box eucalypt dominated communities, but it is distinctly more common in box/ironbark/cypress-pine vegetation that occurs in a north-south belt along the western slopes and plains of NSW and southern Queensland. Roosts in tree hollows, crevices, and under loose bark. Potential habitat in the form of PCT's 22, 23, 28, 58, 75, 80, 110, 170, 171, 172, 199, 249 & 267.	**Recorded** - known to occur within locality, habitat available within study area.	**Predicted ecosystem credit species.** **Considered further in the MNES section.**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Petaurus norfolcensis	Squirrel Glider	V	–	BAM-C, Bionet (207 records)	No	–	–	–	✓	✓	**Habitat requirements** The species is widely though sparsely distributed in eastern Australia, from northern Queensland to western Victoria. Inhabits mature or old growth Box, Box-Ironbark woodlands and River Red Gum forest west of the Great Dividing Range and Blackbutt-Bloodwood forest with heath understorey in coastal areas. Prefers mixed species stands with a shrub or Acacia midstorey. Require abundant tree hollows for refuge and nest sites. Diet varies seasonally and consists of Acacia gum, eucalypt sap, nectar, honeydew and manna, with invertebrates and pollen providing protein. Potential habitat in the form of PCT's 5, 74, 75, 76, 80, 110, 249, 267 & 277.	**Recorded –** records and potential habitat in the east of the study area.	**Candidate species.** Lower Slopes Inland Slopes
Petaurus norfolcensis	Squirrel Glider in the Wagga Wagga Local Government Area	E	-	BAM-C	No	–	–	–	✓	✓	The extent of this endangered population is defined by the boundaries of the Wagga Wagga LGA. Potential habitat in the form of PCT's 5, 74, 75, 76, 80, 110, 249, 267 & 277.	**Recorded –** records and potential habitat in the east of the study area.	**Candidate species.** Lower Slopes Inland Slopes

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Petauroides volans	Greater Glider	–	V	SEARs, ALA	No	–	–	–	–	–	**Habitat requirements** The range of the Greater Glider extends from northern Queensland to central Victoria occurring as a band from the eastern seaboard to as far inland as the western slopes of the Great Dividing Range. The Greater Glider heavily relies upon unfragmented old growth Eucalypt forest as it is clumsy on the ground and finds movements through treeless areas difficult. The nearest records of the species occur to the west of Wagga Wagga - approximately 80 kms from the far eastern end of the proposal.	**Low –** due to the highly fragmented nature of potential habitat within the proposal study area and distance from nearest known record it is considered unlikely that this species occurs within the proposal study area.	This species is not considered further.

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Petrogale penicillata	Brush-tailed Rock-wallaby	E	V	BAM-C, ALA (1 record)	Yes	–	–	–	–	✓	Land within 1 km of rocky escarpments, gorges, steep slopes, boulder piles, rock outcrops or cliff lines. **Habitat requirements** The range of the Brush-tailed Rock-wallaby extends from south-east Queensland to the Grampians in western Victoria, roughly following the line of the Great Dividing Range. The distribution of the species across its original range has declined significantly in the west and south and has become more fragmented. In NSW they occur from the Queensland border in the north to the Shoalhaven in the south, with the population in the Warrumbungle Ranges being the western limit. Occupy rocky escarpments, outcrops and cliffs with a preference for complex structures with fissures, caves and ledges, often facing north. Browse on vegetation in and adjacent to rocky areas eating grasses and forbs as well as the foliage and fruits of shrubs and trees. Highly territorial and have strong site fidelity with an average home range size of about 15 ha. Breeding occurs throughout the year with a peak in births between February and May, especially in the southern parts of the range and at higher altitudes.	**Low** - largely outside of species known distribution, no available habitat within study area.	**Candidate species.** Inland Slopes

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Phascogale tapoatafa	Brush-tailed Phascogale	V	–	BAM-C, Bionet (1 record)	No	–	–	–	–	✓	**Habitat requirements** The Brush-tailed Phascogale has a patchy distribution around the coast of Australia. In NSW it is mainly found east of the Great Dividing Range although there are occasional records west of the divide. Prefer dry sclerophyll open forest with sparse groundcover of herbs, grasses, shrubs or leaf litter. Also inhabit heath, swamps, rainforest and wet sclerophyll forest. Agile climber foraging preferentially in rough barked trees of 25 cm DBH or greater. Feeds mostly on arthropods but will also eat other invertebrates, nectar and sometimes small vertebrates. Nest and shelter in tree hollows with entrances 2.5 - 4 cm wide and use many different hollows over a short time span. Potential habitat in the form of PCT's 5, 74, 80, 267 & 277.	**Low –** no recent record, study area falls outside of species known distribution.	**Candidate species.** Inland Slopes
Phascogale calura	Red-tailed Phascogale	EX	X	Bionet (1 record), ALA (1 record)	–	✓	–	–	–	–	**Habitat Requirements** It was previously found in most arid and semi-arid regions of Australia. Preferred habitats are *Allocasuarina* woodlands with hollow-containing eucalypts. Is now known to occur only in the central and southern wheatbelt areas of Western Australia.	**Low –** Considered extinct in NSW, unlikely to occur.	Not considered further.

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Phascolarctos cinereus	Koala	V	V	BAM-C, Bionet (279 records), PMST, SEPP	No	–	–	✓	✓	✓	Breeding habitat: areas identified via survey as important habitat. 'Important' habitat (however this is not a mapped important habitat area) is defined by the density of koalas and quality of habitat determined by on-site survey - contact OEH for more information. **Habitat Requirements** Inhabit eucalypt woodlands and forests. Feed on the foliage of more than 70 eucalypt species and 30 non-eucalypt species, but in any one area will select preferred browse species. Some preferred species include Forest Red Gum, Grey Gum. In coastal areas, Tallowwood and Swamp Mahogany are important food species, while in inland areas White Box, Bimble Box and River Red Gum are favoured. Home range size varies with quality of habitat, ranging from less than two ha to several hundred hectares in size. Potential habitat in the form of PCT's 5, 7, 8, 11, 13, 15, 74, 75, 76, 80, 110, 249, 267 & 277.	**Moderate** - Predicted habitat in multiple PCTs within the Murrumbidgee, Lower Slopes and Inland Slopes subregions. Scattered records and potential habitat in the east of the study area. Study area intersects multiple LGAs protected under the Koala State Environmental Planning Policy (SEPP)	**Candidate species** Murrumbidgee Lower Slopes Inland Slopes **Predicted ecosystem credit species.** **Considered further in MNES section**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Pseudomys bolami	Bolam's Mouse	E	–	Bionet (4 records)	No	✓	–	–	–	–	**Habitat Requirements** Prefers mallee shrubland where there is a developed understorey of *Acacia*, *Dodonaea* or *Eremophila* sp. and succulent chenopod (bluebush and saltbush) shrubs, hummock grass or spinifex, especially in plains areas, spillways and along valley bottoms where soils are loams or clays. It has been recorded in four broad vegetation types in Tarawi Nature Reserve: Mallee-spinifex, Mallee shrubland, Belah woodland and Mixed open shrubland/woodland. Potential habitat in the form of PCT's 22, 58, 170, 171 & 172.	**Recorded** – study area occurs in habitats where this species known distribution is mapped. Captured in spinifex mallee.	**Predicted ecosystem credit species.**
Pseudomys desertor	Desert Mouse	CE	-	BAM-C, Bionet	Yes	✓	–	–	–	–	**Habitat Requirements** Most records of the Desert Mouse come from sand dune or sand plain habitats dominated by Spinifex (*Triodia* spp.). Depends on a dense groundcover of grasses, sedges or shrubs; survives in small pockets of habitat and expands into other areas following rains and subsequent vegetation growth. Has been found in open eucalypt woodlands, riparian habitats, acacia, samphire and nitre bush shrublands, and sedge, spinifex and cane-grass habitats, on alluvial plains, sandplains, dunes, stony hills, scree slopes, and wetlands. Potential habitat in the form of PCT's 24, 163, 171 & 172.	**Low** – no records within locality for >100 years.	**Candidate species.** South Olary Plain

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Pseudomys hermannsburgensis	Sandy Inland Mouse	V	–	BAM-C, Bionet	No	✓	–	–	–	–	**Habitat requirements** This species mostly occurs on sand and sandy loams with a wide range of vegetation types. Can also occasionally occur in areas of cracking earth and gibber plains. Potential habitat in the form of PCT's 23, 58, 143, 171 & 199.	**Low-** species range is confined to the far north-west corner of NSW.	**Predicted ecosystem credit species**
Pteropus poliocephalus	Grey-headed Flying-fox	V	V	BAM-C, Bionet (51 records), PMST	No	–	–	–	✓	✓	Breeding habitat: breeding camps. **Habitat requirements** In NSW, species is uncommon south of Nowra and typically occupies coastal lowlands and is uncommon inland. Occurs in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops. Roosting camps are generally located within 20 km of a regular food source and are commonly found in gullies, close to water, in vegetation with a dense canopy. Species feeds on the nectar and pollen of native trees, particularly *Eucalyptus spp*., *Melaleuca spp*. and *Banksia spp*., and fruits of rainforest trees and vines. Potential habitat in the form of PCT's 5, 76, 267 & 277. Species typically associated with woodlands and riparian forests.	**Moderate –** Scattered records in far east, and roosting known to occur within locality.	**Candidate species** Lower Slopes Inland Slopes **Predicted ecosystem credit species.** **Considered further in MNES section**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Saccolaimus flaviventris	Yellow-bellied Sheathtail Bat	V	–	Bionet (32 records)	No	✓	✓	✓	✓	✓	**Habitat Requirements** Roosts singly or in groups of up to six, in tree hollows and buildings; in treeless areas they are known to utilise mammal burrows. Forages in most habitats across its very wide range, with and without trees; appears to defend an aerial territory. Potential habitat in the form of PCT's 5, 7, 8, 11, 13, 15, 17, 23, 24, 26, 28, 45, 53, 58, 74, 75, 76, 80, 110, 143, 160, 170, 182, 249, 267 & 277.	**Moderate -** The proposal study area occurs in habitats where this species known distribution is mapped.	**Predicted ecosystem credit species.**
Sminthopsis macroura	Stripe-faced Dunnart	V	-	BAM-C	No	✓	–	–	✓	–	**Habitat Requirements** Species occurs in native dry grasslands and low dry shrublands where they shelter in cracks in the soils, in grass tussocks or under rocks and logs. Potential habitat in the form of PCT's 58, 143, 163, 171, 172, 199 & 249.	**Low-** species range is confined to the far north-west corner of NSW.	**Predicted ecosystem credit species**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Vespadelus baverstocki	Inland Forest Bat	V	–	Bionet (1948 records)	No	✓	–	✓	–	–	**Habitat Requirements** Roosts in tree hollows and abandoned buildings. Known to roost in very small hollows in stunted trees only a few metres high. Recorded from a variety of woodland formations, including Mallee, Mulga and River Red Gum. Most records are from drier woodland habitats with riparian areas. However, other habitats may be used for foraging and/or drinking. Potential habitat in the form of PCT's 13, 15, 22, 28, 58, 143, 170, 171 & 172.	**Moderate -** The proposal study area occurs in habitats where this species known distribution is mapped.	**Predicted ecosystem credit species.**
Fish													
Bidyanus bidyanus	Silver Perch	V	CE	PMST, ALA (3 records), DPI	–	–	–	–	–	–	**Habitat requirements** The most abundant remaining natural population occurs in the central Murray River downstream of Yarrawonga Weir as well as several of its anabranches and tributaries. The central Murray population is considered secure and self-sustaining. There have also been reports of self-sustaining populations in other rivers, including the MacIntyre and Macquarie Rivers in northern NSW and the Warrego River in Queensland, mostly from recreational anglers. It prefers fast-flowing waters but is also known from rivers, lakes and reservoirs.	**Moderate -** The proposal study area occurs in habitats where this species known distribution is mapped.	Due to the nature of construction, species is unlikely to be affected – i.e. powerline will span waterbodies. **Considered further in MNES section.**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Craterocephalus fluviatilis	Murray Hardyhead	CE	C	PMST	–	–	–	–	–	–	**Habitat requirements** Murray Hardyhead live along the edges of slow-flowing lowland rivers, as well as in lakes, billabongs and backwaters. They are often found amongst aquatic weeds, in both fresh and quite saline waters. They were once widespread and abundant in the Murray and Murrumbidgee river systems in southern NSW and northern Victoria; however, they have suffered a serious population decline, and now seem to be limited to a few sites, mainly in northern Victoria. Since 2000, only one individual has been collected in extensive surveys in NSW.	**Moderate -** The proposal study area occurs in habitats where this species known distribution is mapped.	Due to the nature of construction, species is unlikely to be affected – i.e. powerline will span waterbodies. **Considered further in MNES section.**
Galaxias rostratus	Flathead Galaxias	CE	CE	PMST, ALA (2 records)	–	–	–	–	–	–	**Habitat requirements** This species is endemic to the southern tributaries of the Murray-Darling River System; the Murray, Murrumbidgee and Lachlan Rivers and their tributaries. It has also previously been reported from the upper Macquarie River. mall shoaling fish that grows to 150 mm and 22.5 g, but is seldom over 100 mm. It is often seen mid-water and is found in still and gently flowing waters in small streams, lakes, lagoons, billabongs and backwaters. Its habitats consist of rock or sand bottoms, and aquatic vegetation.	**Moderate -** The proposal study area occurs in habitats where this species known distribution is mapped.	Due to the nature of construction, species is unlikely to be affected – i.e. powerline will span waterbodies. **Considered further in MNES section.**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Maccullochella macquariensis	Trout Cod	-	E	PMST, ALA	–	–	–	–	–	–	**Habitat requirements** This species was historically distributed in upland rivers and streams of the Murray-Darling and East Coast River systems. These fish can be found in a range of habitats including slow- and fast-flowing waters of both small upland streams and larger deeper rivers. This species habitat overlaps with both the Murray Cod and the Macquarie Perch.	**Moderate -** The proposal study area occurs in habitats where this species known distribution is mapped.	Due to the nature of construction, species is unlikely to be affected – i.e. powerline will span waterbodies. **Considered further in MNES section.**
Maccullochella peelii	Murray Cod	-	V	PMST	–	–	–	–	–	–	**Habitat requirements** The Murray Cod was historically distributed throughout the Murray-Darling Basin (the Basin), which extends from southern Queensland, through New South Wales (NSW), the Australian Capital Territory (ACT) and Victoria to South Australia, with the exception of the upper reaches of some tributaries. The species still occurs in most parts of this natural distribution, up to approximately 1000 m above sea level. It utilises a diverse range of habitats from clear rocky streams, such as those found in the upper western slopes of NSW (including the ACT), to slow-flowing, turbid lowland rivers and billabongs. Preferred microhabitat consists of complex structural features in streams such as large rocks, snags (pieces of large submerged woody debris), overhanging stream banks and vegetation, tree stumps, logs, branches and other woody structures.	**Moderate -** The proposal study area occurs in habitats where this species known distribution is mapped.	Due to the nature of construction, species is unlikely to be affected – i.e. powerline will span waterbodies. **Considered further in MNES section.**

SCIENTIFIC NAME	COMMON NAME	BC ACT	EPBC ACT	SOURCE	SAII	IBRA SUBREGIONS					HABITAT REQUIREMENTS / SUITABILITY	HABITAT SUITABILITY	OUTCOME
						SOP	LAC	MUR	LS	IS			
Macquaria australasica	Macquarie Perch	E	E	PMST	–	–	–	–	–	–	**Habitat requirements** Macquarie Perch are found in the Murray-Darling Basin (particularly upstream reaches) of the Lachlan, Murrumbidgee and Murray rivers, and parts of south-eastern coastal NSW, including the Hawkesbury/Nepean and Shoalhaven catchments. Macquarie Perch are found in both river and lake habitats, especially the upper reaches of rivers and their tributaries. It prefers clear water and deep, rocky holes with lots of cover. As well as aquatic vegetation, additional cover may comprise of large boulders, debris and overhanging banks. Spawning occurs just above riffles (shallow running water).	**Moderate** - The proposal study area occurs in habitats where this species known distribution is mapped.	Due to the nature of construction, species is unlikely to be affected – i.e. powerline will span waterbodies. **Considered further in MNES section.**

**Note – listed under the Fisheries Management Act 1994 (FM Act)*

(1) V = Vulnerable, E = Endangered, CE = Critically Endangered, EX = Presumed Extinct under the BC Act

(2) V = Vulnerable, E = Endangered, M = Migratory, X = Extinct.

(3) Source; Professional opinion = ESS expert advice of predicted threatened species areas provided as spatial data, PMST = The Department of Agriculture, Water and the Environment's EPBC Protected Matters Search Tool, BioNet = DPIE's Bionet Atlas of NSW Wildlife, BAM-C = BAM calculator predictor

APPENDIX C-3
Candidate threatened flora species survey effort

Table C-3.1 Candidate threatened flora species survey effort

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL SURVEY PERIOD[3]	VEGETATION TYPE / HABITAT CONSTRAINTS	SURVEY EFFORT
Acacia acanthoclada	Harrow Wattle	E	No	Aug – Nov Survey notes: based on flowering Observational notes: the species is readily identifiable based on phyllodes and growth form all year	PCT's 170, 171& 172 Deep siliceous sands	South Olary Plain IBRA subregion Note: survey effort focused on deep siliceous sands with specific emphasis on PCT 171 and PCT 172. Inspections of shrubs with similar growth form being: *Acacia wilhelmiana*, *Cryptandra sp*. and *Westringia rigida* were regularly undertaken. Representative parallel field traverses (PCT 171 & PCT 172): — 26-27 Oct 2020: Species not recorded during traverses. Two-phase grid-based systematic survey (PCT 171 & PCT 172): — 6-8, 11-13 & 18-20 Oct 2021: Species not recorded. Active searches during BAM vegetation integrity surveys and opportunistic surveys: — 10-18 Feb 2020: Species not recorded. — 19-20 Mar 2020: Species not recorded. — 26-27 October 2020: Species not recorded. — 7-8 June 2021: Species not recorded. — 5-12 Aug 2021: Species not recorded.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL SURVEY PERIOD[3]	VEGETATION TYPE / HABITAT CONSTRAINTS	SURVEY EFFORT
Acacia ausfeldii	Ausfeld's Wattle	V	No	Aug – Oct	PCT's 267 & 277 Habitat constraint: — footslopes and low rises on sandstone Geographical limitations: Inland Slopes IBRA subregion — south of Cowra Note: Most records of this species occur east of Dubbo well outside the proposal locality.	Lower Slopes & Inland Slopes IBRA subregion Parallel field traverses (PCT 267 & 277) — 20-21 Oct 2020: Species not recorded. Two-phase grid-based systematic survey (PCT 267 & 277) — 15-16 Sept 2021: Species not recorded. Active searches during BAM vegetation integrity surveys and opportunistic surveys: — 13-15 April 2021: Species not recorded. — 15 Aug 2021: Species not recorded. — 24-31 Aug 2021: Species not recorded. — 15-16 Sept 2021: Species not recorded. — 31 Oct – 1 Nov 2021: Species not recorded. While survey effort occurred outside of optimal period species is identifiable by habit, and distinguishable from similar species, namely *Acacia verniciflua* and *Acacia leprosa* by phyllode characteristics.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL SURVEY PERIOD[3]	VEGETATION TYPE / HABITAT CONSTRAINTS	SURVEY EFFORT
Acacia carneorum	Purple-wood Wattle	V	Yes	All year	PCT's 58 & 199 Note: Most records of this species occur north of Menindee well outside the proposal locality.	South Olary Plain IBRA subregion Note: targeted surveys for *Acacia carneorum* involved regular close inspection of other similar spiny phyllode species such as *Acacia colletioides* and *Acacia nyssophylla*. Representative parallel field traverses (PCT 58 & PCT 199): — 26-27 Oct 2020: Species not recorded during traverses. Two-phase grid-based systematic survey (PCT 58 & 199) — 6-8, 11-13 & 18-20 Oct 2021: Species not recorded. Active searches during BAM vegetation integrity surveys and opportunistic surveys: — 10-18 Feb 2020: Species not recorded. — 19-20 Mar 2020: Species not recorded. — 26-27 Oct 2020: Species not recorded. — 7-8 June 2021: Species not recorded. — 5-12 Aug 2021: Species not recorded.
Ammobium craspedioides	Yass Daisy	V	No	Sept - Nov	PCT's 277 Geographical limitations: Inland Slopes IBRA subregion — south of Cowra	Inland slopes IBRA subregion Parallel field traverses (PCT 277) — 20-21 Oct 2020: Species not recorded. Active searches during BAM vegetation integrity surveys and opportunistic surveys: — 28-29 Aug 2021: Species not recorded. — 31 Oct – 1 Nov 2021: Species not recorded.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL SURVEY PERIOD[3]	VEGETATION TYPE / HABITAT CONSTRAINTS	SURVEY EFFORT
Amphibromus fluitans	Floating Swamp Wallaby - grass	V	No	Dec - Mar	PCT 249 Habitat constraints: — Semi-permanent/ ephemeral wet areas — Periodically inundated sites (including table drains and farm dams), notably wetlands on riverine floodplain.	Lower Slopes IBRA subregion Two-phase grid-based systematic survey (PCT 249) — 15 Sept 2021 (following rainfall event – refer to Figure 5-6): Species not recorded. Active searches during BAM vegetation integrity surveys and opportunistic surveys: — 13 April 2021: Species not recorded. Despite falling outside of optimal survey period, evidence of species was expected to persist in the landscape, i.e. plants that had begun to die back. — 15 Sept 2021 (following rainfall event – refer to Figure 5-6): Species not recorded. — 31 Oct – 1 Nov 2021: Species not recorded. Whilst surveys were conducted outside optimal seasonal timing, no *Amphibromus* species were recorded from the target vegetation types. Microhabitat searches PCT 249 was only recorded from property H134. PCT 249 occurred in mod-good and derived condition class. Microhabitat searches within these vegetation zones did not record the specific habitat constraints listed in BAM-C (i.e. Semi-permanent/ ephemeral wet areas and periodically inundated sites despite above average rainfall prior to surveys – refer to Figure 5-6). Microhabitat searches occurred at locations with man-made periodically inundated sites, i.e. table drains and farm dams, during all relevant survey periods that followed above average rainfall (refer to Section 5.5.1).

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL SURVEY PERIOD[3]	VEGETATION TYPE / HABITAT CONSTRAINTS	SURVEY EFFORT
Atriplex infrequens	A saltbush	V	No	Nov – Feb Survey notes: Use fruiting bodies to accurately identify. Fruit available between Nov – Feb, 4 to 6 weeks after above average rainfall. Suitable months presumed based on recorded emergence of seedlings in Dec.	PCT's 17, 23, 24, 157, 160, 163, 170 & 216 Habitat note: *Atriplex infrequens* is associated with broad drainage tracts, clay flats and possibly occasionally inundated habitats.	South Olary Plain IBRA subregion Note: *Atriplex infrequens* is closely related *Atriplex semibaccata* both were collected during previous field surveys and forwarded to the National Herbarium of NSW for reference purpose. Representative parallel field traverses (PCT 163 & 170): — 26-27 Oct 2020 (following rainfall event): Species not recorded during traverses. Two-phase grid-based systematic survey (PCT 163 & 170): — 6-8, 11-13 & 18-20 Oct 2021 (following above average rainfall): Species not recorded. Active searches during BAM vegetation integrity surveys and opportunistic surveys: — 10-18 Feb2020: Species not recorded. — 19-20 Mar 2020: Species not recorded. — 7-8 June 2021: Species not recorded. — 5-12 Aug 2021 (following above average rainfall): Species not recorded. As previously surveyed the species appears to grow in response to favourable conditions. Species was previously recorded on 2 May and 22 July 2020 during surveys conducted for Western BDAR following above average rainfall. Species appears to grow in response to favourable conditions and post rainfall would be considered optimal for this species.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL SURVEY PERIOD[3]	VEGETATION TYPE / HABITAT CONSTRAINTS	SURVEY EFFORT
Austrostipa metatoris	A spear-grass	V	No	Oct – Nov Survey notes: very little is known about this species - flowers in response to rain.	PCT's 8, 28 & 170	South Olary Plain & Lower Slopes IBRA subregion Note: While some surveys occurred outside of optimal survey period, 2020 & 2021 were years of above average rainfall providing optimal growing conditions for many plant species – refer to Section 5.5.1. During survey events *Austrostipa spp.* were inspected and fertile material was found from Sept. – April. Representative parallel field traverses (PCT 170): — 26-27 Oct 2020 (following rainfall event): Species not recorded during traverses. Two-phase grid-based systematic survey (PCT 170): — 6-8, 11-13 & 18-20 Oct 2021 (following above average rainfall): Species not recorded. Active searches during BAM vegetation integrity surveys and opportunistic surveys: — 10-18 Feb 2020: Species not recorded. — 19-20 Mar 2020: Species not recorded. — 12, 14, 16 April 2020: Species not recorded. — 7-8 June 2021 (following rainfall event): Species not recorded. — 5-12 Aug 2021 (following above average rainfall): Species not recorded.
Austrostipa wakoolica	A spear-grass	E	No	Oct - Dec	PCT's 17, 26, 28, 74, 76 & 80 Habitat constraint: — alluvial plains and plains Geographical limitations:	Murrumbidgee, Lower Slopes & Inland Slopes IBRA subregion Note: While some surveys occurred outside of optimal survey period, 2020 & 2021 were years of above average rainfall providing optimal growing conditions for many plant species. During survey events *Austrostipa spp.* were inspected and fertile material was found from Sept. – April.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL SURVEY PERIOD[3]	VEGETATION TYPE / HABITAT CONSTRAINTS	SURVEY EFFORT
					Murrumbidgee IBRA subregion — south of the Murrumbidgee River	Representative parallel field traverses (PCT 17, 74 & 76): — 4-10 Sept 2020:10 Sept 2020 recorded an *Austrostipa sp.* in PCT 26_derived on property H084. No fertile material was found, location recorded to allow return during more favourable conditions to confirm species level identification. — 20-23 & 28 Oct 2020: Species not recorded during traverses. Two-phase grid-based systematic survey (PCT 17, 26, 28 & 80) — 7 – 16 Sept 2021: Species not recorded. — 30 Oct 2021: Species not recorded. Active searches during BAM vegetation integrity surveys and opportunistic surveys: — 24-26 May 2019: Species not recorded — 19-20 March 2020: Species not recorded — 4-6 & 9 Sept 2020: Species not recorded — 20-23 & 28 Oct 2020: Species not recorded — 23-31 March 2021: 29 March 2021 unidentified *Austrostipa sp.* (from property H084 during September 2020 surveys) was resampled to ensure confirmation of any potential *Austrostipa wakoolica* was not overlooked. Fertile material found; specimen found to not be Austrostipa *wakoolica* but positively identified as *Austrostipa aristiglumis.* 30 March 2021 recorded unidentified *Austrostipa sp.* in PCT 26_derived on property H087. Plant material, including fertile material collected for positive identification. Further investigation positively identified specimen as *Austrostipa aristiglumis.* — 8-15 April 2021: Species not recorded — 4, 13, 24-28 & 30-31 Aug 2021: Species not recorded — 31 Oct – 1 Nov 2021: Species not recorded.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL SURVEY PERIOD[3]	VEGETATION TYPE / HABITAT CONSTRAINTS	SURVEY EFFORT
Brachyscome muelleroides	Claypan Daisy	V	Yes	Sept - Nov	PCT's 44, 45, 46 & 47 Habitat constraint: — floodplains on grey-brown or red-brown clays and claypans|Semi-permanent/ephemeral wet areas — wetland-grassland communities on grey-brown or red-brown clays and claypans Geographical limitations: Murrumbidgee IBRA subregion — east of the Cobb Highway and south of Griffith	Murrumbidgee IBRA subregion Representative parallel field traverses (PCT 44 & 46) — 10 Sept 2020: Species not recorded. — 22-23 Oct 2020: Species not recorded. Two-phase grid-based systematic survey (PCT 44, 45, 46 & 47) — 9-14 Sept 2021: Species not recorded. — 30 Oct 2021: Species not recorded. Microhabitat searches Searches of inundated grasslands on grey-brown and red-brown clays occurred following above average rainfall in 2020 and 2021. Regular checks of any *Brachyscome* spp. were undertaken.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL SURVEY PERIOD[3]	VEGETATION TYPE / HABITAT CONSTRAINTS	SURVEY EFFORT
Brachyscome papillosa	Mossgiel Daisy	V	No	Sept - Nov	PCT's 13, 15, 17, 24, 44, 45, 46, 76, 80, 157, 160, 163, 164 & 216	South Olary Plain, Lachlan, Murrumbidgee & Lower Slopes IBRA subregions Representative parallel field traverses (PCT 13, 15, 17, 24, 46, 80, 157, 160, 163, 164 & 216) — 4-10 Sept 2020: 7 Sept 2020 recorded large population within PCT 17_mod-good, PCT 163_mod-good & 164_mod-good on property H062. Plant material, including flower and seed, collected for positive identification. 28 Sept 2021 plant material forwarded to the National Herbarium of NSW. — 22-29 & 28 Oct 2020 Two-phase grid-based systematic survey (PCT 13, 15, 17, 24, 44, 45, 46, 80, 157, 160, 163, 164 & 216) — 7-16 Sept 2021: 10 Sept 2021 recorded a population within PCT 24_mod-good on property H079. Plant material, including flower and seed, collected for positive identification. 28 Sept 2021 plant material forwarded to the Nation Herbarium of NSW. 14 Sept 2021 recorded a population within PCT 160_mod-good in a road reserve adjacent to property H114. Plant material, including flower and seed, collected for positive identification. 28 Sept 2021 plant material forwarded to the National Herbarium of NSW. — 30 Oct 2021: records from 14 Sept 2021 revisited. Population surveyed on H114. Active searches during BAM vegetation integrity surveys and opportunistic surveys: — 21 Oct 2020: Species not recorded. — 31 Oct – 1 Nov 2021: Species not recorded.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL SURVEY PERIOD[3]	VEGETATION TYPE / HABITAT CONSTRAINTS	SURVEY EFFORT
Caladenia arenaria	Sand-hill Spider Orchid	E	Yes	Sept	PCT's 28, 75 & 80 Geographical limitations: Murrumbidgee IBRA subregion — east of Jerilderie Lower Slopes IBRA subregion — west of Lockhart and north of Rand	Murrumbidgee, Lower Slopes & Inland Slopes IBRA subregions Note: Reference population in Buckingbong State Forest was visited on 13 September 2021. *Caladenia arenaria* observed to be flowering during visit. Two-phase grid-based systematic survey (PCTs 28, 75 & 80) — 9-16 Sept 2021: Search dates include properties H087, H088 & H090 which lie slightly west of Coleambally. While these locations fall outside of the geographical limitations produced by BAM-C, it was determined that appropriate vegetation communities occurred to support *Caladenia arenaria* populations. Species not recorded. Microhabitat searches Microhabitat searches of sandhills, associated with Callitris, were undertaken in PCT 75 & 80 in areas where the two-phase grid-based system was deemed impractical due to small patch size. Species was not recorded.
Calotis moorei	A burr-daisy	E	Yes	Sept – Nov Survey notes: short-lived perennial. Use flowering/fruiting material to locate. Flowering occurs in the first year of growth. Flowering is recorded for September and fruit have been collected in October.	PCT's 23, 143, 157, 170 & 199	South Olary Plain & Murrumbidgee IBRA subregions Representative parallel field traverses (PCT 23, 143, 157 & 170): — 4-10 Sept 2020: Species not recorded. — 22-23 & 26-28 Oct 2020: Species not recorded. Two-phase grid-based systematic survey (PCT 143, 157, 170 & 199) — 7-14 Sept 2021: Species not recorded. — 6-8, 11-13 & 18-20 Oct 2021: Species not recorded.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL SURVEY PERIOD[3]	VEGETATION TYPE / HABITAT CONSTRAINTS	SURVEY EFFORT
Cratystylis conocephala	Bluebush Daisy	E	No	All year Survey notes: identified by foliage year-round by a skilled botanist familiar with species, as can be easily confused with the foliage of *Maireana sedifolia*. Is also difficult to locate in understorey.	PCT's 58, 170, 171 & 172	South Olary Plain IBRA subregion Note: Surveys involved regular foliage inspection of *Maireana sedifolia* plants. The known plant on Rufus River Rd approximately 10 km south of Renmark Rd (Catalogue number NSW 809068) was visited and had flower buds in September 2020. Known plant was visited again on 6 June 2021. Representative parallel field traverses (PCT's 58, 170, 171 & 172) — 26-27 Oct 2020: Species not recorded. Two-phase grid-based systematic survey (PCT 143, 170 & 199) — 6-8, 11-13 & 18-20 Oct 2021: Species not recorded. Active searches during BAM vegetation integrity surveys and opportunistic surveys: — 10-18 Feb 2020: Species not recorded — 19-20 Mar 2020: Species not recorded — 7-8 June 2021: Species not recorded — 5 & 8-12 Aug 2021: Species not recorded

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL SURVEY PERIOD[3]	VEGETATION TYPE / HABITAT CONSTRAINTS	SURVEY EFFORT
Convolvulus tedmoorei	Bindweed	E	Yes	Jun - Sept	PCT's 17, 24, 26, 44, 45, 46, 157, 160, 163 & 216	Murrumbidgee IBRA subregion Representative parallel traverses (PCT's 17, 24, 26, 44, 45, 46, 157, 160, 163 & 216) — 4-10 Sept 2020: Species not recorded. — 22-23 & 28 Oct 2020: Species not recorded. 2-phase grid-based systematic surveys (PCT's 17, 24, 26, 44, 45, 46, 157, 160, 163 & 216) — 7-14 Sept 2021: Species not recorded. Active searches during BAM vegetation integrity surveys and opportunistic surveys: — 4 & 13 August 2021: Species not recorded.
Cullen parvum	Small Scurf-pea	E	No	Dec - Jan	PCT's 5, 7, 44, 74, 277, 249 Geographical limitations: Murrumbidgee IBRA subregion — Hay Plain and east	Murrumbidgee, Lower Slopes & Inland Slopes IBRA subregions *Cullen parvum* was not recorded during floristic plot sampling and no targeted surveys were undertaken due to time constraints. Surveys are not considered sufficient to dismiss presence of this species within the proposal study area.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL SURVEY PERIOD[3]	VEGETATION TYPE / HABITAT CONSTRAINTS	SURVEY EFFORT
Diuris tricolor	Pine Donkey Orchid	V	No	Sept - Oct	PCT's 75, 76, 80 & 267	Murrumbidgee IBRA subregion Survey effort completed outside of optimal survey period for this species. PCT 75_mod-good was the only community of interest recorded within the proposal study area in the Murrumbidgee subregion, and occurs as small, fragmented, linear patches within agricultural lands (cropping lands) with a total impact area of only 0.21 ha. Lower Slopes & Inland Slopes IBRA subregion Note: Species was observed flowering in Buckingbong State Forest on 13 Sept 2021. 2-phase grid-based systematic surveys (PCT's 75 & 80) — 15-16 Sept 2021: Species not recorded Active searches during BAM vegetation integrity surveys and opportunistic surveys: — 20-21 Oct 2020: Species not recorded. — 26-31 Aug 2021: Species not recorded. — 31 Oct – 1 Nov 2021: Species not recorded. Note: A reference population of this species (Buckingbong State Forest) was inspected on 15 September 2021 where the species was observed to be in flower.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL SURVEY PERIOD[3]	VEGETATION TYPE / HABITAT CONSTRAINTS	SURVEY EFFORT
Diuris sp. (Oaklands, D.L. Jones 5380)	Oaklands Diuris	E	Yes	Nov	PCT's 75 & 80	Murrumbidgee IBRA subregion Survey effort completed outside of optimal survey period for this species. PCT 75_mod-good was the only community of interest recorded within the proposal study area in the Murrumbidgee subregion, and occurs as small, fragmented, linear patches within agricultural lands (cropping lands) with a total impact area of only 0.21 ha. Lower Slopes IBRA subregion 2-phase grid-based systematic surveys (PCT's 75 & 80) — 15-16 Sept 2021: Species not recorded Active searches during BAM vegetation integrity surveys and opportunistic surveys: — 20-21 Oct 2020: Species not recorded — 26-31 Aug 2021: Species not recorded — 31 Oct – 1 Nov 2021: Species not recorded. Note: Species recorded only from Urana area and deemed unlikely to occur within the proposal study area.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL SURVEY PERIOD[3]	VEGETATION TYPE / HABITAT CONSTRAINTS	SURVEY EFFORT
Dodonaea sinuolata subsp. *acrodentata*	A Hopbush	E	Yes	July – Nov Survey: Use fruit to locate and identify. Flowering/fruiting dependent on above average rainfall. Survey after above average rainfall. General: Ecological data assumed based on similar species.	PCT 58 & 143	Lachlan IBRA subregion Two-phase grid-based systematic survey (PCT 143, 170 & 199): — 18-20 Oct 2021: Species not recorded. Note: Known to grow on stony ridges and sandy "jump-ups" on stony red sandy-loams with limonite and quartzite pebbles. Typically associated with *Acacia aneura, A. harpophylla, Eucalyptus melanophloia, E. populnea* and *E. cambageana*. Neither landform pattern, lithology or associated assemblage of species was recorded in the proposal study area.
Dodonaea stenozyga	Desert Hopbush	CE	Yes	All year	PCT's 170,171 & 172	South Olary Plain IBRA subregion Note: Can be easily confused with the foliage of *Eremophila sturtii* and *Senna artemisioides* subsp. *filifolia* when fruiting bodies not present. Regular checks of *Eremophila sturtii* and *Senna artemisioides* subsp. *filifolia* were undertaken. Representative parallel field traverse (PCT170, 171 & 172) — 26-27 Oct 2020: Species not recorded. Two-phase grid-based systematic survey (PCT 170, 171 & 172): — 6-8, 11-13 & 18-20 Oct 2021: Species not recorded.
Eleocharis obicis	Spike-Rush	V	No	Oct – Nov Survey: Ephemeral, and requires good soaking rains to emerge, primarily in spring.	PCT's 11, 13, 17, 24, 47, 53, 76, 160, 164, 216 Habitat constraint: Present — semi-permanent / ephemeral wet areas	Lachlan, Murrumbidgee & Lower Slopes IBRA subregion Note: BAM-C has not recommended this as a candidate species for the Murrumbidgee subregion. However due to records around Hay area it has been included. Due to insufficient information known about this species, optimal survey period determined to depend more greatly on rainfall than BAM-C predicted survey months.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL SURVEY PERIOD[3]	VEGETATION TYPE / HABITAT CONSTRAINTS	SURVEY EFFORT
				Survey after soaking rains. General: Little knowledge, much of this information is based on observational information/estimates.	— periodically waterlogged sites (including table drains and farm dams)	Representative parallel field traverse (PCT 13, 17, 24, 160, 164 & 216) — 4-10 Sept 2020: Survey period following above average winter rainfall leaving large patches of inundated ephemeral wet areas. 7 September 2020 *Eleocharis sp.* recorded and collected, including fertile material, from PCT 160_mod-good & PCT 17_Mod-good on property H062. On further investigation specimen we deemed *Eleocharis pusilla.* 9 September 2020 recorded *Eleocharis* spp. in PCT_160 mod-good & PCT 17_mod-good on property H081 & H081A respectively. Plant material, including fertile material, was collected for positive identification. Upon further investigation specimen was deemed to be *Eleocharis pusilla.* — 20-23 & 28 Oct 2020: Survey period following above average winter and spring rains. *Eleocharis acuta, E. pallens, E. pusilla* and *E. plana* recorded with spikelet and nut present. 2-phase grid-based systematic survey (PCT 13, 17, 24, 47, 53, 160, 164 & 216) — 7-16 Sept 2021: Survey following major rainfall event; large areas inundated. *Eleocharis acuta, E. pallens, E. pusilla* and *E. plana* recorded with spikelet and nut present. — 18-20 Oct 2021: Species not recorded — 30 Oct 2021: Species not recorded. Active searches during BAM vegetation integrity surveys and opportunistic surveys (only includes post-drought surveys that correspond to periods of above average rainfall or a major rain event – refer to Section 5.5.1): — 8-15 April 2021: Species not found — 4, 13, 24-27 & 31 Aug 2021: Species not found — 31 Oct – 1 Nov 2021: Species not recorded

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL SURVEY PERIOD[3]	VEGETATION TYPE / HABITAT CONSTRAINTS	SURVEY EFFORT
						Microhabitat searches Microhabitat searches of inundated areas including table drains and farm dams occurred during 20-21 October 2020 following above average winter and spring rainfall. *Eleocharis* spp. were regularly inspected. *Eleocharis pusilla* and *E. plana* were recorded.
Erodiophyllum elderi	Koonamore Daisy	E	Yes	Sept - Dec	PCT 199	South Olary Plain IBRA subregion Note: Species is highly restricted to sandy calcareous soils south of Broken Hill. 2-phase grid-based systematic survey (PCT 199): — 6-8 & 11-13 Oct 2021: Species not recorded.
Eucalyptus leucoxylon subsp. *pruinosa*	Yellow Gum	V	No	All year Survey notes: not listed	PCT's 11, 13 & 15 Occurs at the bases of sandy rises and on loamy clay flats on the floodplains of the Murray River and its tributaries in the Riverina Bioregion.	Murrumbidgee IBRA subregion Note: This species is only known to occur in NSW in several small areas between Barham and Euston. Representative parallel field traverses (PCT 11, 13 &15) — 4-6, 9-10 Aug 2020: Species not recorded. — 2-phase grid-based systematic survey (PCT 11, 13 &15) — 10-12 Sept 2021: Species not recorded. Active searches during BAM vegetation integrity surveys and opportunistic surveys — 23 & 27-28 March 2021: Species not recorded. — 8-12 April 2021: Species not recorded. — 4, 13 & 24-25 Aug 2021: Species not recorded.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL SURVEY PERIOD[3]	VEGETATION TYPE / HABITAT CONSTRAINTS	SURVEY EFFORT
Euphrasia arguta	Euphrasia arguta	CE	Yes	Nov - March	PCT 267 & 277	Inland Slopes IBRA subregion *Euphrasia arguta* was not recorded during floristic plot sampling and targeted survey for this species were conducted outside of optimal seasonal survey period. *Euphrasia arguta* was rediscovered in the Nundle area of the NSW north western slopes and tablelands in 2008. Prior to this, it had not been collected for 100 years. Historically, *Euphrasia arguta* has only been recorded from relatively few places within an area extending from Sydney to Bathurst and north to Walcha. This species has not been recorded from the NSW South Western Slopes Bioregion and considered out of range within the proposal area.
Indigofera efoliata	-	CE	Yes	Sept - Oct	PCT 76 & 267	Lower Slopes & Inland Slopes IBRA subregion Parallel field traverses (PCT 76 & 267) — 20-21 Oct 2020: Species not recorded. Two-phase grid-based systematic survey (PCT 76 & 267) — 15-16 Sept 2021: Species not recorded. Active searches during BAM vegetation integrity surveys and opportunistic surveys — 15-16 Sept 2021: Species not recorded — 31 Oct – 1 Nov 2021: Species not recorded.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL SURVEY PERIOD[3]	VEGETATION TYPE / HABITAT CONSTRAINTS	SURVEY EFFORT
Kippistia suaedifolia	Fleshy Minuria	E	Yes	All year Survey notes: survey after above average rainfall. Flowers from August to October, mostly from September to November.	PCT 143 Habitat notes: Grows around saline lakes and depressions, often in association with gypsum. Rare in NSW, recorded only from a restricted area on a loamy and highly gypseous soil.	South Olary Plain IBRA subregion Note: No gypseous soil recorded within proposal study area. Representative parallel field traverses (PCT 143) — 26-27 Oct 2020: Species not found. 2-phase grid-based systematic survey (PCT 143) — 6-8 & 11-13 Oct 2021: Species not recorded. Active searches during BAM vegetation integrity surveys and opportunistic surveys — 10-18 Feb 2020: Species not found. — 19-20 March 2020: Species not found. — 7-8 June 2021: Species not found. — 5, 8-12 August 2021: Species not found.
Lasiopetalum behrii	Pink Velvet Bush	CE	Yes	All year Survey notes: not listed Flowering period is late winter to spring	PCT 170, 171 & 172 Habitat constraint: — Shallow, sandy soils — Grows in mallee and red dune and swale country.	South Olary Plain IBRA subregion Representative parallel field traverses (PCT 170, 171 & 172) — 26-27 Oct 2020: Species not found. 2-phase grid-based systematic survey (PCT 170, 171 & 172) — 6-8 & 11-13 Oct 2021: Species not recorded. Active searches during BAM vegetation integrity surveys and opportunistic surveys — 10-18 Feb 2020: Species not found. — 19-20 March 2020: Species not found. — 7-8 June 2021: Species not found. — 5, 8-12 August 2021: Species not found.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL SURVEY PERIOD[3]	VEGETATION TYPE / HABITAT CONSTRAINTS	SURVEY EFFORT
Lepidium aschersonii	Spiny Peppercress	V	No	Nov - Apr	PCT 76	Lower Slopes IBRA subregion Active searches during BAM vegetation integrity surveys and opportunistic surveys — 14-15 April 2021 – given the very small patch sizes that comprise this vegetation zone, opportunistic surveys were deemed reliable to detect the presence of this species during late autumn flowering period. Surveys occurred after above average rainfall in January – March 2021 (Figure 5-7) — 1 Nov 2021: Species not recorded. Microhabitat searches Microhabitat searches within these patches failed to identify gilgai clays or grey loamy clays of which the species is known from. Microhabitats within patches comprising the 1.25 ha of impact are not considered suitable to support this species.
Lepidium monoplocoides	Winged Peppercress	E	No	Nov – Feb Survey notes: use seed-heads to identify. Survey about 1 month after significant rain. Plants emerge about 1 month after rain and only persist for a few months.	PCT's 13, 15, 24, 26, 45, 46, 47, 74, 80, 160, 163, 170 & 216 Habitat note: Mostly restricted to seasonally moist sites	South Olary Plain, Lachlan, Murrumbidgee & Lower Slopes IBRA subregions Note: Whilst BAM-C predicts optimal survey period for this species to occur between November and February, it is noted that rainfall conditions are more critical to the lifecycle of this species with plants emerging about 1 month after significant rainfall. Targeted surveys were conducted following above average spring rainfall for 2020 & 2021 (refer to Section 5.5.1 for more detailed analysis). Conditions for *Lepidium* flowering and fruit set were good in September 2020 & 2021. Regular checks of any *Lepidium spp.* found were undertaken. *Lepidium papillosum, L. phlebopetalum*, and *L. fasciculatum* were examined closely. One individual of *Lepidium monoplocoides* was recorded.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL SURVEY PERIOD[3]	VEGETATION TYPE / HABITAT CONSTRAINTS	SURVEY EFFORT
						Representative parallel field traverses (PCT 13, 15, 24, 26, 160, 163, 170 & 216) — 4-10 Sept 2020: Species not recorded. — 22-29 & 28 Oct 2020: Species not recorded. Two-phase grid-based systematic survey (13, 15, 24, 26, 45, 46, 47, 80, 160, 163 & 216) — 7-16 Sept 2021: Species not recorded. — 6-8, 11-13 & 18-20 Oct 2021 (following above average rainfall – refer to section 5.5.1): Species not recorded. — 30 Oct 2021 A potential *Lepidium monoplocoides* was recorded on property H104 in PCT 44_Mod-good. Plant material, including fruit was collected, for positive identification. Active searches during BAM plots & opportunistic surveys — 19-20 Mar 2020: Species not recorded. — 22-23 & 26-28 Oct 2020: Species not recorded. — 24-31 Mar 2021: Species not recorded. — 8-13 Apr 2021: Species not recorded. — 7-8 June 2021: Species not recorded. — 4-5 & 8-13 Aug 2021: Species not recorded. — 31 Oct – 1 Nov 2021: Species not recorded.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL SURVEY PERIOD[3]	VEGETATION TYPE / HABITAT CONSTRAINTS	SURVEY EFFORT
Leptorhynchos orientalis	Lanky Buttons	E	No	Sept - Nov	PCT's 24, 26, 44, 45, 46 & 47	Lachlan & Murrumbidgee IBRA subregions Representative parallel field traverses (PCT 24, 26, 44 & 46) — 4-10 Sept 2020: Species not recorded. — 22-23 & 28 Oct 2020: Species not recorded. Two-phase grid-based systematic survey (PCT 24, 26, 44, 45, 46 & 47) — 7-14 Sept 2020: 12 Sept 2021 recorded species from PCT 44_mod-good on property H090. Plant material collected, including flower, for positive identification. 28 Sept 2021 plant material forwarded to the National Herbarium of NSW. — 18-20 Oct 2021: Species not recorded. — 30 Oct 2021: Species not recorded.
Leptorhynchos waitzia	Button Immortelle	E	Yes	Sept – Nov Survey notes: not listed Limited survey information is known for this species in NSW.	PCT 170	South Olary Plain IBRA subregion Representative parallel field traverses (PCT 170): — 26-27 Oct 2020: Species not recorded during traverses. Two-phase grid-based systematic survey (PCT 170): — 6-8, 11-13 & 18-20 Oct 2021 (following above average rainfall): Species not recorded.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL SURVEY PERIOD[3]	VEGETATION TYPE / HABITAT CONSTRAINTS	SURVEY EFFORT
Maireana cheelii	Chariot Wheels	V	No	Sept - Dec	PCT's 26, 44, 46, 157, 163 & 164 Habitat constraint: — heavy grey clay soils and claypans or shallow depressions Geographical limitations: Murrumbidgee IBRA subregion — east of Darlington Point, west of Jerilderie	Murrumbidgee IBRA subregion Note: *Maireana cheelii* superficially looks like *Maireana pentagona* and the species are often found growing together. Regular inspections of *Maireana* sp. with similar growth habits occurred to ensure positive identification of any *M. cheelii* populations. Representative parallel field traverses (PCT 26, 44, 46, 157, 163 & 164) — 4-10 Sept 2020: *Maireana cheelii* found at multiple locations during survey period, most with the distinct 5-winged chariot wheel fruiting body. Dates and locations are as follows: — 6 Sept 2020 in PCT 163_mod-good on property H062. Multiple populations recorded in association with red clay scalds. — 8 Sept 2020 in PCT 163_mod-good on property H070. Small population found. — 10 Sept 2020 in PCT 44_mod-good, PCT 46_mod-good & PCT 216_mod-good on property H084. Population found in conjunction with large *Swainsona murrayana* population. — 22-23 & 28 Oct 2020: Species not found. Two-phase grid-based systematic survey (PCT 26, 44, 46, 157, 163 & 164) — 7-14 Sept 2021: *Maireana cheelii* found at multiple locations during survey period, most with distinct 5-winged chariot wheel fruiting body. — 7 & 8 Sept 2021 in PCT 157_mod-good & PCT 163_mod-good on property H064. Significant populations recorded, with one potentially recording 500+ individual plants. Larger populations were associated with red clay scalds.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL SURVEY PERIOD[3]	VEGETATION TYPE / HABITAT CONSTRAINTS	SURVEY EFFORT
						— 9 & 10 Sept 2021 in PCT 17_mod-good, PCT 163_mod-good & PCT 164_mod-good on property H075. Multiple populations found, sometimes in conjunction with *Swainsona murrayana* populations. — 30 Oct 2021: species not recorded Active searches during BAM vegetation integrity surveys and opportunistic surveys: Note: Whilst surveys occurred outside of optimal predicted survey period for this species, it was discovered that plants, including chariot wheels, were persisting in the landscape. — 23-31 March 2021: 26 March 2021 *Maireana cheelii* recorded in Q67E (PCT 163_mod-good) on property H062. Distinct chariot wheel fruiting body and plant found. — 8-10 April 2021: Species not recorded. — 4 & 13 Aug 2021: Species not recorded. Microhabitat searches Despite BAM-C providing the habitat constraint of *Maireana cheelii* occurring on heavy grey soils, it was observed that to be growing more consistently and in larger populations on hard cracking red clay soils associated with scalds. Microhabitat searches of large scalds occurred during all survey periods.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL SURVEY PERIOD[3]	VEGETATION TYPE / HABITAT CONSTRAINTS	SURVEY EFFORT
Pilularia novae-hollandiae	Austral Pillwort	E	Yes	Oct – Dec Survey Oct - Dec in drying mud after inundation. Strongly recommend expert report to discount presence or absence if conditions do not meet requirements.	PCT's 13, 15, 26, 44, 45, 46, 47, 53, 74, & 249 PCT's not included in BAM-C but recorded populations – PCT 17 & PCT 160. Geographical limitations: Murrumbidgee IBRA subregion — east of Deniliquin	Murrumbidgee, Lower Slopes & Inland Slopes IBRA subregions Note: Whilst BAM-C has recommended Oct- Dec as optimal survey period for this species, species was observed with fruiting capsule outside of this season. Due to above average rainfall (2020 & 2021), species sighting outside of season and species reliance on periodic inundation, surveys conducted outside of this period but after major rainfall events considered valid. Representative parallel field traverses (PCT 13, 15, 26, 44, 46, 74) — 4-10 Sept 2020: 9 Sept 2020 species recorded from property H081 & H081A in PCT 17_mod-good & PCT 160_mod-good. Small population of approximately 50 plants was identified. Plant material, including fruiting capsules, collected for positive identification. 28 Sept 2021 plant material forwarded to National Herbarium of NSW. — 20-21 Oct 2020: Species not recorded. 2-phase grid-based systematic survey (PCT 13, 15, 26, 44, 45, 46, 53 & 249) — 7-16 Sept 2021: Species not recorded. — 30 Oct 2021: Species not recorded. Active searches during BAM vegetation integrity surveys and opportunistic surveys: — 20-21 Oct 2020: Species not recorded. — 10-13 April 2021: Species not recorded. — 13 Aug 2021: Species not recorded. — 31 Oct – 1 Nov 2021: Species not recorded.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL SURVEY PERIOD[3]	VEGETATION TYPE / HABITAT CONSTRAINTS	SURVEY EFFORT
						Microhabitat searches Microhabitat searches were conducted in areas subject to inundation and/or drying after inundation. Efforts were focused on PCTs 17 & 160 which occur in low lying areas subject to periods of inundation following rainfall.
Pimelea serpyllifolia subsp. *serpyllifolia*	Thyme Rice-Flower	E	Yes	Jul – Nov Grows in scrub and woodland on calcareous soils. Often found in sandy red soils supporting mallee scrub.	PCT's 170, 171 & 172 Geographical limitations: — Within 50 km of the Murray River	South Olary Plain subregions Representative parallel field traverses (PCT 170, 171 & 172) — 26-27 Oct 2020: Species not recorded. Two-phase grid-based systematic survey (PCT 170, 171 & 172): — 6-8, 11-13 & 18-20 Oct 2021: Species recorded on property H035 by Dr Ian Sluiter. Population was estimated at about 40 plants, 10 of which were recorded in a BAM vegetation integrity plot (too be provided in first revision). Active searches during BAM vegetation integrity surveys and opportunistic surveys: — 5, 8-12 Aug 2021: Species not recorded.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL SURVEY PERIOD[3]	VEGETATION TYPE / HABITAT CONSTRAINTS	SURVEY EFFORT
Prasophyllum petilum (Syn. *Prasophyllum* sp. Wybong)	Tarengo Leek Orchid	E	No	Sept - Dec Notes: For sites north of Queanbeyan survey period is listed as Oct, for sites south of Queanbeyan survey period is listed as Nov – Dec. Survey period is also listed to vary based on the season.	PCT's 267 & 277 Geographical limitations: Inland Slopes IBRA subregion — east of Binalong, south and east of Boorowa	Inland Slopes IBRA subregion Note: Patches of PCT 267 & 277 recorded within the proposal study area were recorded as small patches within agricultural lands (cropping lands). A total of 0.26 ha of PCT 267_mod-good & 2.92 ha of PCT 277_mod-good fall within the impact footprint. The proposed alignment falls mainly due west of Queanbeyan. Due to above average rainfall preceding survey periods (refer to Figure 5-7 & Figure 5-8) it is accepted that flowering most likely would have occurred in October. Representative parallel field traverses (PCT 267 & 277): — 20-21 Oct 2020: Species not recorded. Active searches during BAM vegetation integrity surveys and opportunistic surveys: — 31 Oct & 1 Nov 2021: Species not recorded
Prasophyllum sp. Wybong		-	Yes			

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL SURVEY PERIOD[3]	VEGETATION TYPE / HABITAT CONSTRAINTS	SURVEY EFFORT
Pterostylis cobarensis	Greenhood Orchid	V	No	Oct Survey: Use flowers to locate and identify, usually in October. Rosette growth and flowering dependent on soaking rains in autumn and winter. Plants are deciduous and die back to the large, underground tubers after seed release or in dry weather, and become undetectable.	PCT's 170 & 171	South Olary Plain IBRA subregion Note: Soaking rains recorded during autumn and winter preceding survey effort – refer to section 5.5.1. Representative parallel field traverse (PCT 170 & 171): — 26-27 Oct 2020: Species not recorded. Two-phase grid-based systematic survey (PCT 170 & 171): — 6-8, 11-13 & 18-20 Oct 2021: Species not recorded.
Santalum murrayanum	Bitter Quandong	E	No	All year Survey notes: not listed Fruits seen mostly during September and October; however fruiting collections have also been made from January to August.	PCT's 170, 171 & 172 Habitat constraint: — Sandy loam or loamy sand	South Olary Plain IBRA subregion Representative parallel field traverses (PCT 170, 171 & PCT 172): — 26-27 Oct 2020: Species not recorded during traverses. Two-phase grid-based systematic survey (PCT 170, 171 & PCT 172): — 6-8, 11-13 & 18-20 Oct 2021: Species not recorded. Active searches during BAM vegetation integrity surveys and opportunistic surveys: — 10-18 Feb 2020: 16 & 17 Feb 2020 recorded four (4) of plants. Plants were not currently fruiting, but old fruit was found at the base. — 19-20 Mar 2020: Species not recorded. — 26-27 October 2020: Species not recorded. — 7-8 June 2021: Species not recorded. — 5-12 Aug 2021: Species not recorded.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL SURVEY PERIOD[3]	VEGETATION TYPE / HABITAT CONSTRAINTS	SURVEY EFFORT
Sclerolaena napiformis	Turnip Copperburr	E	No	Sept - Dec	PCT's 26, 44, 46 Geographical limitations: — Hay Plain	Murrumbidgee IBRA subregion Representative parallel field traverses (PCT 26, 44 & 46) — 10 Sept 2020: Species not recorded. — 22-23 Oct 2020: Species not recorded. Two-phase grid-based systematic survey (PCT 44, 45, 46 & 47) — 9-14 Sept 2021: Species not recorded. — 30 Oct 2021: Species not recorded.
Solanum karsense	Menindee Nightshade	V	No	Sept – Nov Survey notes: survey after flood recession if possible as flowering is driven by flood disturbance. Species does not flower every year.	PCT's 13, 15, 17, 24 & 160 Habitat constraint: — Semi-permanent / ephemeral wet areas Geographical limitations: — west of Maude	South Olary Plain, Lachlan & Murrumbidgee IBRA subregions Representative parallel field traverses (PCTs 13, 15, 17 & 160) — 4-7 Sept 2020: Species not recorded. Two-phase grid-based systematic survey (PCT 15 & 24): — 6-8, 11-13 & 18-20 Oct 2021: Species not recorded.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL SURVEY PERIOD[3]	VEGETATION TYPE / HABITAT CONSTRAINTS	SURVEY EFFORT
Swainsona colutoides	Bladder Senna	E	No	All year Survey notes: survey after soaking rain and when night-time temperatures are above frost temperatures. Survey up to 2 years after fire.	PCT's 170, 171 & 172 Habitat notes: Grows on sandy flats or skeletal hillside soils in mallee woodland.	South Olary Plain IBRA subregion Note: Surveys were undertaken after above average rainfall. Disturbed edges and areas of recent mallee clearing were targeted. No *Swainsona* sp. were recorded. Representative parallel field traverses (PCT 170, 171 & 172) — 26-27 Oct 2020: Species not found. Two-phase grid-based systematic survey (PCT 170, 171 &172) — 6-8 & 11-13 Oct 2021: Species not recorded. Active searches during BAM vegetation integrity surveys and opportunistic surveys — 10-18 Feb 2020: Species not found. — 19-20 March 2020: Species not found. — 7-8 June 2021: Species not found. — 5, 8-12 August 2021: Species not found.
Swainsona murrayana	Slender Darling Pea	V	No	Sept Survey notes: not listed	PCT's 15, 23, 26, 28, 44, 45, 46, 76, 80, 157, 163, 164 & 216	Lachlan, Murrumbidgee & Lower Slopes IBRA subregions Note: Surveys were undertaken after above average rainfall. All *Swainsona* spp. located in the field were checked. Representative parallel field traverses (PCT 15, 23, 26, 28, 44, 46, 157, 163, 164 & 216) — 4-10 Sept 2020: *Swainsona murrayana* found at multiple locations during survey period. Dates and locations are as follows: — 7 Sept 2020 in PCT 157_mod-good in the Cobb Highway TSR. Small population within TSR, but larger population in neighbouring property H075 could be seen.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL SURVEY PERIOD[3]	VEGETATION TYPE / HABITAT CONSTRAINTS	SURVEY EFFORT
						— 8 Sept 2020 in PCT 163_mod-good on property H064. This population was recorded in conjunction with known records occurring along Boorooban-Tchelery Road. — 9 Sept 2020 in PCT 163_mod-good and PCT 17_mod-good on property H081/H081A. Multiple populations found. — 10 Sept 2020 PCT 24_mod-good, PCT 44_mod-good & PCT 46_mod-good. Multiple populations found including one large population associated with PCT 44_mod-good and one population found in conjunction with *Swainsona sericea* population. 2-phase grid-based systematic survey (PCT 15, 23, 26, 28, 44, 45, 46, 76, 80, 157, 163, 164 & 216) — 7-16 Sept 2021 *Swainsona murrayana* found at multiple locations during survey period. Dates and locations are as follows: — 7-8 Sept 2021 in PCT163_mod-good on property H064. Multiple populations found. — 9-11 Sept 2021 in PCT 46_mod-good, 164_mod-good & PCT 163_mod-good on property H075. Multiple populations found; some large in size. Recorded to grow with *Maireana cheelii*. Population recorded in the Cobb Highway TSR (borders property boundary) was re-visited and plants were observed to be flowering. 10 Sept 2021 plant material, including flower, was collected for positive identification. 28 Sept 2021 plant material was forwarded to National Herbarium of NSW. — 9 Sept 2021 in PCT 26_moderate, PCT 26_mod-good & PCT 164_ mod-good on property H087. Multiple populations found including one large population associated with PCT 26_moderate. Due to time constraints, every second circle was surveyed in PCT 26_moderate. Results indicate species presence across all patches of PCT 26_mod-good & PCT 26-moderate.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL SURVEY PERIOD[3]	VEGETATION TYPE / HABITAT CONSTRAINTS	SURVEY EFFORT
						— 13-14 Sept 2021 in PCT 46 mod-good in Bundure Siding TSR. Population found to be growing alongside *Swainsona sericea.* — 13-14 Sept 2021 in PCT 44_mod-good, PCT 45_mod-good, PCT 46_mod-good, PCT 164_mod-good & lands mapped as Category 1 on H104. Very large population (>1,000 plants) recorded. Found to be growing in areas subject to modification including two paddocks that have been classified as Category 1 exempt lands. Species recorded to be growing alongside *Swainsona sericea.* — 14 Sept 2021 in PCT 44_mod-good & PCT 45_mod-good in The Gums TSR. Population recorded with a high density of *Swainsona murrayana* plants growing in conjunction with *Swainsona sericea.* — 30 Oct 2021: *Swainsona murrayana* found on H090 & H104. — The population on H090 was found to be senescent but still contained few flowers and fruit for positive identification. Population size was small and isolated to a patch of PCT 26_moderate and PCT 26_derived. — The population on H104 was found to be extensive and occurred in a number of PCTs including PCT's 44, 45 & 46. This population forms part of a larger population that extends across to Bundure Siding TSR and The Gums TSR. Note: On 10 Sept 2020 a very large population was recorded at Coonong TSR which falls outside of the current alignment. Population was revisited on 25 Aug 2021 as a reference population. Specimens were reidentified and observed to not yet be in flower (only several flowers found).

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL SURVEY PERIOD[3]	VEGETATION TYPE / HABITAT CONSTRAINTS	SURVEY EFFORT
Swainsona plagiotropis	Red Darling Pea	V	No	Sept	PCT's 26, 44, 45, 46 Geographical limitations: — Hay Plain	South Olary Plain, Murrumbidgee, Lower Slopes & Inland Slopes IBRA subregions Representative parallel field traverse (PCT's 23, 26, 28, 44, 45, 46, 74, 76, 80) — 4-10 Sept 2020: Species not recorded. — 20-23 Oct 2020: Species not recorded. Two-phase grid-based systematic survey (PCT's 26, 28, 44, 45, 46 & 80) — 7-16 Sept 2021: Species not recorded. — 30 Oct 2021: Species not recorded.
Swainsona pyrophila	Yellow Swainson-pea	V	No	Sept – Nov Survey notes: not listed Flowers mainly from September to December.	PCT's 170, 171 & 172 Habitat note: Grows in mallee scrub on sandy or loamy soil, usually found only after fire.	South Olary Plain IBRA subregion Representative parallel field traverses (PCT 170, 171 & 172) — 26-27 Oct 2020: Species not found. Two-phase grid-based systematic survey (PCT 170, 171 & 172) — 6-8 & 11-13 Oct 2021: Species not recorded.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL SURVEY PERIOD[3]	VEGETATION TYPE / HABITAT CONSTRAINTS	SURVEY EFFORT
Swainsona recta	Small Purple-pea	E	No	Sept - Nov	PCT's 76, 267 & 277	Lower Slopes & Inland Slopes IBRA subregions Representative parallel field traverse (PCT 76, 267 & 277) — 20-21 Oct 2020: Species not recorded. Active searches during BAM vegetation integrity surveys and opportunistic surveys: — 30 Aug 2021: Species not recorded. — 31 Oct – 1 Nov 2021: Species not recorded. Note: Vegetation associated with the PCT types listed above were recorded to occur as small, sometimes linear, patches within agricultural lands (cropping lands) and were often subject to weed incursions resulting in diminished vegetation integrity. Species determined unlikely to occur within the proposal study area.
Swainsona sericea	Silky Swainson-pea	V	No	Sept – Nov Survey notes: survey months differ based on location. Survey Oct – Nov on Monaro. Survey Sep – Oct in the Riverina.	PCT's 23, 26, 28, 44, 45, 46, 74, 76, 80	Murrumbidgee IBRA subregion Note: 16 Sept 2021 species was observed to be flowering in Buckingbong State Forest. Plant material, including flower was collected for positive identification. 28 Sept 2021 plant material were forwarded to the National Herbarium of NSW. Representative parallel field traverses (PCT 26, 44 & 46) — 10 Sept 2020 recorded in PCT 46_mod-good on property H084. Small population recorded. Two-phase grid-based systematic surveys (PCT 26, 44, 45 & 46) — 9-16 Sept 2021 *Swainsona sericea* found at multiple locations during survey period. Dates and locations are as follows: — 12 Sept 2021 Population previously recorded on property H091 (see active search section below).

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL SURVEY PERIOD[3]	VEGETATION TYPE / HABITAT CONSTRAINTS	SURVEY EFFORT
						— 13-14 Sept 2021 in PCT 46_mod-good in Bundure Siding TSR. Found to be growing alongside *Swainsona murrayana.* — 13-14 Sept 2021 in PCT 44_mod-good, PCT 45_mod-good, PCT 46_mod-good & PCT 164_mod-good on property H104. Large population found that encompasses most of the proposal study area for this property. Found to be growing alongside *Swainsona murrayana* albeit in less numbers. — 14 Sept 2021 in PCT 44_mod-good & PCT 45_mod-good in The Gums TSR. Found to be growing alongside *Swainsona murrayana* albeit in less numbers. — 30 Oct 2021: Species not found. Active searches during BAM vegetation integrity surveys and opportunistic surveys: — 16 Aug 2021: whilst surveys occurred outside of optimal predicted survey period species was observed to already be in flower on property H091. Small population recorded in Q195E. Population was revisited on 12 Sept 2021.

APPENDIX C-4
Candidate threatened fauna species survey effort

Table C-4.1 Candidate threatened fauna species survey effort

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL/BREEDING SURVEY PERIOD[3]	HABITAT / BREEDING FEATURES	SURVEY EFFORT
Insects						
Synemon plana	Sun Moth	E	Yes	Oct – Dec Note: Males only fly on bright sunny days during the warmest part of the day (1000 hrs – 1400 hrs).	PCT 277 Habitat constraints: — Wallaby grass (*Rytidosperma sp*), Chilean needlegrass (*Nassella nessiana*) or Serrated Tussock (*Nassella trichotoma*) Note: Typically associated with grassy plains	Inland Slopes IBRA subregion Note: survey effort restricted to one survey day per site due to poor quality habitat. Grassy Woodlands (PCT 277): — Habitat assessment (12 person hours) — Targeted species search (12 person hours) — Survey dates as follows: — 8-9 Dec 2021
Amphibians						
Crinia sloanei	Sloane's Froglet	V	No	July-Aug	PCT's 5, 74, 76, 80, 249 Habitat constraint: — semi-permanent/ephemeral wet areas — containing relatively shallow sections with submergent and emergent vegetation, or within 500 m of wet areas and swamps — within 500 m of waterbodies	Murrumbidgee, Lower Slopes & Inland Slopes IBRA subregion: Note: Reference site at Charles Sturt University visited to ensure reference population was calling. Surveys took place following rainfall – refer to section 5.5.1. Grassy Woodlands (PCT 74, 76, 80): — Assessment of wetland habitat — Frog call playback — Spotlighting/targeted nocturnal survey (4 person hours) — Survey dates as follows: — 20-22 July 2020 — 23 – 24 Aug 2021 Riverine (PCT 5): — Assessment of wetland habitat — Frog call playback — Spotlighting/targeted nocturnal survey (4 person hours) — Survey dates as follows: — 25 Aug 2021

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL/BREEDING SURVEY PERIOD[3]	HABITAT / BREEDING FEATURES	SURVEY EFFORT
Litoria booroolongensis	Booroolong Frog	E	No	Oct - Dec	PCT's 277 Note: Live along permanent streams with some fringing vegetation cover such as ferns, sedges or grasses	Inland Slopes IBRA subregion Opportunistic habitat assessment did not identify any potential habitat for this species within the proposed development study area – i.e no permanent streams identified within areas mapped as PCT 277.
Litoria raniformis	Southern Bell Frog	E	No	Oct - Jan	PCT's 7, 8, 11, 13, 15, 17, 24, 47, 53, 249 Note: associated with lakes, swamps and rivers	Lachlan, Murrumbidgee & Lower Slopes IBRA subregion Opportunistic habitat assessment did not identify any potential habitat for this species within the proposed development study area.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL/BREEDING SURVEY PERIOD[3]	HABITAT / BREEDING FEATURES	SURVEY EFFORT
Neobatrachus pictus	Painted Burrowing Frog	E	No	Year round	PCT's 15, 58, 163, 170, 171, 172 Note: associated with floodplains, grasslands and swamps	South Olary Plain IBRA subregion Note: surveys occurred following above average rainfall periods – refer to section 5.5.1. Arid Woodlands/Shrublands (PCT 58, 170, 171, 172) — Pitfall trapping (242 trap nights) — 2-5 Dec 2019 — 11-19 Feb 2020 — 18-21 March 2020 — 23-31 Mar 2021 — Funnel trapping (274 trap nights) — 2-5 Dec 2019 — 11-19 Feb 2020 — 18-21 March 2020 — 23-31 Mar 2021 — Elliot A trapping (300 trap nights) — 18-21 March 2020 — 23-31 Mar 2021 — Elliot E trapping (120 trap nights) — 18-21 March 2020 — 23-31 Mar 2021 — Spotlighting — Survey dates (non-trapping) — 2-9 Sept 2021 Riverine (PCT 15) — Habitat assessment and opportunistic survey (23 person hrs) — Targeted survey (3 person hours) — 19-23 July 2020

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL/BREEDING SURVEY PERIOD[3]	HABITAT / BREEDING FEATURES	SURVEY EFFORT
Reptiles						
Aprasia parapulchella	Pink-tailed Legless Lizard	V	No	Sept-Nov	PCT's 267, 277, 319 Habitat constraint: — rocky areas — within 50m of rocky areas	Inland Slopes IBRA subregion Grassy Woodlands (PCT 267 & 277) Opportunistic habitat assessments determined no suitable habitat within these PCTs. No targeted surveys completed. Rocky Woodlands (PCT 319): — Roof tile surveys (14,406 tile days) — 2 Sept – 9 Dec 2021 — Opportunistic surveys — Habitat assessments — Survey dates: — 26 April 2021 — 2 Sept 2021 — 9 Dec 2021
Delma impar	Striped Legless Lizard	V	No	Sept - Dec	PCT's 277 Note: associated with grassy woodland on rocky substrates	Inland Slopes IBRA subregion Grassy Woodlands (PCT 277) Opportunistic habitat assessments determined no suitable habitat within these PCTs. No targeted surveys completed.
Lucasium stenodactylum	Crowned Gecko	V	No	Oct - Mar	PCT's 143, 153, 170, 199 Note: associated with sand hill habitats	South Olary Plain IBRA subregion Arid Woodlands/Shrublands (PCT 143, 170, 199) — 23 - 31 Mar 2021 — 178 x Pitfall trap nights — 178 x funnel trap nights — 72 person hours spotlighting

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL/BREEDING SURVEY PERIOD[3]	HABITAT / BREEDING FEATURES	SURVEY EFFORT
Birds						
Amytornis striatus	Striated Grasswren	V	Yes	Year round	PCT's 171, 172 Note: associated with Spinifex Mallee	South Olary Plain IBRA subregion Arid Woodlands/Shrublands (PCT 171, 172) — Formal 20-minute bird surveys (32 surveys) — Opportunistic surveys (302 person hours) — Survey dates as follows: — 2-5 Dec 2019 — 11-18 & 19 Feb 2020 — 18-21 Mar 2020 — 23-31 Mar 2020 — 19-23 July 2020 — 2- 9 Sept 2021
Anthochaera phrygia	Regent Honeyeater	CE	Yes	N/A	As per mapped areas Note: The species is a dual credit species, mapped important areas are a species credit, these areas do not require survey and any impact from development could be potentially serious and irreversible. Ecosystem credit areas are unlikely to be potential serious and irreversible impacts.	Murrumbidgee, Lower Slopes and Inland Slopes IBRA subregions No mapped important habitat within the proposed development study area.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL/BREEDING SURVEY PERIOD[3]	HABITAT / BREEDING FEATURES	SURVEY EFFORT
Ardeotis australis	Australian Bustard	E	No	All year	PCT's 11, 15, 22, 23, 24, 26, 28, 44, 45, 46, 47, 53, 58, 143, 157, 160, 163, 164, 166, 199, 216 Note: associated with chenopod shrublands and grassy plains	South Olary Plain, Lachlan and Murrumbidgee IBRA subregion Arid Woodlands/shrublands (PCT 22, 23, 26, 28, 59, 143, 199) — Habitat assessments — Formal 20- minute bird surveys (33 surveys) — Opportunistic surveys (339 person hours) — Survey dates as follows: — 3-5 Dec 2019 — 11-19 Feb 2020 — 18 – 21 & 23 – 31 Mar 2020 — 19-20 July 2020 — 2- 9 Sept 2021 Chenopod shrublands (PCTs 157, 163, 164, 166, 216) — Habitat assessments — Formal 20-minute bird surveys (2 surveys) — Opportunistic surveys (112 person hours) — Survey dates as follows: — 19 – 23 July 2020 — 8 - 15 Apr 2021 — 7- 26 Sept 2021 Grasslands (PCTs 44, 45, 46) — Habitat assessments — Formal 20 -minute bird surveys (6 surveys) — Opportunistic surveys (156 person hours) — Survey dates as follows: — 7 – 15 Apr 2020 — 24-17 May 2021 — 7 – 16 Sept 2021

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL/BREEDING SURVEY PERIOD[3]	HABITAT / BREEDING FEATURES	SURVEY EFFORT
						Riverine (PCT 11, 15) — Habitat assessments — Formal 20-minute bird surveys (2 surveys) — Opportunistic surveys (68 person hours) — Survey dates as follows: — 3 Dec 2019 — 11 Feb 2020 — 12 & 14 Apr 2020 — 20-22 Jul 2020 — 28 Apr 2021 — 7-19 Sept 2021 Wetlands (PCTs 24, 47, 53, 160) — Habitat assessments (32 person hours) — Opportunistic surveys (56 person hours) — Survey dates as follows: — 21- 22 Jul 2020 — 7 -16 Sept 2021

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL/BREEDING SURVEY PERIOD[3]	HABITAT / BREEDING FEATURES	SURVEY EFFORT
Burhinus grallarius	Bush Stone-curlew	V	No	All year	PCT's 5, 7, 8, 11, 13, 15, 22, 23, 26, 28, 58, 74, 75, 76, 80, 249, 267, 277 Habitat constraint: — fallen/standing dead timber including logs Note: associated with grassy woodlands	South Olary Plain, Lachlan, Murrumbidgee, Lower Slopes and Inland Slopes IBRA subregion Arid woodland/shrublands (PCT 22, 23, 26, 28, 58) — Habitat assessment — Formal 20-minute bird surveys (33 surveys) — Opportunistic surveys (339 person hours) — Survey dates as follows: — 3-5 Dec 2019 — 11-19 Feb 2020 — 18-21 & 23-31 Mar 2020 — 19-20 July 2020 — 2-9 Sept 2021 Grassy Woodlands (PCT 74, 75, 76, 80, 249, 267, 277) — Formal 20-minute bird surveys (23 surveys) — Opportunistic surveys (211 person hours) — Survey dates as follows: — 3-5 Dec 2019 — 11-19 Feb 2020 — 19-2- July 2020 — 2-9 Sept 2021 — 16 Sept 2021 Riverine (PCT 5, 7, 8, 11, 13, 15) — Formal 20-minute bird surveys (2 surveys) — Opportunistic surveys (58 person hours) — Survey dates as follows: — 3 Dec 2019 — 12 & 14 April 2020 — 11 Feb 2020 — 20-22 July 2020 — 28 Apr 2021 — 7-16 Sept 2021

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL/BREEDING SURVEY PERIOD[3]	HABITAT / BREEDING FEATURES	SURVEY EFFORT
Calidris ferruginea	Curlew Sandpiper	E	Yes	N/A	As per mapped areas Note: The species is a dual credit species, mapped important areas are a species credit, these areas do not require survey and any impact from development could be potentially serious and irreversible. Ecosystem credit areas are unlikely to be potential serious and irreversible impacts.	Lachlan and Murrumbidgee IBRA subregion No mapped important habitat within the proposed development study area.
Callocephalon fimbriatum	Gang-gang Cockatoo	V	No	Oct - Jan	PCT's 5, 74, 75, 267, 277 Habitat constraint (breeding): — Eucalypt tree species with hollows greater than 9 cm diameter	Lower Slopes and Inland Slopes IBRA subregion Grassy Woodlands (PCT74, 75, 267, 277) — Habitat assessments — Formal 20-minute bird surveys (23 surveys) — Opportunistic surveys (203 person hours) — Survey dates are as follows: — 3-5 Dec 2019 — 11-19 Feb 2020 — 19-20 July 2020 — 2-9 Sept 2021 — 19 Sept 2021 Riverine (PCT 5) — Habitat assessments — Formal 20-minute bird surveys (2 surveys) — Opportunistic surveys (68 person hours) — Survey dates are as follows: — 3 Dec 2019 — 11 Feb 2020 — 12 & 14 April 2020 — 20-22 July 2020 — 28 April 2021 — 7-16 Sept 2021

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL/BREEDING SURVEY PERIOD[3]	HABITAT / BREEDING FEATURES	SURVEY EFFORT
Calyptorhynchus lathami	Glossy Black-Cockatoo	V	No	Jan-Sept	PCT's 74, 75, 76, 80, 110 Note: associated with grassy woodlands	Lower Slopes & Inland Slopes IBRA subregion Grassy Woodlands (PCT 74, 75, 76, 80) — Habitat assessments — Formal 20-minute bird surveys (23 surveys) — Opportunistic surveys (203 person hours) — Survey dates are as follows: — 3-5 Dec 2019 — 11-19 Feb 2020 — 19-20 July 2020 — 2-9 Sept 2021 — 19 Sept 2021 Rocky Woodlands (PCT 110) — Habitat assessments — Opportunistic surveys (8 person hours) — Survey dates are as follow: — 26 April 2021 — 2 Sept 2021
Calyptorhynchus lathami	Glossy Black-Cockatoo, Riverina population	E	No	All year	PCT's 74, 75, 76, 80 Geographical limitations: — Endangered population in Carrathool, Griffith, Leeton and Narrandera LGAs	Murrumbidgee & Lower Slopes IBRA subregion Grassy Woodlands (PCT 74, 75, 76, 80) — Habitat assessments — Formal 20-minute bird surveys (23 surveys) — Opportunistic surveys (203 person hours) — Survey dates are as follows: — 3-5 Dec 2019 — 11-19 Feb 2020 — 19-20 July 2020 — 2-9 Sept 2021 — 19 Sept 2021

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL/BREEDING SURVEY PERIOD[3]	HABITAT / BREEDING FEATURES	SURVEY EFFORT
Climacteris affinis	White-browed Treecreeper – endangered population	E	No	All year	PCT's 58, 80 Geographical limitations: — Endangered population in Carrathool local government area south of the Lachlan River and Griffith local government area	Lachlan, Murrumbidgee and Lower Slopes IBRA subregion Arid woodland/shrublands (PCT 22, 23, 26, 28, 58) — Habitat assessment — Formal 20-minute bird surveys (33 surveys) — Opportunistic surveys (339 person hours) — Survey dates as follows: — 3-5 Dec 2019 — 11-19 Feb 2020 — 18-21 & 23-31 Mar 2020 — 19-20 July 2020 — 2-9 Sept 2021 Grassy Woodlands (PCT 74, 75, 76, 80) — Habitat assessments — Formal 20-minute bird surveys (23 surveys) — Opportunistic surveys (203 person hours) — Survey dates are as follows: — 3-5 Dec 2019 — 11-19 Feb 2020 — 19-20 July 2020 — 2-9 Sept 2021 — 19 Sept 2021

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL/BREEDING SURVEY PERIOD[3]	HABITAT / BREEDING FEATURES	SURVEY EFFORT
Haliaeetus leucogaster	White-bellied Sea-Eagle	V	No	July-Dec	PCT's 5, 7, 8, 11, 13, 15, 17, 23, 24, 26, 28, 44, 45, 46, 47, 53, 58, 74, 75, 76, 80, 110, 143, 157, 160, 163, 164, 166, 170, 171, 182, 216, 249, 267, 277 & 319. Note: associated with riparian forest – inland lakes and rivers Habitat constraint: — living or dead mature trees within suitable vegetation within 1km of a rivers, lakes, large dams or creeks, wetlands and coastlines	South Olary Plain, Lachlan, Murrumbidgee, Lower Slopes & Inland Slopes IBRA subregion Arid Woodlands/Shrublands (PCT 28, 26, 58, 143, 170, 171) — Formal 20-minute bird surveys (24 surveys) — Opportunistic surveys (768 person hours) — Survey dates are as follows: — 2-5 Dec 2019 — 11-19 Feb 2020 — 18-21, 23-31 Mar 2020 — 19-23 July 2020 — 8-15 Apr 2021 — 25-30 Apr 2021 — 24-17 May 2021 — 2-9 Sept 2021 Chenopod Shrublands (PCT 157, 163, 164, 216) — Formal 20-minute bird surveys (2 surveys) — Opportunistic surveys (116 person hours) — Survey dates are as follows: — 19-23 July 2020 — 7-15 Apr 2021 — 7-16 Sept 2021 Grasslands (PCT 44, 45, 46) — Formal 20-minute bird surveys (6 surveys) — Opportunistic surveys (156 person hours) — Survey dates are as follows: — 8-15 Apr 2021 — 24-27 May 2021 — 7-16 Sept 2021

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL/BREEDING SURVEY PERIOD[3]	HABITAT / BREEDING FEATURES	SURVEY EFFORT
						Grassy Woodlands (74, 75, 76, 80, 267, 277) — Opportunistic surveys (65 person hours) — Survey dates are as follows: — 3-5 Dec 2019 — 23 Jul 2020 — 14 Apr 2021 — 25, 27-30 Apr 2021 — 27 May 2021 — 7-16 Sept 2021 Riverine (PCT 5, 7, 8, 11, 13, 14, 249) — Formal 20-minute bird surveys (2 surveys) — Opportunistic surveys (68 person hours) — Survey dates are as follows: — 3 Dec 2019 — 11 Feb 2020 — 12, 14 Apr 2020 — 20-22 Jul 2020 — 28 Apr 2021 — 7-16 Sept 2021 Rocky Woodlands (PCT 110, 319) — Habitat assessment — Opportunistic surveys (8 person hours) — Survey dates are as follows: — 26 Apr 2021 — 2 Sept 2021 Wetlands (PCT 17, 24, 47, 53, 160, 182) — Opportunistic surveys (56 person hours) — Survey dates are as follows: — 21-22 July 2020 — 7-16 Sept 2021

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL/BREEDING SURVEY PERIOD[3]	HABITAT / BREEDING FEATURES	SURVEY EFFORT
Hamirostra melanosternon	Black-breasted Buzzard	V	No	Sept-Nov	PCT's 15, 23, 24, 58, 143, 163, 170, 171, 172, 199 Note: associated with semi-arid zone – open country Habitat constraint: — waterbodies — land within 40 m of riparian woodland on inland watercourses/waterholes containing dead or dying eucalypts	South Olary Plain, Lachlan and Lower Slopes IBRA subregion Arid Woodlands/Shrublands (PCT 23, 58, 143, 170, 171, 172, 199) — Formal 20-minute bird surveys (24 surveys) — Opportunistic surveys (768 person hours) — Survey dates are as follows: — 2-5 Dec 2019 — 11-19 Feb 2020 — 18-21, 23-31 Mar 2020 — 19-23 July 2020 — 8-15 Apr 2021 — 25-30 Apr 2021 — 24-17 May 2021 — 2-9 Sept 2021 Chenopod shrublands (PCT 163) — Formal 20-minute bird surveys (2 surveys) — Opportunistic surveys (116 person hours) — Survey dates are as follows: — 19-23 July 2020 — 7-15 Apr 2021 — 7-16 Sept 2021 Riverine (PCT 15) — Formal 20-minute bird surveys (2 surveys) — Opportunistic surveys (68 person hours) — Survey dates are as follows: — 3 Dec 2019 — 11 Feb 2020 — 12, 14 Apr 2020 — 20-22 Jul 2020 — 28 Apr 2021 — 7-16 Sept 2021

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL/BREEDING SURVEY PERIOD[3]	HABITAT / BREEDING FEATURES	SURVEY EFFORT
						Wetlands (PCT 24) — Opportunistic surveys (56 person hours) — Survey dates are as follows: — 21-22 July 2020 — 7-16 Sept 2021
Hieraaetus morphnoides	Little Eagle	V	No	Aug-Oct	PCT's 5, 7, 8, 11, 13, 15, 17, 22, 23, 24, 26, 28, 44, 45, 46, 47, 53, 58, 74, 75, 76, 80, 110, 143, 157, 160, 163, 164, 166, 170, 171, 172, 182, 199, 216, 249, 267, 277, 319 Note: typically occurs in woodlands with associated grassland Habitat constraint: — nest trees - live (occasionally dead) large old trees within vegetation)	South Olary Plain, Lachlan, Murrumbidgee, Lower Slopes and Inland Slope IBRA subregion Arid Woodlands/Shrublands (PCT 22, 23, 26, 28, 58, 143, 170, 171, 172, 199) — Formal 20-minute bird surveys (24 surveys) — Opportunistic surveys (768 person hours) — Survey dates are as follows: — 2-5 Dec 2019 — 11-19 Feb 2020 — 18-21, 23-31 Mar 2020 — 19-23 July 2020 — 8-15 Apr 2021 — 25-30 Apr 2021 — 24-17 May 2021 — 2-9 Sept 2021 Chenopod Shrublands (PCT 157, 163, 164, 166, 216) — Formal 20-minute bird surveys (2 surveys) — Opportunistic surveys (116 person hours) — Survey dates are as follows: — 19-23 July 2020 — 7-15 Apr 2021 — 7-16 Sept 2021 Grasslands (PCT 44, 45, 46) — Formal 20-minute bird surveys (6 surveys) — Opportunistic surveys (156 person hours) — Survey dates are as follows:

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL/BREEDING SURVEY PERIOD[3]	HABITAT / BREEDING FEATURES	SURVEY EFFORT
						— 8-15 Apr 2021 — 24-27 May 2021 — 7-16 Sept 2021 Grassy Woodlands (74, 75, 76, 80, 267, 277) — Opportunistic surveys (65 person hours) — Survey dates are as follows: — 3-5 Dec 2019 — 23 Jul 2020 — 14 Apr 2021 — 25, 27-30 Apr 2021 — 27 May 2021 — 7-16 Sept 2021 Riverine (PCT 5, 7, 8, 11, 13, 15, 249) — Formal 20-minute bird surveys (2 surveys) — Opportunistic surveys (68 person hours) — Survey dates are as follows: — 3 Dec 2019 — 11 Feb 2020 — 12, 14 Apr 2020 — 20-22 Jul 2020 — 28 Apr 2021 — 7-16 Sept 2021 Rocky Woodlands (PCT 110, 319) — Habitat assessment — Opportunistic surveys (8 person hours) — Survey dates are as follows: — 26 Apr 2021 — 2 Sept 2021

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL/BREEDING SURVEY PERIOD[3]	HABITAT / BREEDING FEATURES	SURVEY EFFORT
						Wetlands (PCT 17, 24, 47, 53, 160, 182) — Opportunistic surveys (56 person hours) — Survey dates are as follows: — 21-22 July 2020 — 7-16 Sept 2021
Lathamus discolor	Swift Parrot	E	Yes	N/A	As per mapped areas Note: The species is a dual credit species, mapped important areas are a species credit, these areas do not require survey and any impact from development could be potentially serious and irreversible. Ecosystem credit areas are unlikely to be potential serious and irreversible impacts.	Murrumbidgee, Lower Slopes and Inland Slopes IBRA subregion No mapped important habitat within the proposed development study area.
Limosa limosa	Black-tailed Godwit	V	No	N/A	As per mapped areas. Note: The species is a dual credit species, mapped important areas are a species credit, these areas do not require survey and any impact from development could be potentially serious and irreversible. Ecosystem credit areas are unlikely to be potential serious and irreversible impacts.	Murrumbidgee IBRA subregion No mapped important habitat within the proposed development study area.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL/BREEDING SURVEY PERIOD[3]	HABITAT / BREEDING FEATURES	SURVEY EFFORT
Lophochroa leadbeateri	Major Mitchell's Cockatoo	V	No	Sept-Dec	PCT's, 7, 8, 11, 13, 15, 22, 23, 26, 28, 58, 74, 76, 80, 110, 143, 163, 166, 170, 171, 172, 199, 249 Note: associated with Callitris and mallee – arid riverine Habitat constraint: — hollow bearing trees — living or dead tree with hollows greater than 10cm diameter	South Olary Plain, Lachlan, Murrumbidgee, Lower Slopes and Inland Slopes IBRA subregion Arid Woodlands/Shrublands (PCT 22, 23, 26, 28, 58, 143, 170, 171, 172, 199) — Formal 20-minute bird surveys (24 surveys) — Opportunistic surveys (768 person hours) — Survey dates are as follows: — 2-5 Dec 2019 — 11-19 Feb 2020 — 18-21, 23-31 Mar 2020 — 19-23 July 2020 — 8-15 Apr 2021 — 25-30 Apr 2021 — 24-17 May 2021 — 2-9 Sept 2021 Chenopod Shrublands (PCT 163, 166) — Formal 20-minute bird surveys (2 surveys) — Opportunistic surveys (116 person hours) — Survey dates are as follows: — 19-23 July 2020 — 7-15 Apr 2021 — 7-16 Sept 2021 Grassy Woodlands (74, 76, 80) — Opportunistic surveys (65 person hours) — Survey dates are as follows: — 3-5 Dec 2019 — 23 Jul 2020 — 14 Apr 2021 — 25, 27-30 Apr 2021 — 27 May 2021 — 7-16 Sept 2021

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL/BREEDING SURVEY PERIOD[3]	HABITAT / BREEDING FEATURES	SURVEY EFFORT
						Riverine (PCT 7, 8, 11, 13, 15, 249) — Formal 20-minute bird surveys (2 surveys) — Opportunistic surveys (68 person hours) — Survey dates are as follows: — 3 Dec 2019 — 11 Feb 2020 — 12, 14 Apr 2020 — 20-22 Jul 2020 — 28 Apr 2021 — 7-16 Sept 2021 Rocky Woodlands (PCT 110, 319) — Habitat assessment — Opportunistic surveys (8 person hours) — Survey dates are as follows: — 26 Apr 2021 — 2 Sept 2021
Lophoictinia isura	Square-tailed Kite	V	No	Sept-Jan	PCT's 5, 7, 8, 11, 13, 15, 22, 23, 26, 28, 45, 58, 74, 76, 80, 110, 143, 163, 166, 170, 171, 172, 249, 267, 277 Woodlands – Mallee, floodplain and riverine	South Olary Plain, Lachlan, Murrumbidgee, Lower Slopes and Inland Slopes IBRA subregion Arid Woodlands/Shrublands (PCT 22, 23, 26, 28, 58, 143, 170, 171, 172) — Formal 20-minute bird surveys (24 surveys) — Opportunistic surveys (768 person hours) — Survey dates are as follows: — 2-5 Dec 2019 — 11-19 Feb 2020 — 18-21, 23-31 Mar 2020 — 19-23 July 2020 — 8-15 Apr 2021 — 25-30 Apr 2021 — 24-17 May 2021 — 2-9 Sept 2021

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL/BREEDING SURVEY PERIOD[3]	HABITAT / BREEDING FEATURES	SURVEY EFFORT
						Chenopod Shrublands (PCT 163, 166) — Formal 20-minute bird surveys (2 surveys) — Opportunistic surveys (116 person hours) — Survey dates are as follows: — 19-23 July 2020 — 7-15 Apr 2021 — 7-16 Sept 2021 Grasslands (PCT 45) — Formal 20-minute bird surveys (6 surveys) — Opportunistic surveys (156 person hours) — Survey dates are as follows: — 8-15 Apr 2021 — 24-27 May 2021 — 7-16 Sept 2021 Grassy Woodlands (74, 76, 80, 267, 277) — Opportunistic surveys (65 person hours) — Survey dates are as follows: — 3-5 Dec 2019 — 23 Jul 2020 — 14 Apr 2021 — 25, 27-30 Apr 2021 — 27 May 2021 — 7-16 Sept 2021 Riverine (PCT 5, 7, 8, 11, 13, 15, 249) — Formal 20-minute bird surveys (2 surveys) — Opportunistic surveys (68 person hours) — Survey dates are as follows: — 3 Dec 2019 — 11 Feb 2020 — 12, 14 Apr 2020 — 20-22 Jul 2020

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL/BREEDING SURVEY PERIOD[3]	HABITAT / BREEDING FEATURES	SURVEY EFFORT
						— 28 Apr 2021 — 7-16 Sept 2021 Rocky Woodlands (PCT 110, 319) — Habitat assessment — Opportunistic surveys (8 person hours) — Survey dates are as follows: — 26 Apr 2021 — 2 Sept 2021
Manorina melanotis	Black-eared Miner	CE	Yes		PCT's 170, 171, 172 Note: associated with mallee vegetation	South Olary Plain IBRA subregion Arid Woodlands/Shrublands (PCT 22, 23, 26, 28, 58, 143, 170, 171, 172) — Formal 20-minute bird surveys (24 surveys) — Opportunistic surveys (768 person hours) — Survey dates are as follows: — 2-5 Dec 2019 — 11-19 Feb 2020 — 18-21, 23-31 Mar 2020 — 19-23 July 2020 — 8-15 Apr 2021 — 25-30 Apr 2021 — 24-17 May 2021 — 2-9 Sept 2021

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL/BREEDING SURVEY PERIOD[3]	HABITAT / BREEDING FEATURES	SURVEY EFFORT
Ninox connivens	Barking Owl	V	No	May-Dec	PCT's 5, 7, 8, 11, 13, 15, 24, 26, 53, 74, 75, 76, 80, 110, 267, 277, 249, 319 Note: associated with woodlands and riparian vegetation	South Olary Plain, Lachlan, Murrumbidgee, Lower Slopes and Inland Slopes IBRA subregion Grassy Woodlands (PCT 74, 75, 76, 80, 267, 277) — Owl call playback — Spotlighting — Pellet searches — Survey dates are as follows: — 25-31 Aug 2021 Riverine (PCT 5, 7, 8, 11, 13, 15, 249) — Owl call playback — Spotlighting — Pellet searches — Survey dates are as follows: — 24 & 25 Aug 2021 Rocky Woodlands (PCT 110, 319) — Owl call playback — Spotlighting — Pellet searches — Survey dates are as follows: — 30 Aug 2021
Ninox strenua	Powerful Owl	V	No	May-Aug	PCT 5 Habitat constraints (breeding): — living or dead trees with hollow greater than 20cm diameter	Inland Slopes IBRA subregion Riverine (PCT 5) — Habitat assessment — Call playback and spotlighting (6 person hours) — Pellet searches (4 person hours) — Survey dates: — 24 & 25 Aug 2021

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL/BREEDING SURVEY PERIOD[3]	HABITAT / BREEDING FEATURES	SURVEY EFFORT
Pachycephala rufogularis	Red-lored Whistler	CE	Yes	All year	PCT's 171, 172 Note: associated with mallee vegetation	South Olary Plain IBRA subregion Arid woodlands/shrublands (PCT 171, 172) — Habitat assessment — Opportunistic surveys (339 person hours) — Formal 20-minute bird surveys (33 surveys) — Survey dates: — 3-5 Dec 2019 — 11-19 Feb 2020 — 18-21, 23-31 Mar 2020 — 19 & 20 July 2020 — 1-9 Sept 2021
Pedionomus torquatus	Plains-wanderer	E	Yes	N/A	PCT's 44, 46 Habitat constraint: As per mapped areas Note: The species is a dual credit species, mapped important areas are a species credit, these areas do not require survey and any impact from development could be potentially serious and irreversible. Ecosystem credit areas are unlikely to be potential serious and irreversible impacts.	Murrumbidgee IBRA subregion Note: targeted surveys were undertaken despite important habitat mapping. Grasslands (PCT 44, 46) — Opportunistic surveys (146 person hours) — Nocturnal call playback — Spotlight/infrared scope — Survey dates as follows: — 8-15 Apr 2020 — 24-17 May 2021 — 7-16 Sept 2021

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL/BREEDING SURVEY PERIOD[3]	HABITAT / BREEDING FEATURES	SURVEY EFFORT
Polytelis anthopeplus monarchoides	Regent Parrot (eastern subspecies)	E	No	Aug-Nov	PCT's 8, 11, 13, 15, 22, 58, 170, 171, 172 Note: associated with mallee, floodplain and riparian areas Habitat constraint: — hollow bearing trees — living or dead *E. camaldulensis* with hollows greater than 5 cm diameter, greater than 5 m above the ground OR trees with DBH of greater than 40cm, within 1 km of watercourses or billabongs. Trees can be isolated but within 20 km of mallee Geographical limitations: — within 30 km of the Murray and Murrumbidgee Rivers	South Olary Plain, Lachlan & Murrumbidgee IBRA subregion Arid woodland/shrublands (PCT 22, 58, 170, 171, 172) — Habitat assessment — Formal 20-minute bird surveys (33 surveys) — Opportunistic surveys (339 person hours) — Survey dates as follows: — 3-5 Dec 2019 — 11-19 Feb 2020 — 18-21 & 23-31 Mar 2020 — 19-20 July 2020 — 2-9 Sept 2021 Riverine (PCT 8, 11, 13, 15) — Formal 20-minute bird surveys (2 surveys) — Opportunistic surveys (58 person hours) — Survey dates as follows: — 3 Dec 2019 — 12 & 14 April 2020 — 11 Feb 2020 — 20-22 July 2020 — 28 Apr 2021 — 7-16 Sept 2021

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL/BREEDING SURVEY PERIOD[3]	HABITAT / BREEDING FEATURES	SURVEY EFFORT
Polytelis swainsonii	Superb Parrot	V	No	Sept-Nov	PCT's 5, 7, 11, 13, 23, 26, 28, 45, 46, 74, 75, 76, 80, 110, 249, 267, 277 Habitat constraint: — hollow bearing trees — living or dead *E. blakelyi, E. melliodora, E. albens, E. camaldulensis, E. microcarpa, E. polyanthemos, E. mannifera, E. intertexta* with hollows greater than 5cm diameter — greater than 4m above ground or trees with a DBH of greater than 30cm Note: Grassy and riparian woodlands	Lachlan, Murrumbidgee, Lower Slopes & Inland Slopes IBRA subregion Arid woodland/shrublands (PCT 23, 26, 28) — Habitat assessment — Formal 20-minute bird surveys (33 surveys) — Opportunistic surveys (339 person hours) — Survey dates as follows: — 3-5 Dec 2019 — 11-19 Feb 2020 — 18-21 & 23-31 Mar 2020 — 19-20 July 2020 — 2-9 Sept 2021 Grassy Woodlands (PCT 74, 75, 76, 80, 249, 267, 277) — Formal 20-minute bird surveys (23 surveys) — Opportunistic surveys (211 person hours) — Survey dates as follows: — 3-5 Dec 2019 — 11-19 Feb 2020 — 19-2- July 2020 — 2-9 Sept 2021 — 16 Sept 2021 Grasslands (PCTs 45, 46) — Habitat assessments — Formal 20 -minute bird surveys (6 surveys) — Opportunistic surveys (64 person hours) — Survey dates as follows: — 7 – 15 Apr 2020 — 7 – 16 Sept 2021 Riverine (PCT 5, 7, 11, 13) — Formal 20-minute bird surveys (2 surveys) — Opportunistic surveys (58 person hours)

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL/BREEDING SURVEY PERIOD[3]	HABITAT / BREEDING FEATURES	SURVEY EFFORT
						— Survey dates as follows: — 3 Dec 2019 — 12 & 14 April 2020 — 11 Feb 2020 — 20-22 July 2020 — 28 Apr 2021 — 7-16 Sept 2021
Tyto novaehollandiae	Masked Owl	V	No	May-Aug	PCT's 7, 11, 13, 24, 26, 53, 74, 76, 80, 110, 249, 267, 277 Not mallee – woodlands and riparian Habitat constraint: — hollow bearing trees living or dead trees with hollows greater than 20cm diameter	Lachlan, Murrumbidgee, Lower Slopes and Inland Slopes IBRA subregion Grassy Woodlands (PCT 74, 76, 80, 267, 277) — Owl call playback — Spotlighting — Pellet searches — Survey dates are as follows: — 25-31 Aug 2021 Riverine (PCT 7, 11, 13) — Owl call playback — Spotlighting — Pellet searches — Survey dates are as follows: — 24 & 25 Aug 2021 Rocky Woodlands (PCT 110) — Owl call playback — Spotlighting — Pellet searches — Survey dates are as follows: — 30 Aug 2021

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL/BREEDING SURVEY PERIOD[3]	HABITAT / BREEDING FEATURES	SURVEY EFFORT
Mammals						
Cercartetus nanus	Eastern Pygmy-possum	V	No	Dec-March	PCT's 74, 80, 110 Note: associated with forests and woodlands	Lower Slopes & Inland Slopes IBRA subregion Grassy Woodlands (PCT 74, 80) — Habitat searches and assessments — Spotlighting — Arboreal trapping — Remote camera traps — Survey dates: — 11 Feb 2020 — 20 July 2020 — 26-April – 3 May 2021 — 26 May – 8 Nov 2021 Rocky woodlands (PCT 110) — Habitat assessments — Remote camera trapping — Survey dates: — 2 Sept 2021 — 26 April – 4 Aug 2021 — 25 Aug 2021

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL/BREEDING SURVEY PERIOD[3]	HABITAT / BREEDING FEATURES	SURVEY EFFORT
Chalinolobus dwyeri	Large-eared Pied Bat	V	Yes	Nov-Jan	PCT 267, 277 Note: associated with forests and woodlands with escarpments Habitat constraint: — cliffs — within two kilometres of rocky areas containing caves, overhangs, escarpments, outcrops, or crevices, or within two kilometres of old mines or tunnels	Inland Slopes IBRA subregion Grassy Woodlands (PCT 267, 277) Note: Species is only a species credit if the following habitat exists: Potential breeding habitat is PCTs associated with the species within 100m of rocky areas containing caves, or overhangs or crevices, cliffs or escarpments, or old mines, tunnels, culverts, derelict concrete buildings. Surveys must be undertaken as per the Threatened Bat Survey Guide to confirm breeding habitat. No suitable habitat identified during field survey for this species to qualify as a species credit species. No survey effort required.
Lasiorhinus latifrons	Southern Hairy-nosed Wombat	E	No	All year	PCT's 58, 170, 171, 172 Note: associated with semi-arid to arid grassy woodlands with suitable burrowing substrates	South Olary Plain IBRA subregion Arid Woodlands/Shrublands (PCT 58, 170, 171, 172) — Habitat assessment — Spotlighting — Survey dates — 23-31 March 2021 — 2-9 Sept 2021
Miniopterus orianae oceanensis	Large Bent-winged Bat	V	Yes (breeding)	Dec-Feb	PCT 277 Habitat constraints (breeding): — Cave, tunnel, mine, culvert or other structure known or suspected to be used for breeding including species records with microhabitat code "IC - in cave;" observation type code "E nest-roost;" with numbers of individuals >500	Inland Slopes IBRA subregion Note: Species requires potential breeding habitat in the form of caves, tunnels, mine, culvert or other structure suspected to be used for breeding to qualify as a species credit species. No suitable habitat identified during field survey for this species to qualify as a species credit species. No survey effort required.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL/BREEDING SURVEY PERIOD[3]	HABITAT / BREEDING FEATURES	SURVEY EFFORT
Myotis macropus	Southern Myotis	V	No	Oct-March	PCT's 5, 7, 8, 11, 74, 182, 249 Forests, woodlands, water Habitat constraint: — hollow bearing trees — within 200 m of riparian zone | other — bridges, caves or artificial structures within 200 m of riparian zone | waterbodies this includes rivers, creeks, billabongs, lagoons, dams and other waterbodies on or within 200m of the site	Murrumbidgee, Lower Slopes & Inland Slopes IBRA subregion Grassy Woodlands (PCT 74) No suitable habitat identified in field survey. No targeted survey effort completed. Riverine (PCT 5, 7, 8, 11, 249) — Harp Trap — Anabat surveys — Survey dates — 3 Dec 2019 — 11 Feb 2020 Wetlands (PCT 182) — Active Anabat walkabout survey — Survey dates: — 24 Aug 2021

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL/BREEDING SURVEY PERIOD[3]	HABITAT / BREEDING FEATURES	SURVEY EFFORT
Petaurus norfolcensis	Squirrel Glider	V	No	All year	PCT's 5, 74, 75, 76, 80, 110, 249, 267, 277 Note: associated with forests and woodlands	Lower Slopes & Inland Slopes IBRA subregion Grassy woodlands (PCT 74, 75, 80, 267, 277) — Nocturnal survey (6 person hours) — Arboreal traps (241 trap nights) — 26 Apr – 3 May 2021 — Remote camera traps (8912 camera nights) — 26 April – 7 Aug 2021 — 26 May – 8 Nov 2021 — Survey dates: — 11 Feb 2020 — 20 Jul 2020 Riverine (PCT 5, 249) — Spotlighting — Survey dates: — 24 & 25 Aug 2021 Rocky Woodlands (PCT 110) — Nocturnal surveys (3 person hours) — Remote camera traps (600 camera nights) — 26 - 4 Aug 2021 — Survey dates (non-trapping): — 2 Sept 2021

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL/BREEDING SURVEY PERIOD[3]	HABITAT / BREEDING FEATURES	SURVEY EFFORT
Petaurus norfolcensis	Squirrel Glider in the Wagga Wagga Local Government Area	E	No		PCT's 5, 74, 75, 76, 80, 110, 249, 267, 277 Note: associated with forests and woodlands Geographical limitations: — Wagga Wagga Local Government Area	Lower Slopes & Inland Slopes IBRA subregion Grassy woodlands (PCT 74, 75, 80, 267, 277) — Nocturnal survey (6 person hours) — Arboreal traps (241 trap nights) — 26 Apr – 3 May 2021 — Remote camera traps (8912 camera nights) — 26 April – 7 Aug 2021 — 26 May – 8 Nov 2021 — Survey dates (non-trapping): — 11 Feb 2020 — 20 Jul 2020 Riverine (PCT 5, 249) — Spotlighting — Survey dates: — 24 & 25 Aug 2021 Rocky Woodlands (PCT 110) — Nocturnal surveys (3 person hours) — Remote camera traps (600 camera nights) — Survey dates (non-trapping): — 2 Sept 2021
Petrogale penicillata	Brush-tailed Rock-wallaby	E	Yes	All year	PCT's 267, 277 Note: associated with forests and woodlands Habitat constraint: — land within 1 km of rocky escarpments, gorges, steep slopes, boulder piles, rock outcrops or cliff lines	Inland Slopes IBRA subregion Grassy Woodlands (PCT 267, 277) Habitat assessment surveys did not locate any suitable habitat for these species. No targeted survey effort required.

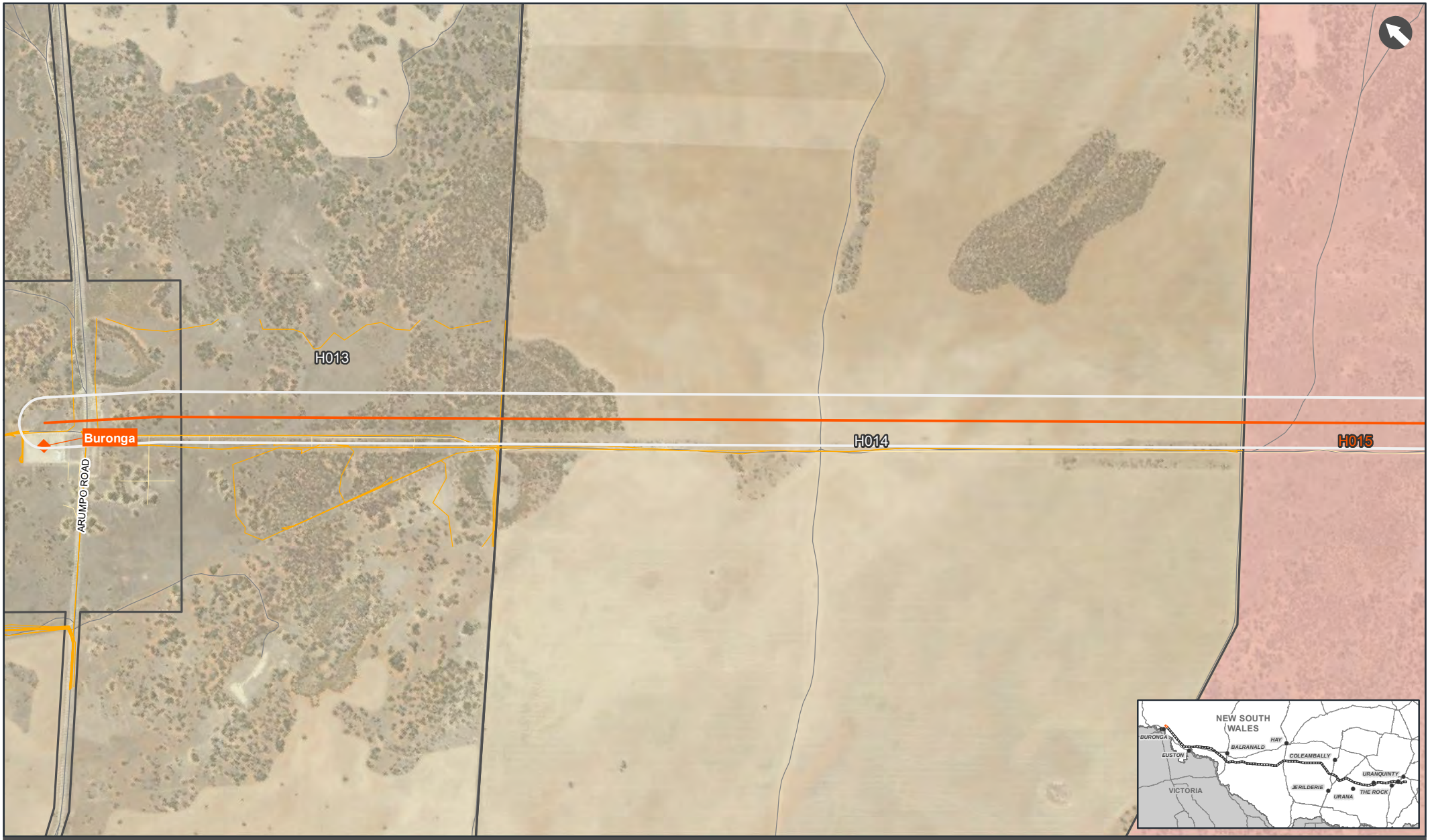
SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL/BREEDING SURVEY PERIOD[3]	HABITAT / BREEDING FEATURES	SURVEY EFFORT
Phascogale tapoatafa	Brush-tailed Phascogale	V	No	Dec-June	PCT's 74 Note: associated with forests and woodlands	Inland Slopes IBRA subregion Grassy woodlands (PCT 74) — Nocturnal survey (6 person hours) — Arboreal traps (241 trap nights) — 26 Apr – 3 May 2021 — Remote camera traps (8912 camera nights) — 26 April – 7 Aug 2021 — 26 May – 8 Nov 2021 — Survey dates (non-trapping): — 11 Feb 2020 — 20 Jul 2020

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL/BREEDING SURVEY PERIOD[3]	HABITAT / BREEDING FEATURES	SURVEY EFFORT
Phascolarctos cinereus	Koala	V	No	All year	PCT's 5, 7, 8, 11, 13, 15, 74, 75, 76, 80, 110, 249, 267, 277 Note: associated with forests and woodlands Areas identified via survey as important habitat	Murrumbidgee, Lower Slopes & Inland Slopes IBRA subregion Grassy woodlands (PCT 74, 75, 76, 80, 267, 277) — Nocturnal survey (6 person hours) — Arboreal traps (241 trap nights) — 26 Apr – 3 May 2021 — Remote camera traps (8912 camera nights) — 26 April – 7 Aug 2021 — 26 May – 8 Nov 2021 — SAT surveys (16 person hours) — Survey dates: — 11 Feb 2020 — 20 Jul 2020 — 6-8 Dec 2021 Riverine (PCT 5, 7, 8, 11, 13, 15, 249) — Spotlighting — SAT surveys (16 person hours) — Survey dates: — 24 & 25 Aug 2021 — 6-8 Dec 2021 Rocky Woodlands (PCT 110) — Nocturnal surveys (3 person hours) — Remote camera traps (600 camera nights) — 26 - 4 Aug 2021 — SAT surveys (4 person hours) — Survey dates (non-trapping): — 2 Sept 2021 — 9 Dec 2021

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL/BREEDING SURVEY PERIOD[3]	HABITAT / BREEDING FEATURES	SURVEY EFFORT
Pseudomys desertor	Desert Mouse	CE	Yes	March-June Aug-Dec	PCT's 24, 163, 171, 172 Note: associated with spinifex mallee	South Olary Plain IBRA subregion Arid woodland/shrublands (PCT 171, 172) — Pitfall trapping (242 trap nights) — 2-5 Dec 2019 — 11-19 Feb 2020 — 18-21 March 2020 — 23-31 Mar 2021 — Funnel trapping (274 trap nights) — 2-5 Dec 2019 — 11-19 Feb 2020 — 18-21 March 2020 — 23-31 Mar 2021 — Elliot A trapping (300 trap nights) — 18-21 March 2020 — 23-31 Mar 2021 — Elliot E trapping (120 trap nights) — 18-21 March 2020 — 23-31 Mar 2021 — Remote camera trapping (2,070 trap nights) — 18-21 Mar 2020 — Mar – Dec 2021 — Spotlighting — Survey dates (non-trapping) — 2-9 Sept 2021 Chenopod shrublands (PCT 163) — Spotlighting/Infrared scope (8 hours) — 14 April 2021

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	SAII[2]	OPTIMAL/BREEDING SURVEY PERIOD[3]	HABITAT / BREEDING FEATURES	SURVEY EFFORT
Pteropus poliocephalus	Grey-headed Flying-fox	V	No	Oct - Dec	PCT's 5, 76, 267 Habitat constraint: — Breeding camps	Lower Slopes & Inland Slopes IBRA subregion Grassy woodlands (PCT 76, 267) — Nocturnal survey (6 person hours) — Survey dates: — 11 Feb 2020 — 20 Jul 2020 Riverine (PCT 5) — Spotlighting — Survey dates: — 24 & 25 Aug 2021

APPENDIX C-5
Threatened flora field survey effort map



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BDAR - Figure C-5a

Threatened Flora Field Survey Effort

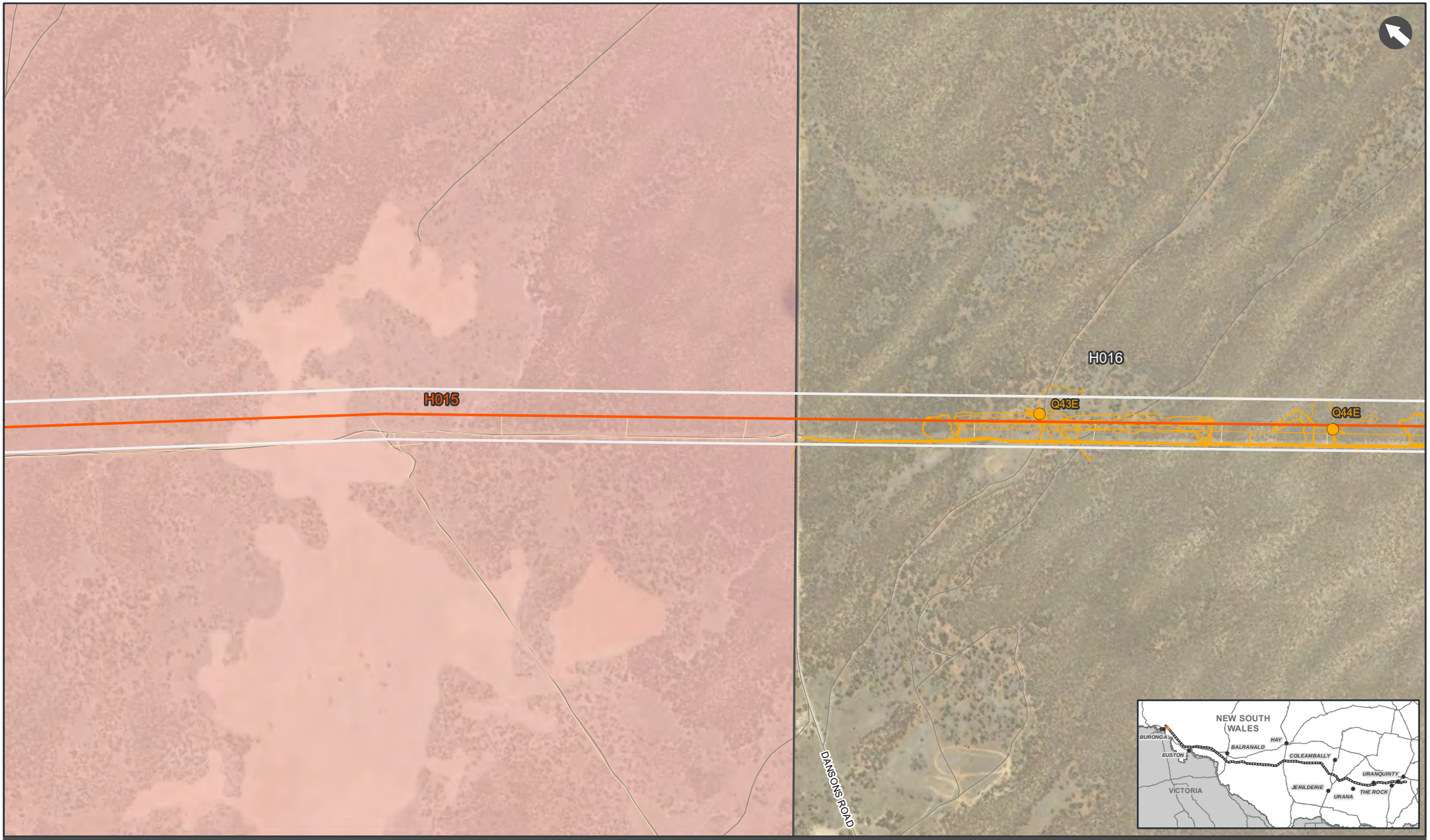
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Holdings
- Holdings - No Access

Flora Survey Effort

- Flora Survey Transect

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Source: NSWSS, ESRI, Transgrid, WSP



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- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Holdings
- Holdings - No Access

Flora Survey Effort

- Flora Survey Transect
- Quadrat

BDAR - Figure C-5b

Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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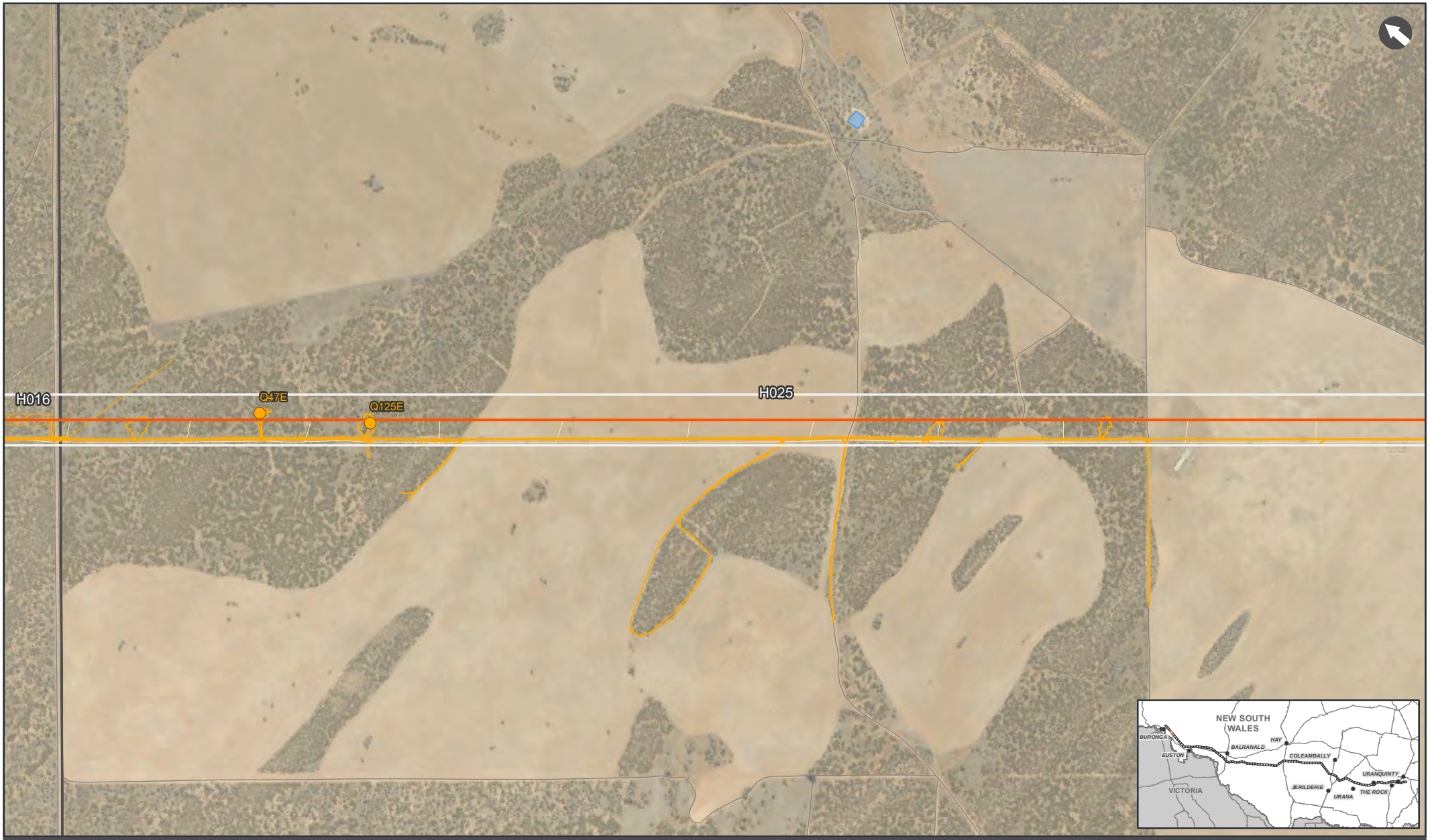
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Holdings **Flora Survey Effort**
- Flora Survey Transect
- Quadrat

BDAR - Figure C-5c

Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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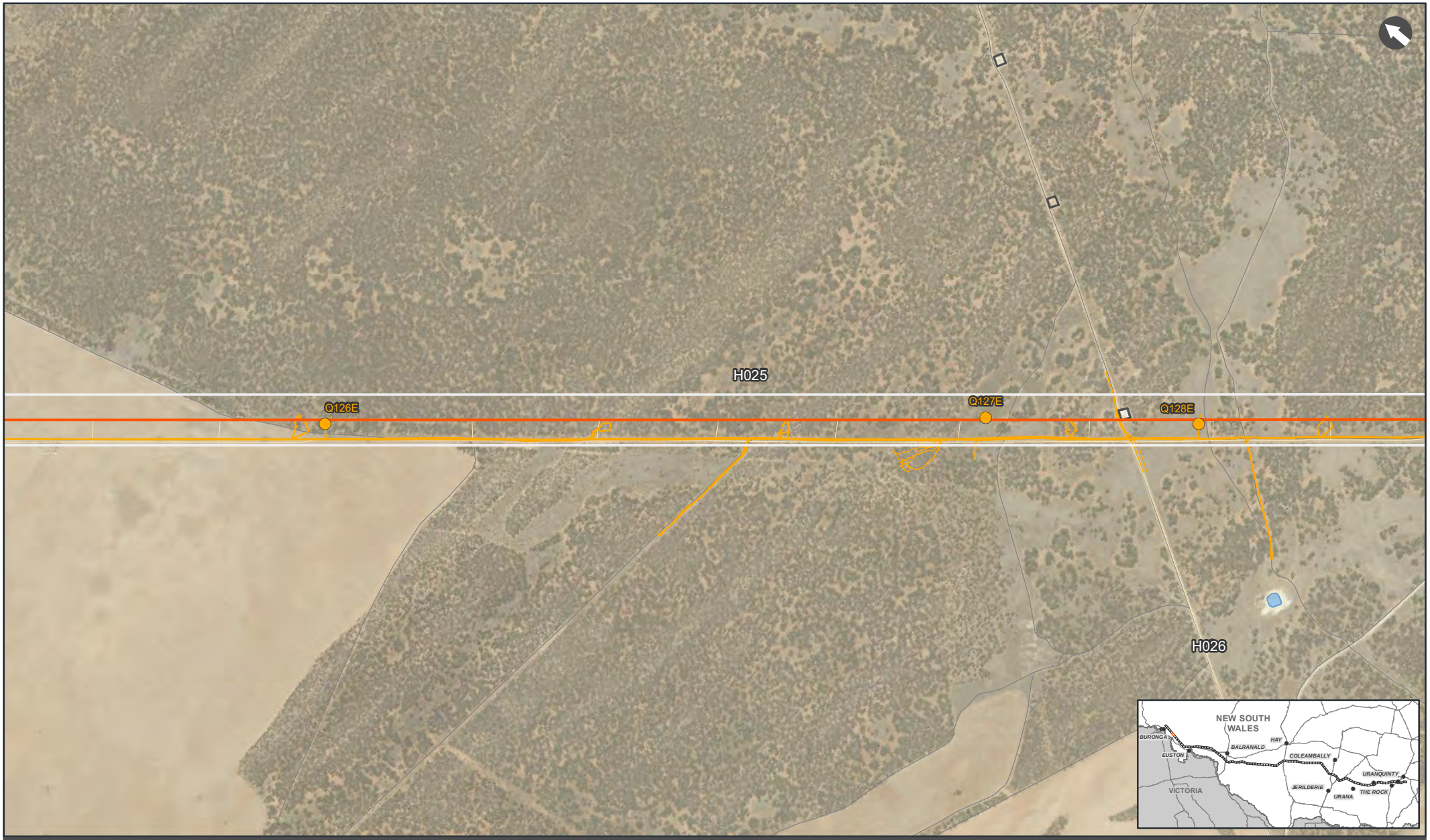
BDAR - Figure C-5d

Threatened Flora Field Survey Effort

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Holdings **Flora Survey Effort**
- Flora Survey Transect
- Quadrat

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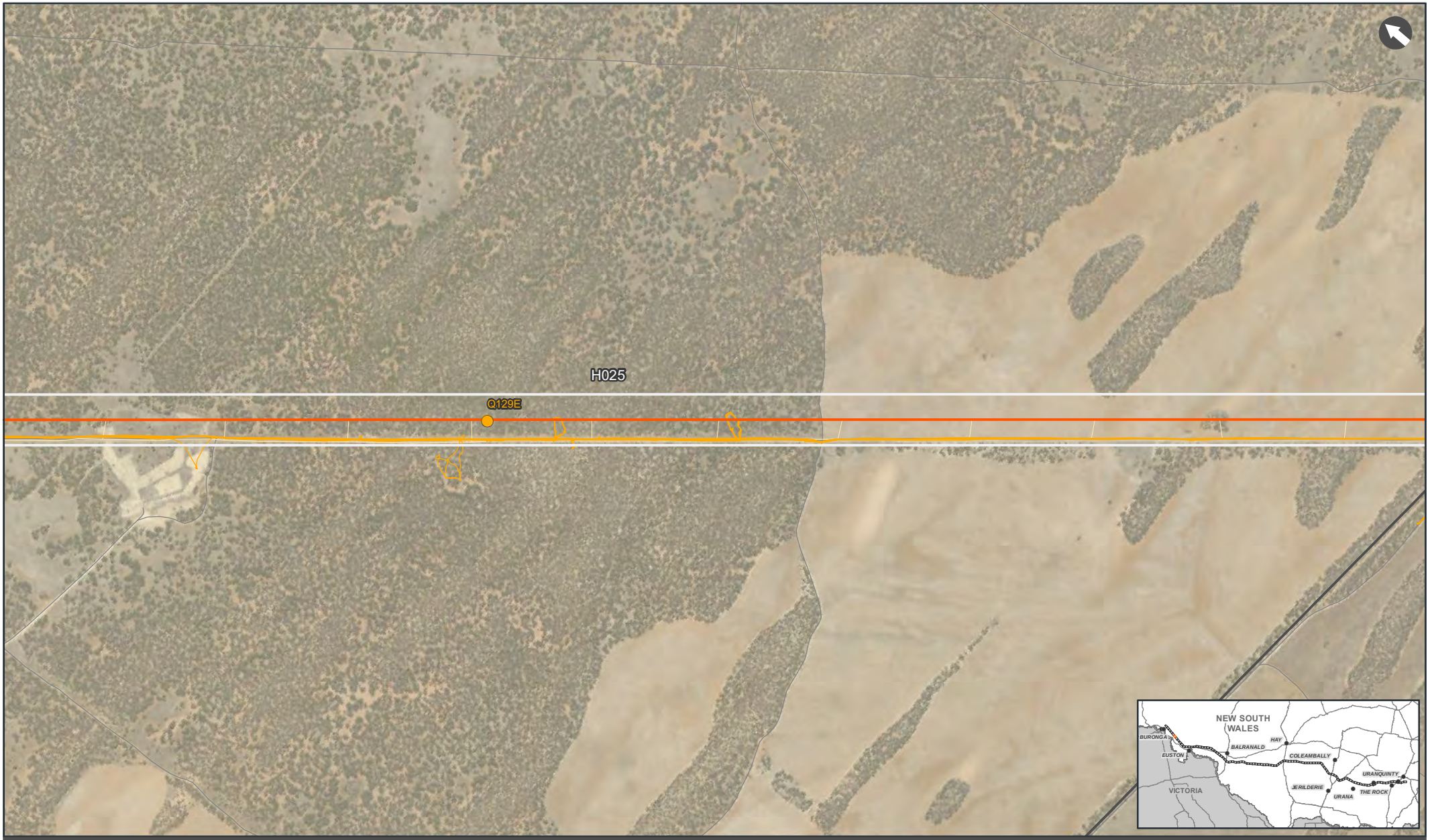


Proposed Alignment
Access Tracks
Main Construction Compounds and Accomodation Sites
Water Supply Point
Existing Substation
Built Up Areas
Waterbody
Biodiversity Study Area
Holdings **Flora Survey Effort**
Flora Survey Transect
Quadrat

BDAR - Figure C-5e
Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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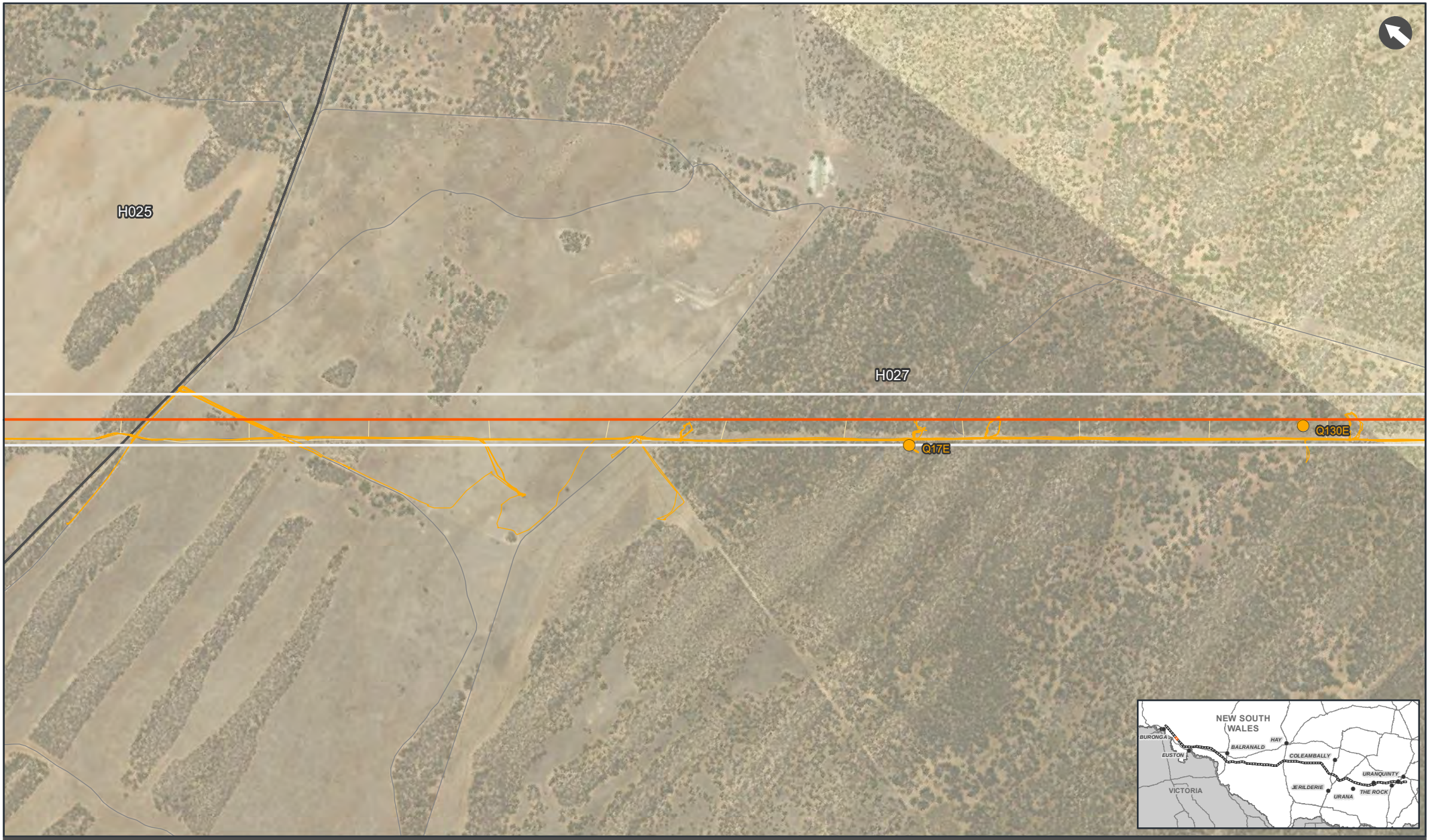
BDAR - Figure C-5f

Threatened Flora Field Survey Effort

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Holdings **Flora Survey Effort**
- Flora Survey Transect
- Quadrat

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Source: NSWSS, ESRI, Transgrid, WSP



Proposed Alignment
Access Tracks
Main Construction Compounds and Accomodation Sites
Water Supply Point
Existing Substation
Built Up Areas
Waterbody
Biodiversity Study Area
Holdings **Flora Survey Effort**
Flora Survey Transect
Quadrat

BDAR - Figure C-5g
Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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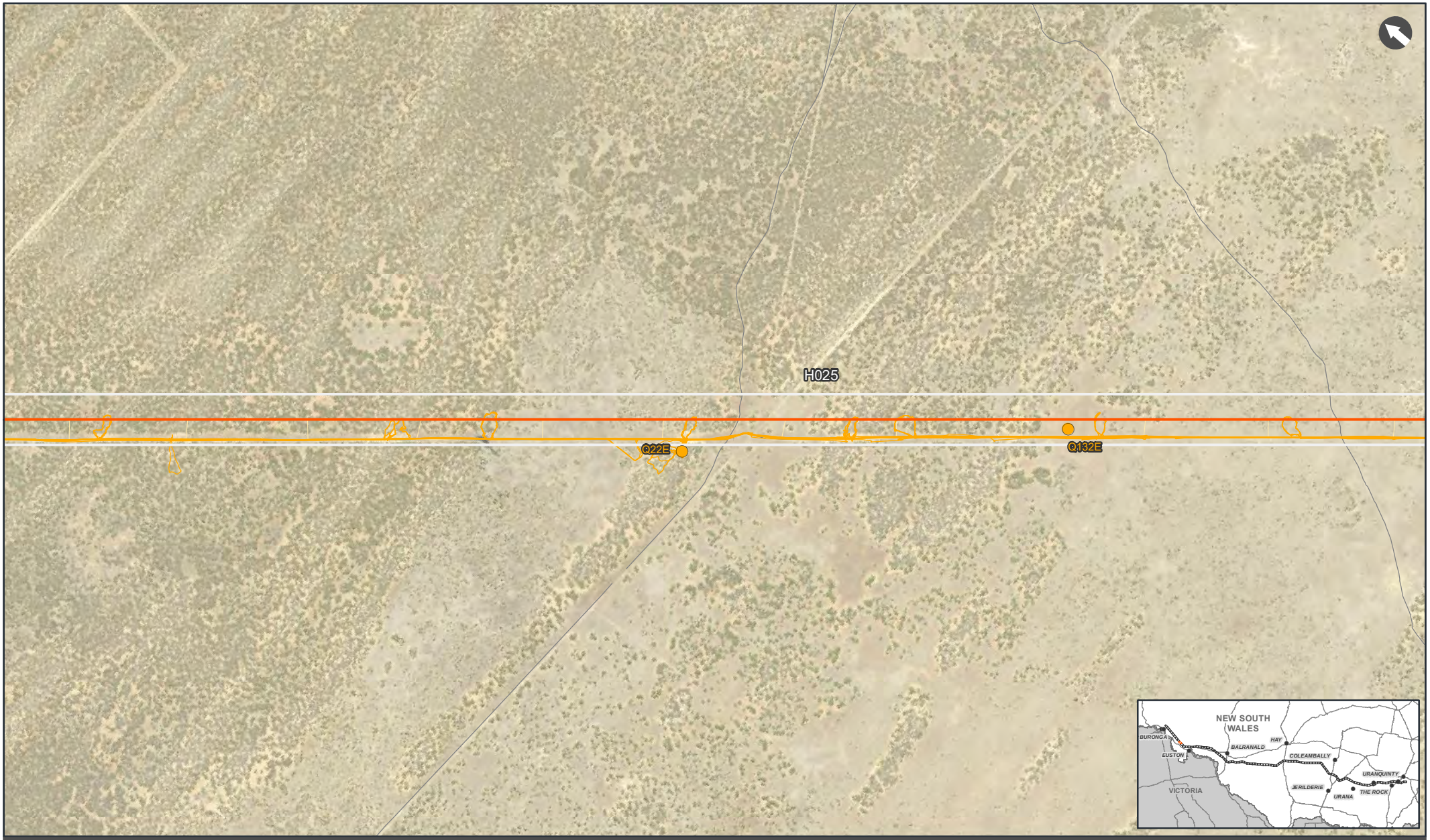
BDAR - Figure C-5h

Threatened Flora Field Survey Effort

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Holdings **Flora Survey Effort**
- Flora Survey Transect
- Quadrat

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Source: NSWSS, ESRI, Transgrid, WSP



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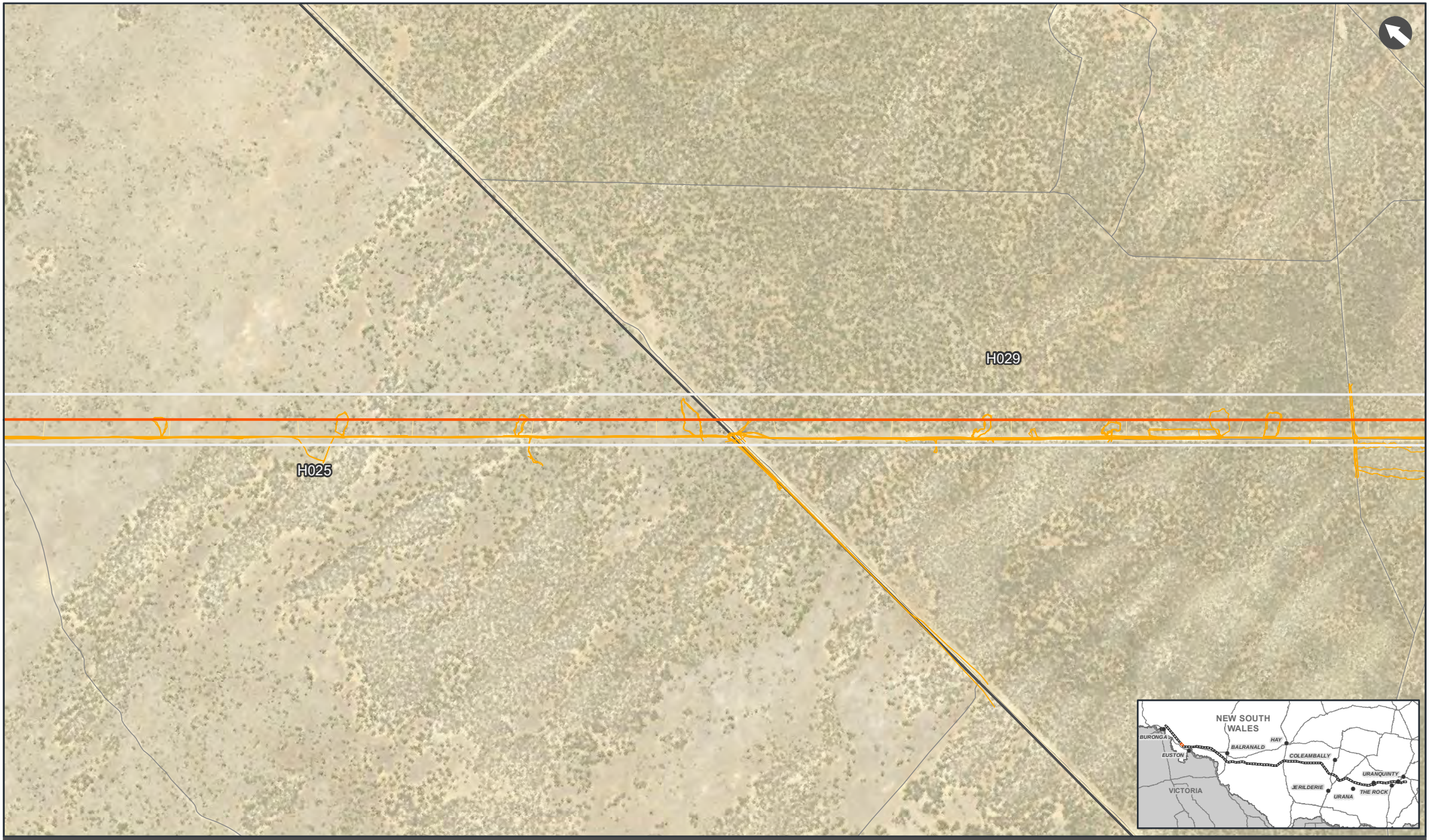
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Holdings **Flora Survey Effort**
- Flora Survey Transect
- Quadrat

BDAR - Figure C-5i

Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Holdings **Flora Survey Effort**
- Flora Survey Transect

BDAR - Figure C-5j

Threatened Flora Field Survey Effort

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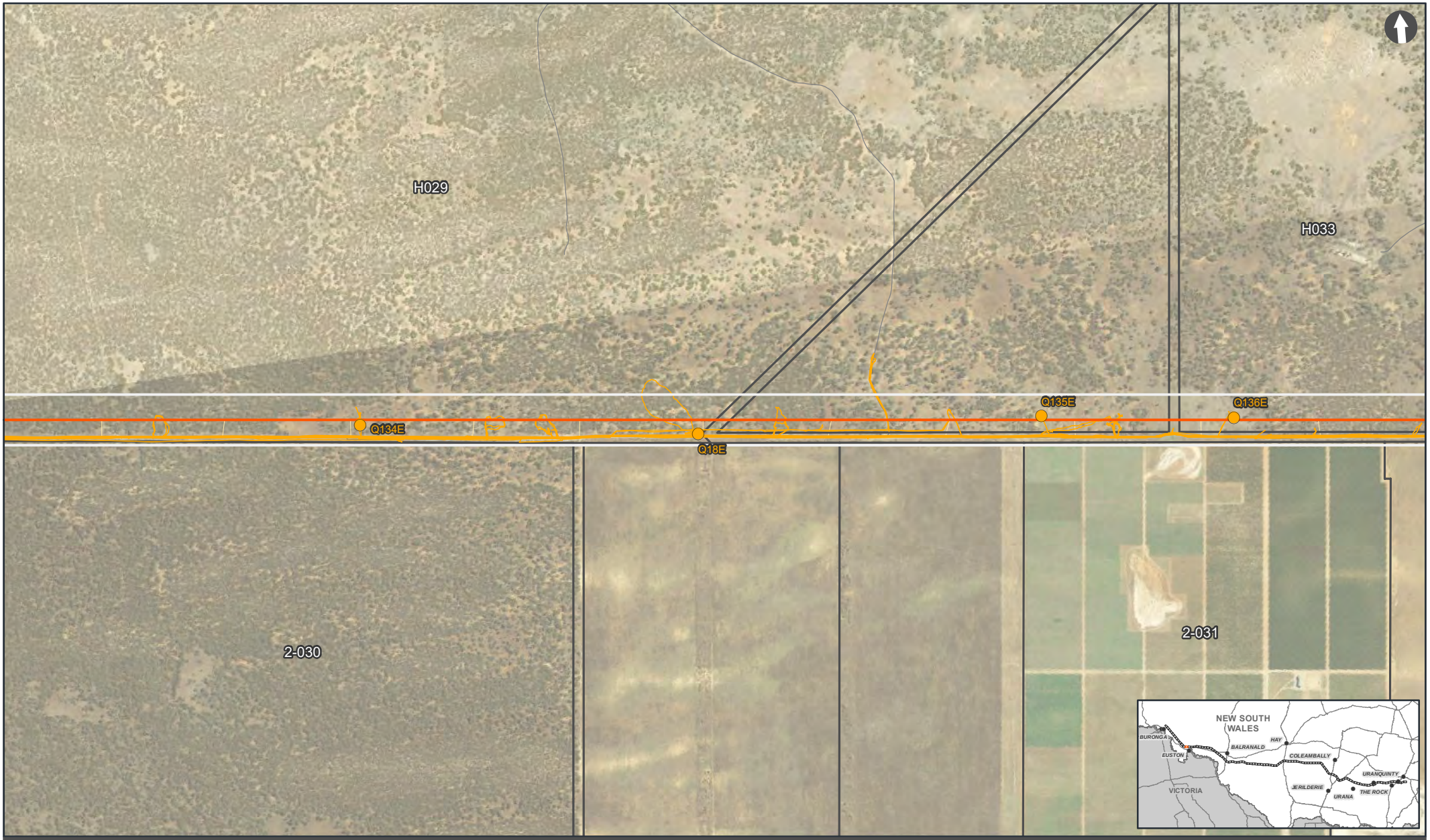


Proposed Alignment
Access Tracks
Main Construction Compounds and Accomodation Sites
Water Supply Point
Existing Substation
Built Up Areas
Waterbody
Biodiversity Study Area
Holdings **Flora Survey Effort**
Flora Survey Transect
Quadrat

BDAR - Figure C-5k
Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-5l

Threatened Flora Field Survey Effort

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Holdings **Flora Survey Effort**
- Flora Survey Transect
- Quadrat

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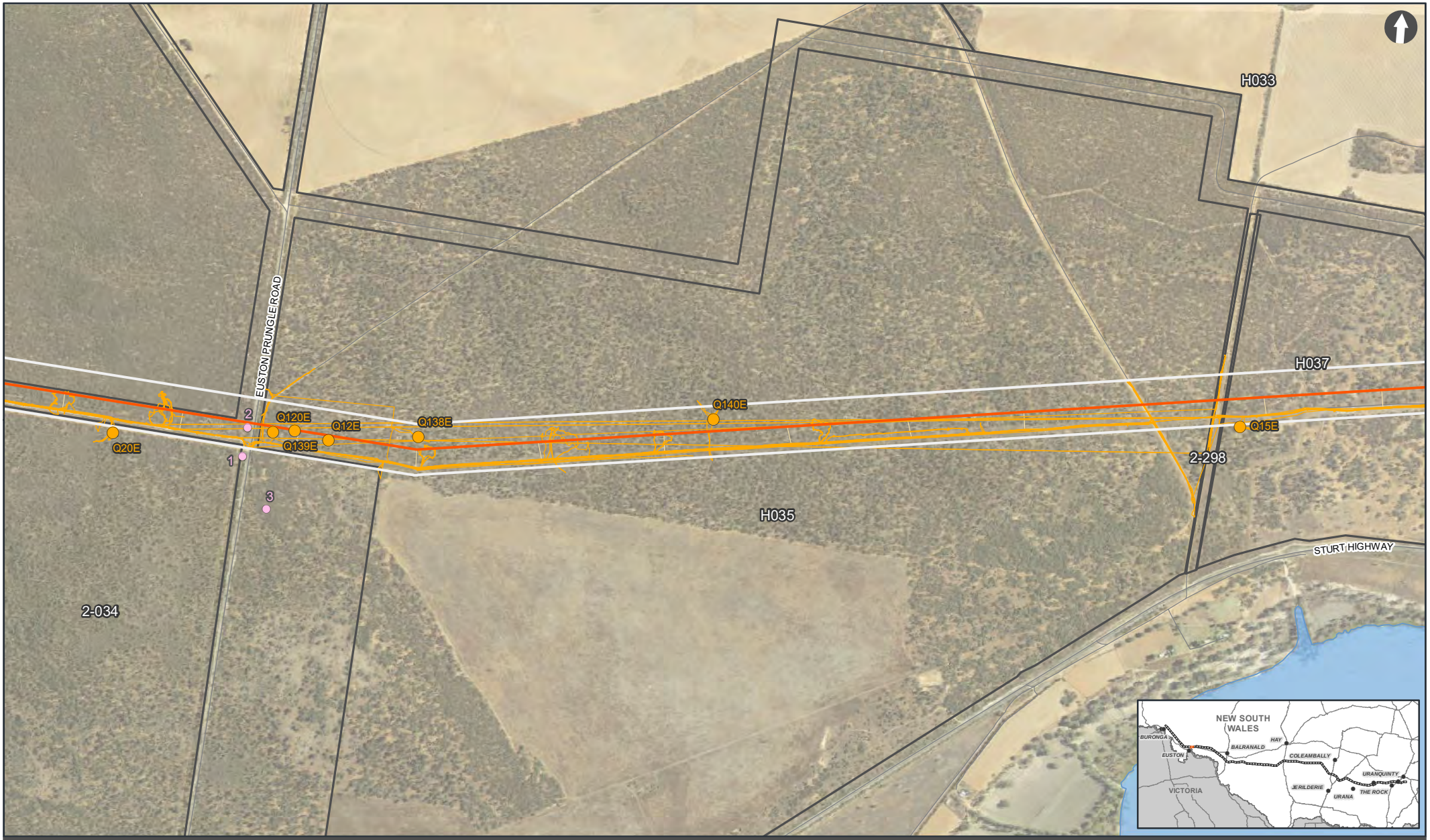


Proposed Alignment
Access Tracks
Main Construction Compounds and Accomodation Sites
Water Supply Point
Existing Substation
Built Up Areas
Waterbody
Biodiversity Study Area
Holdings **Flora Survey Effort**
Flora Survey Transect
Quadrat

BDAR - Figure C-5m
Threatened Flora Field Survey Effort

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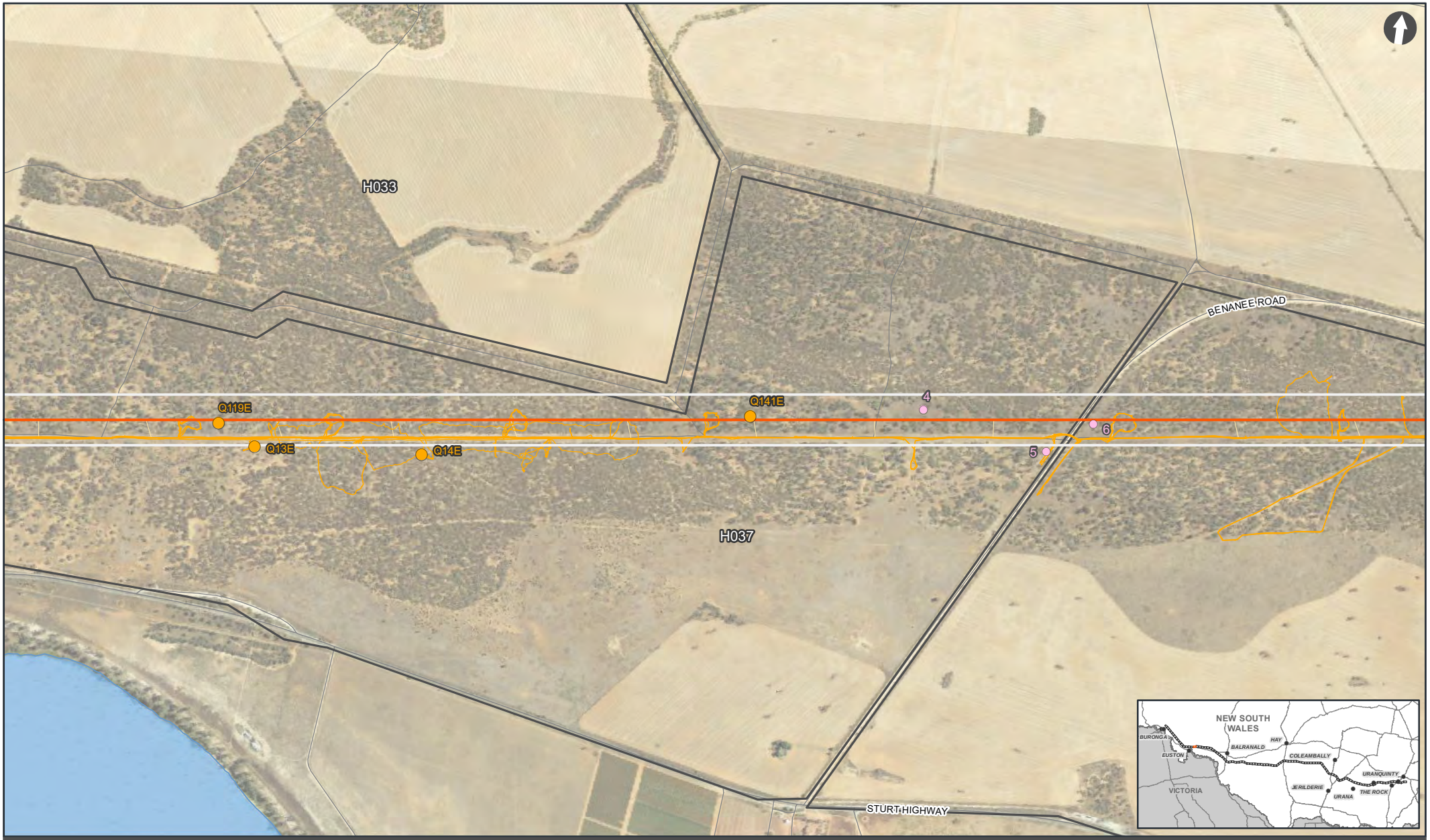


BDAR - Figure C-5n

Threatened Flora Field Survey Effort

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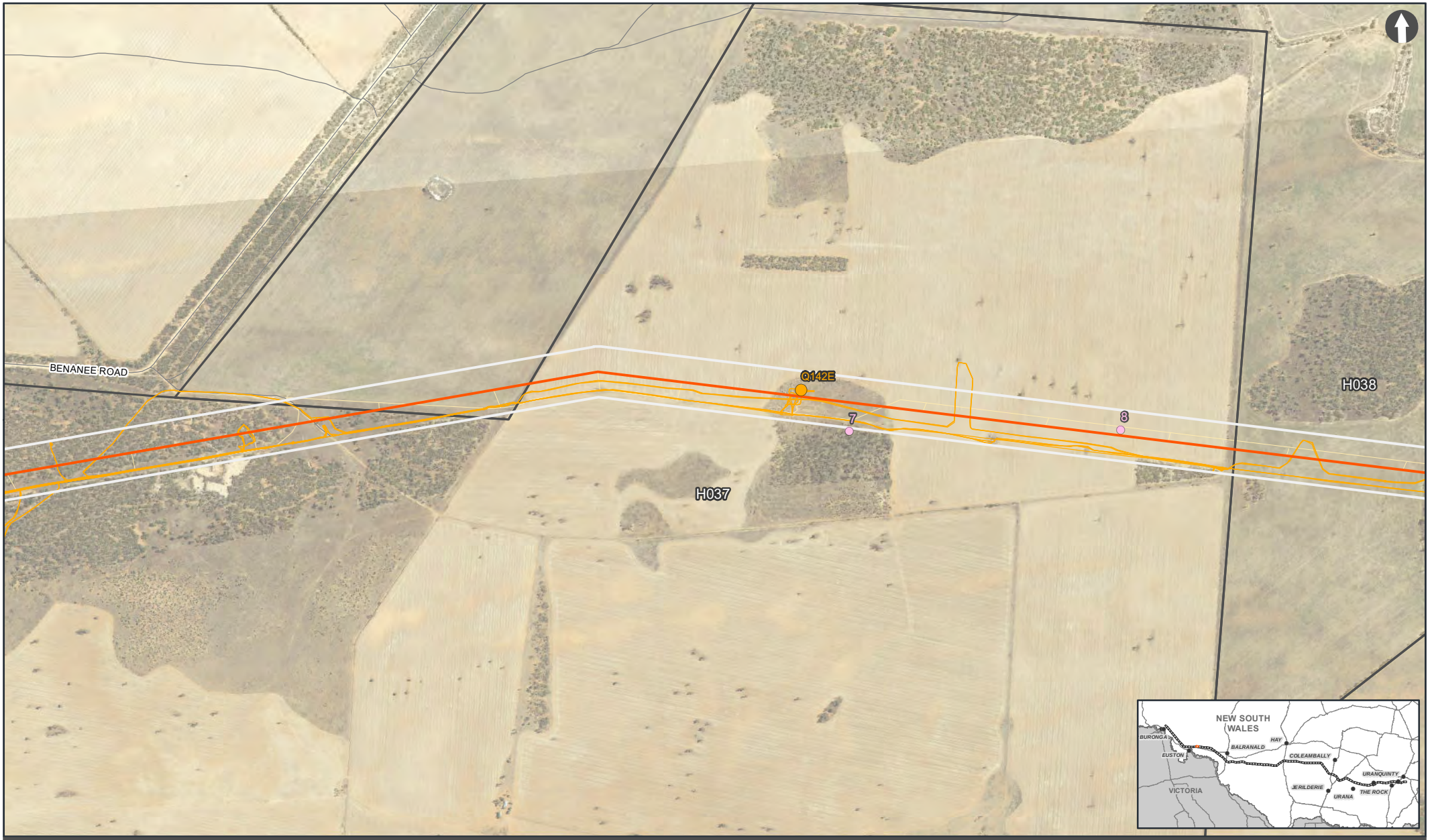


Proposed Alignment
Access Tracks
Main Construction Compounds and Accomodation Sites
Water Supply Point
Existing Substation
Built Up Areas
Waterbody
Biodiversity Study Area
Holdings **Flora Survey Effort**
Flora Survey Transect
Rapid Data Point
Quadrat

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Source: NSWSS, ESRI, Transgrid, WSP

BDAR - Figure C-5o
Threatened Flora Field Survey Effort



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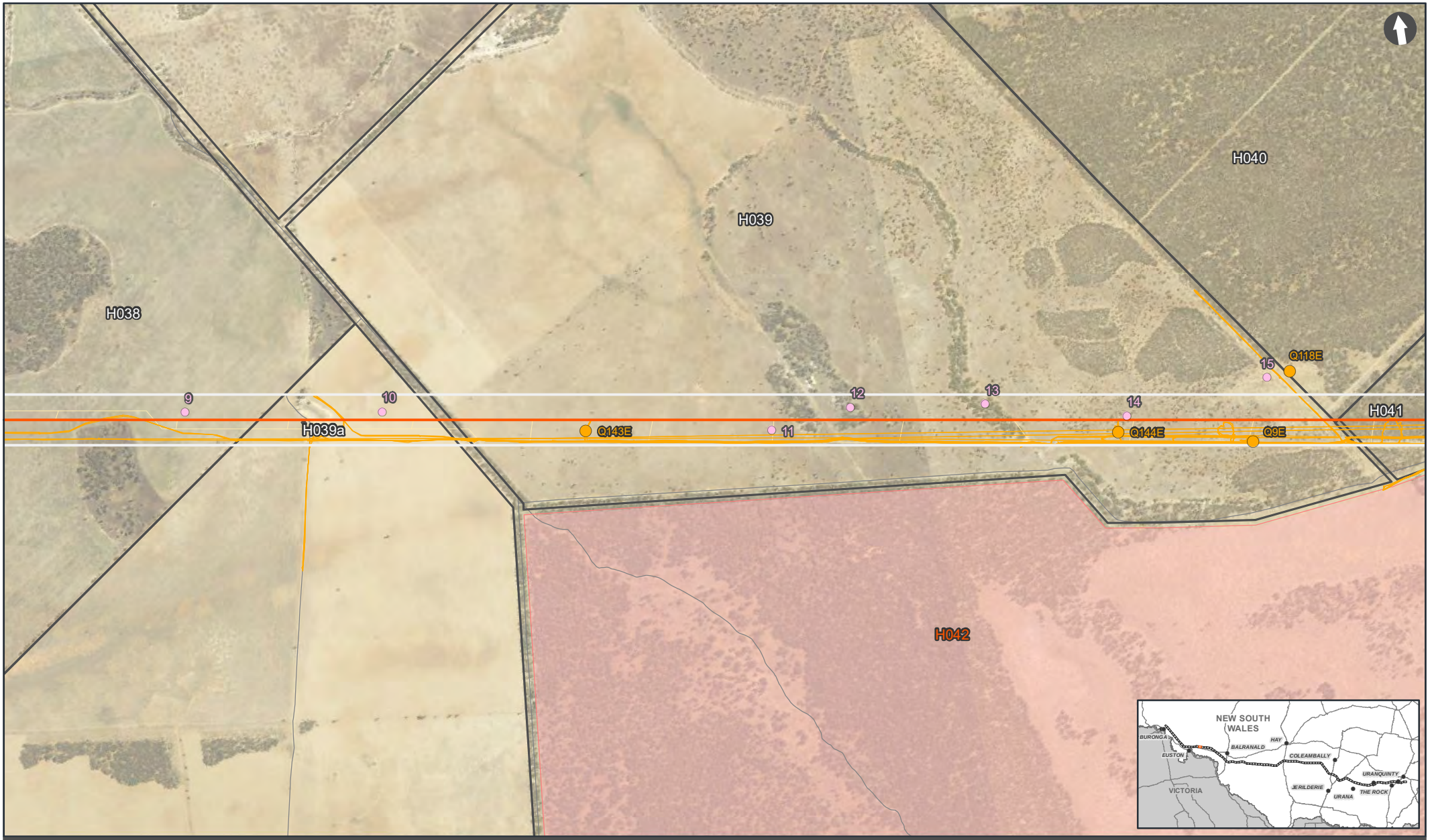
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Holdings **Flora Survey Effort**
- Flora Survey Transect
- Rapid Data Point
- Quadrat

BDAR - Figure C-5p

Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure C-5q

Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Holdings
- Holdings - No Access

Flora Survey Effort

- Flora Survey Transect
- Rapid Data Point
- Quadrat

BDAR - Figure C-5r

Threatened Flora Field Survey Effort

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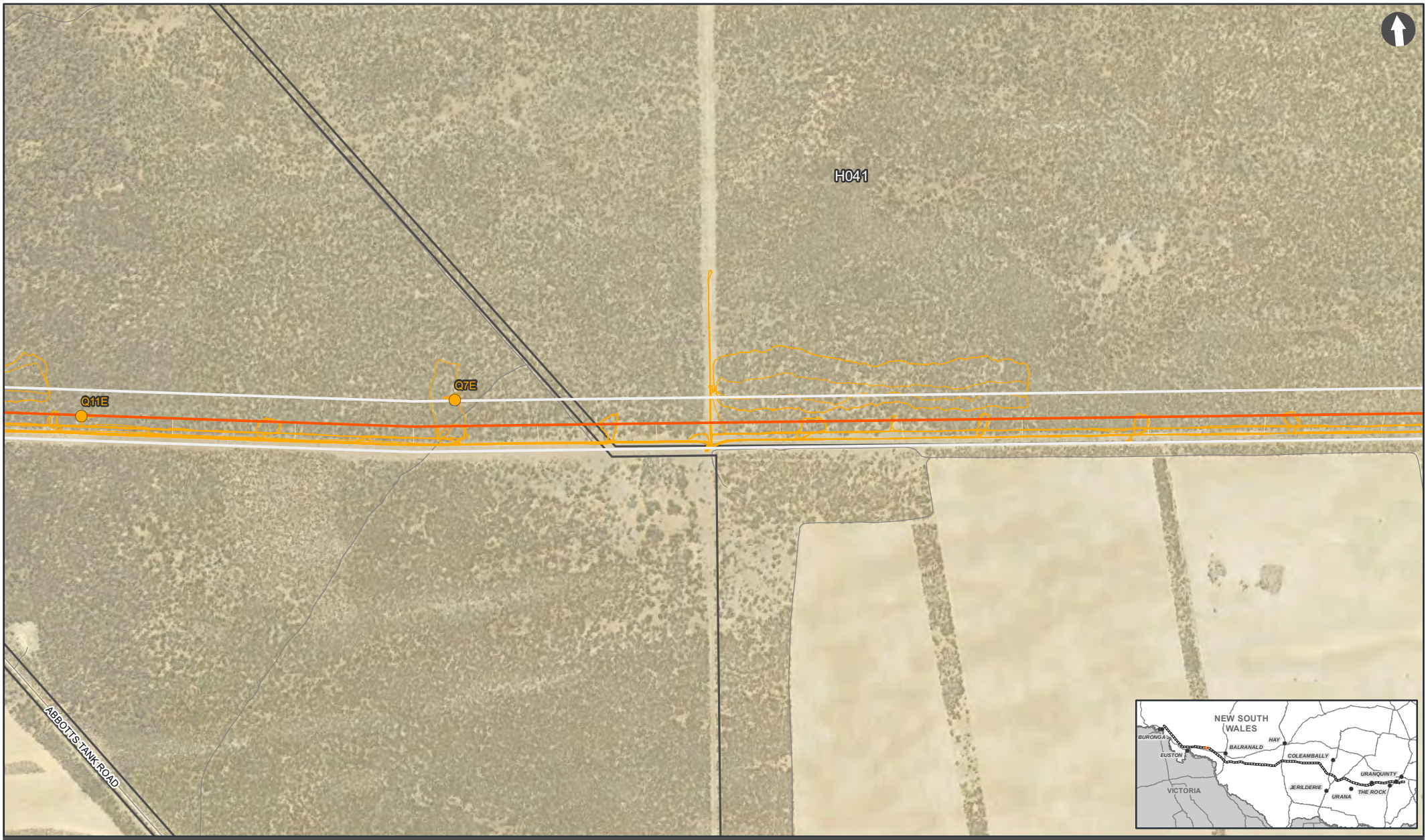


Proposed Alignment
Access Tracks
Main Construction Compounds and Accomodation Sites
Water Supply Point
Existing Substation
Built Up Areas
Waterbody
Biodiversity Study Area
Holdings **Flora Survey Effort**
Flora Survey Transect
Rapid Data Point
Quadrat

BDAR - Figure C-5s
Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



0 0.25 0.5 KM

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Holdings **Flora Survey Effort**
- Flora Survey Transect
- Quadrat

BDAR - Figure C-5t

Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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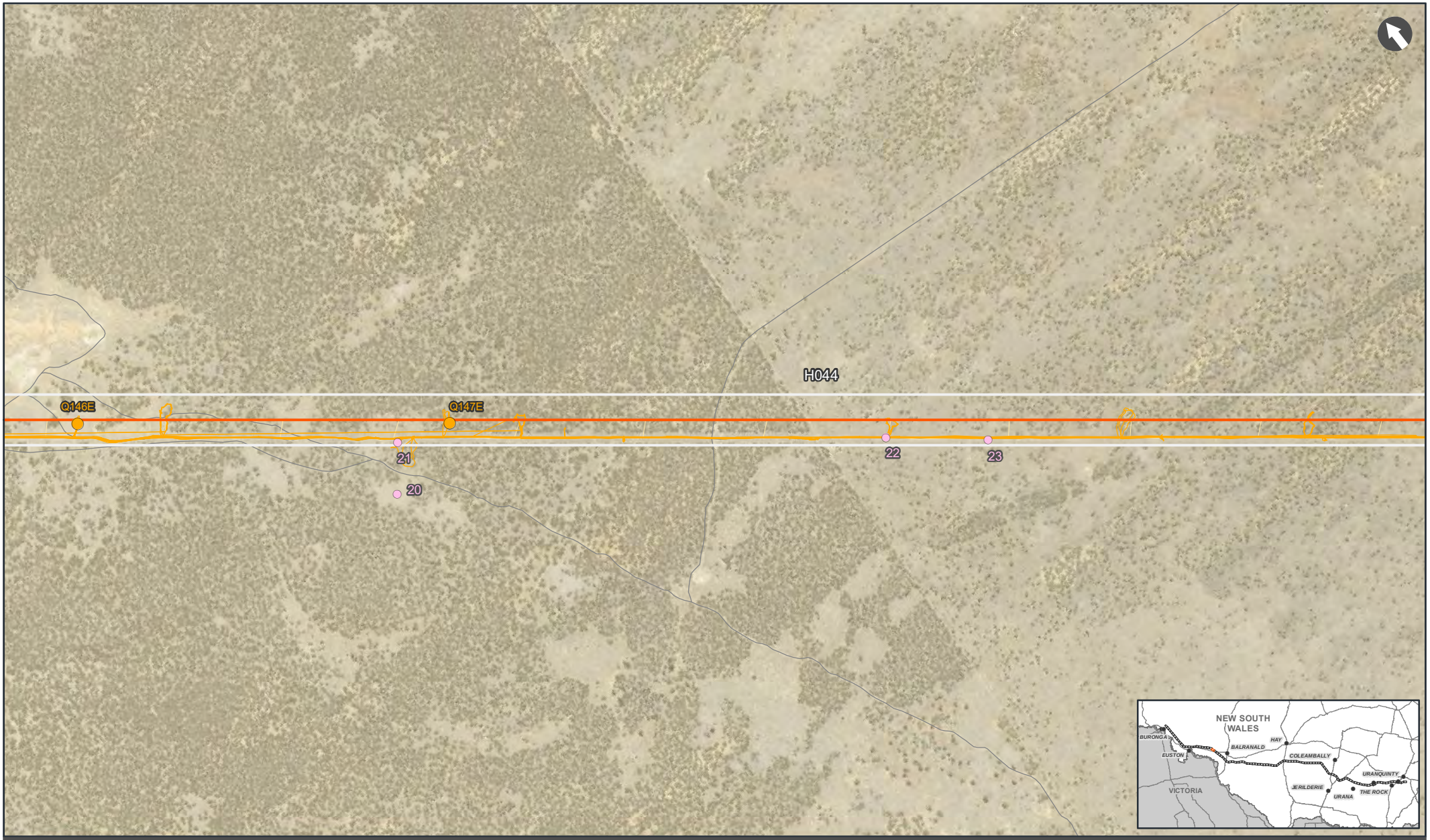
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Holdings **Flora Survey Effort**
- Flora Survey Transect
- Rapid Data Point
- Quadrat

BDAR - Figure C-5u

Threatened Flora Field Survey Effort

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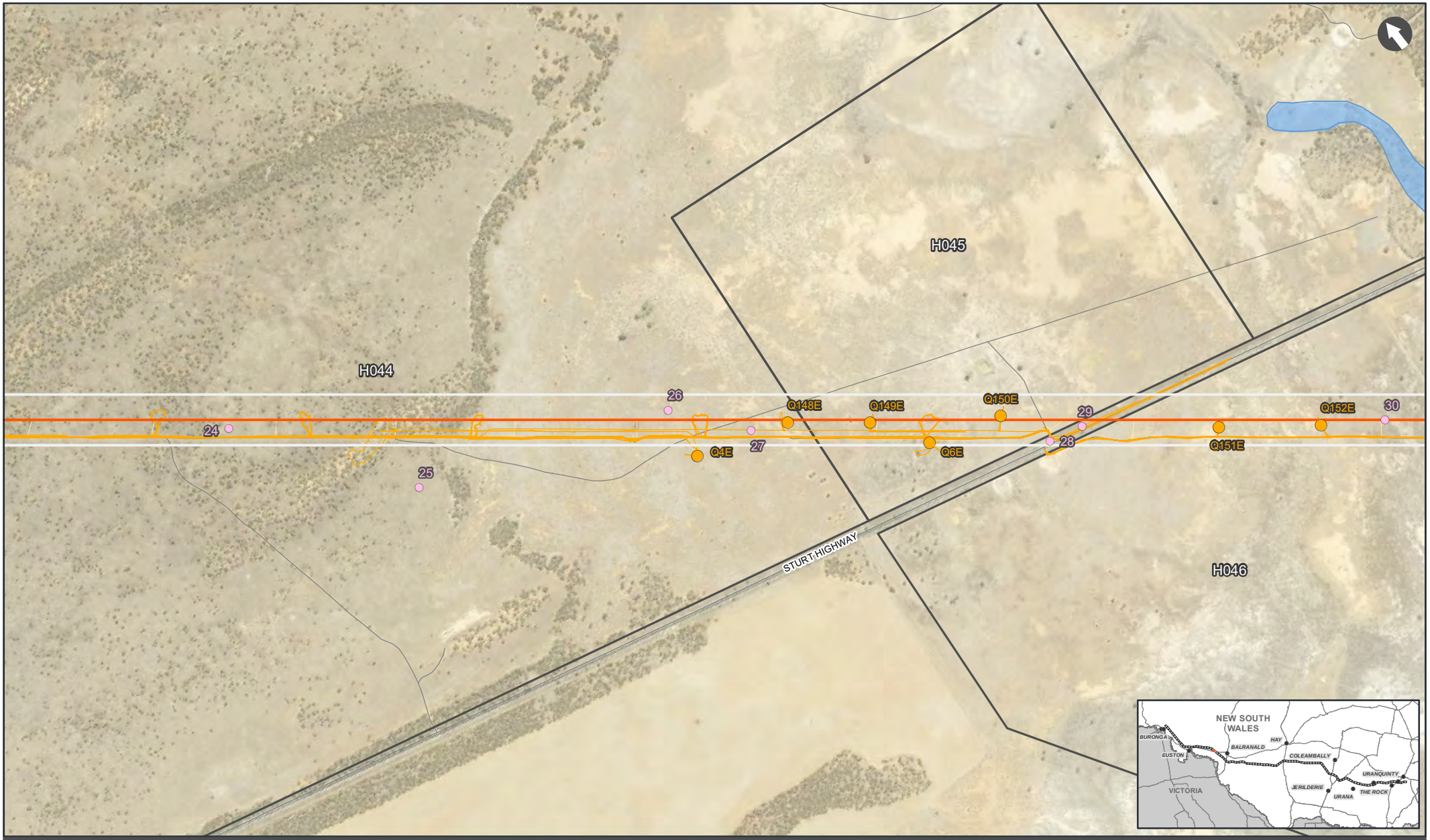
Proposed Alignment
Access Tracks
Main Construction Compounds and Accomodation Sites
Water Supply Point
Existing Substation
Built Up Areas
Waterbody
Biodiversity Study Area
Holdings **Flora Survey Effort**
Flora Survey Transect
Rapid Data Point
Quadrat

BDAR - Figure C-5v

Threatened Flora Field Survey Effort

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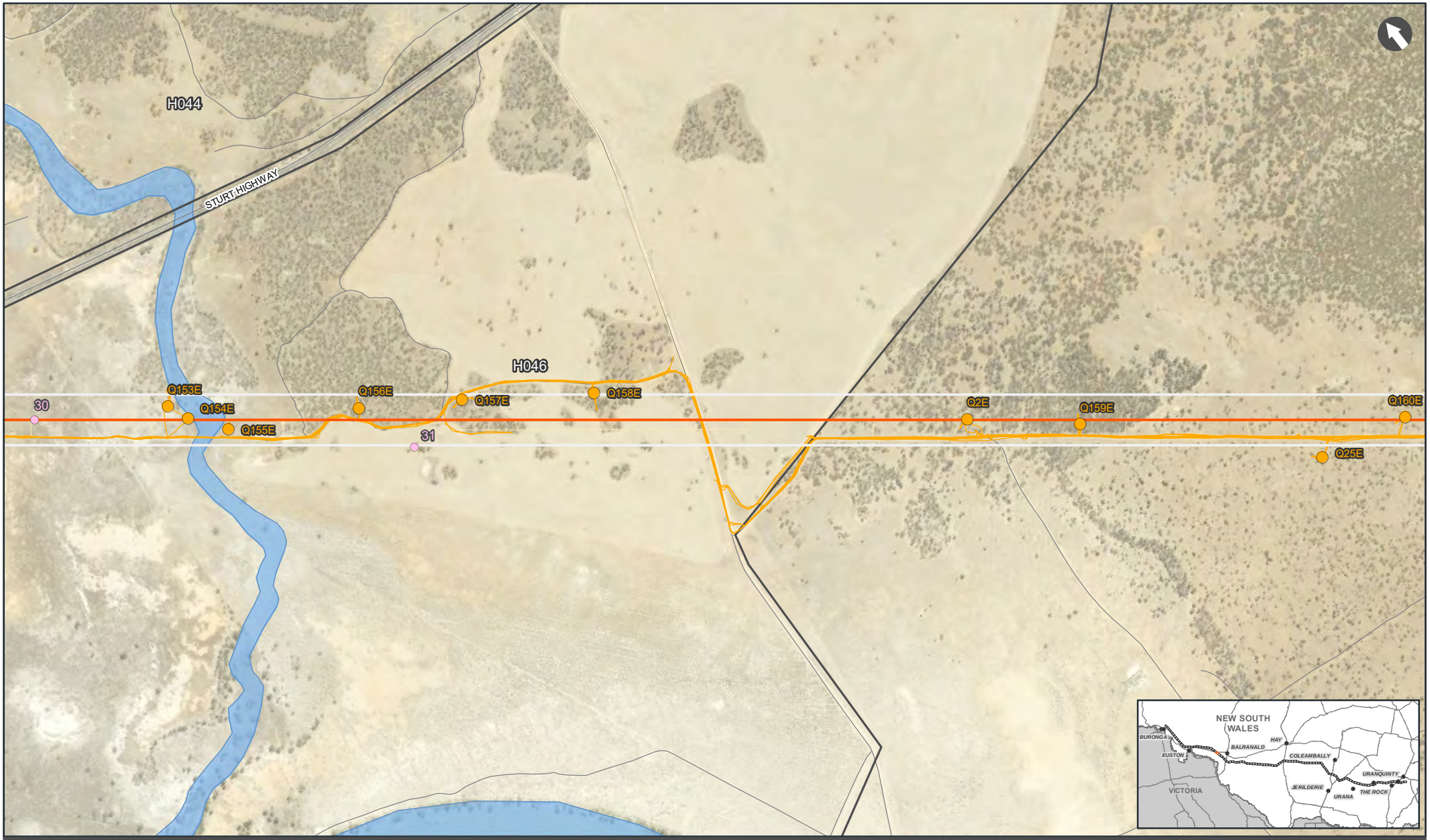


Proposed Alignment
Access Tracks
Main Construction Compounds and Accomodation Sites
Water Supply Point
Existing Substation
Built Up Areas
Waterbody
Biodiversity Study Area
Holdings **Flora Survey Effort**
Flora Survey Transect
Rapid Data Point
Quadrat

BDAR - Figure C-5w
Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP

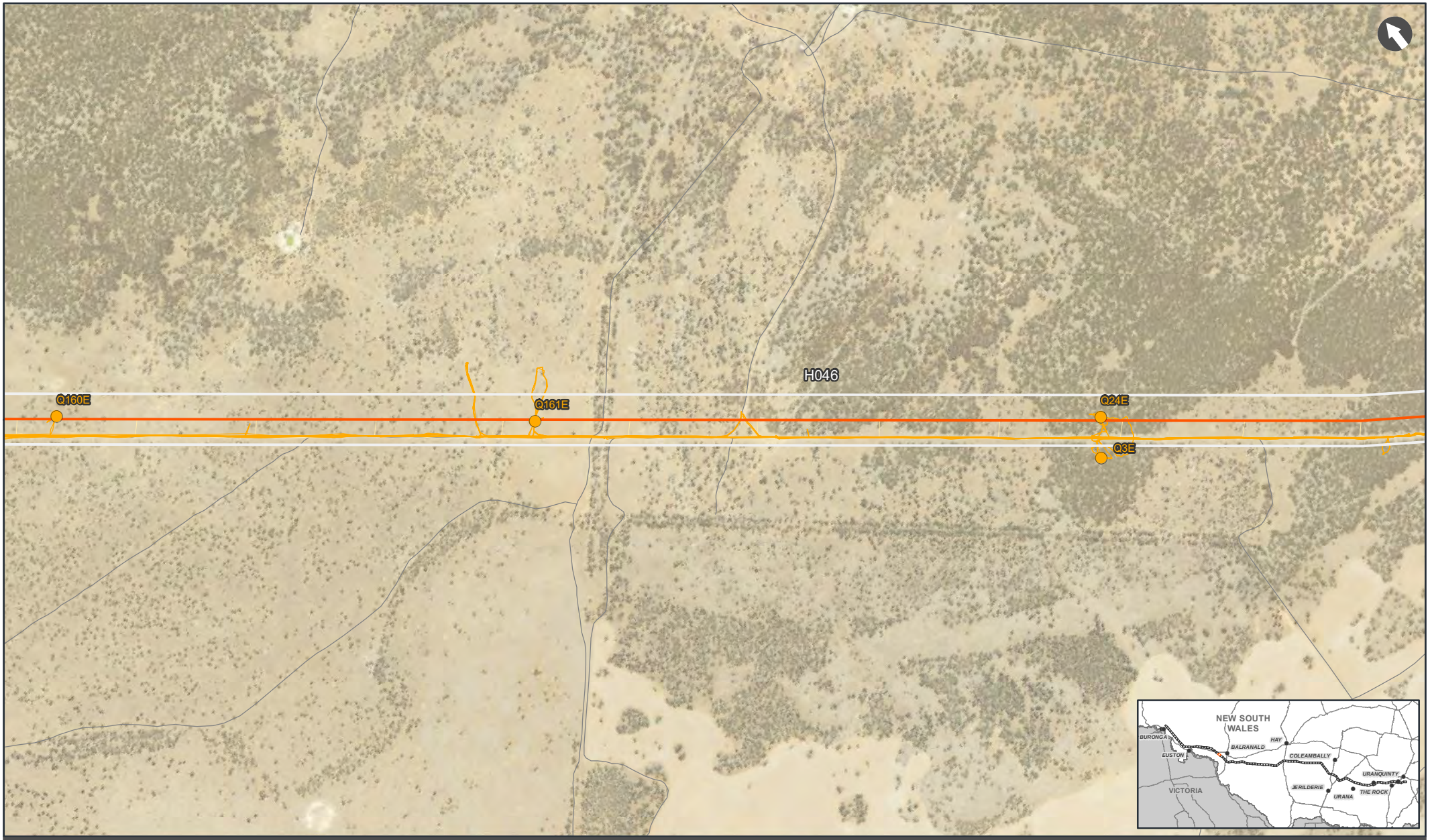


Proposed Alignment
Access Tracks
Main Construction Compounds and Accomodation Sites
Water Supply Point
Existing Substation
Built Up Areas
Waterbody
Biodiversity Study Area
Holdings **Flora Survey Effort**
Flora Survey Transect
Rapid Data Point
Quadrat

BDAR - Figure C-5x
Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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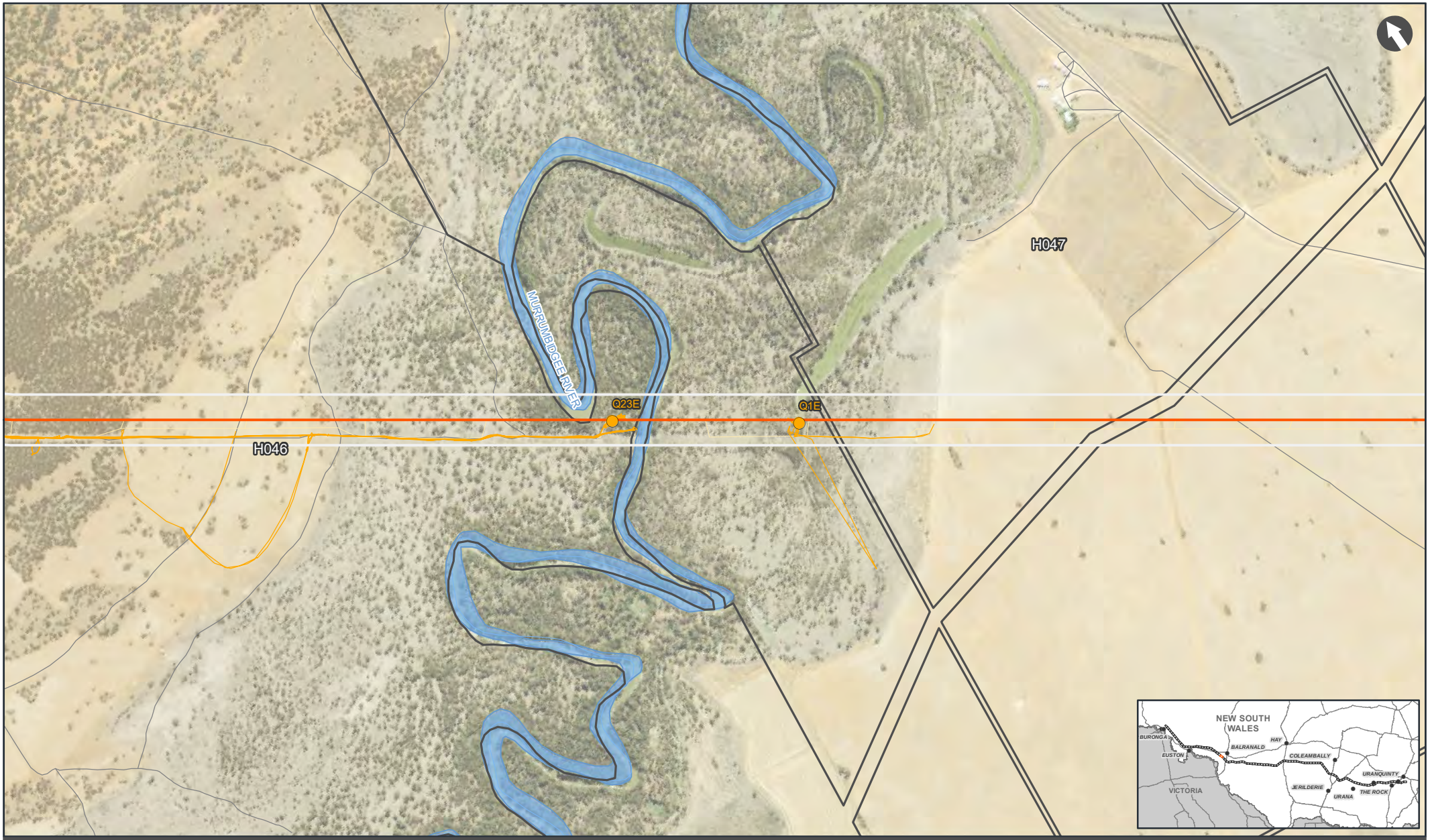
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Holdings **Flora Survey Effort**
- Flora Survey Transect
- Quadrat

BDAR - Figure C-5y

Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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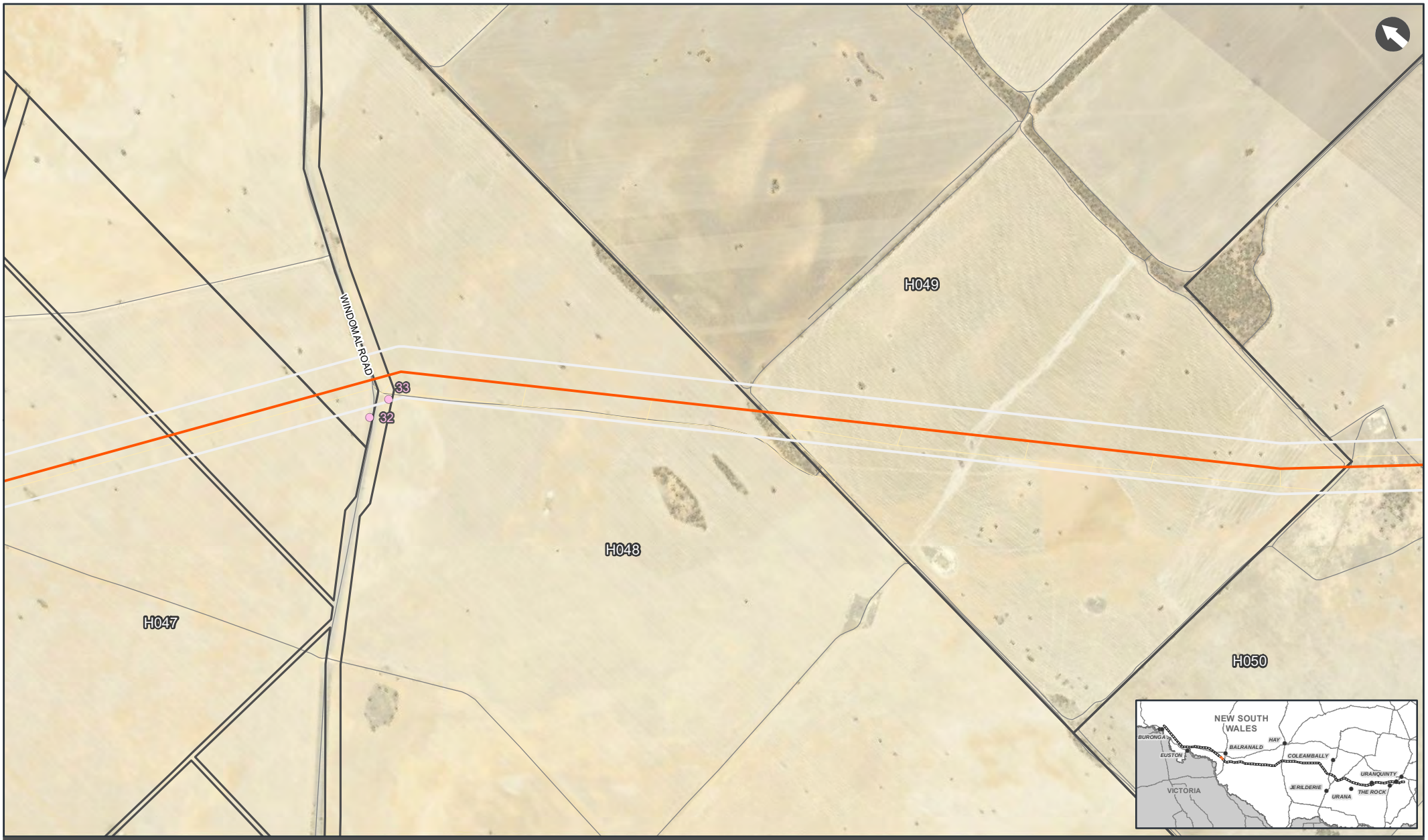
BDAR - Figure C-5z

Threatened Flora Field Survey Effort

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Holdings **Flora Survey Effort**
- Flora Survey Transect
- Quadrat

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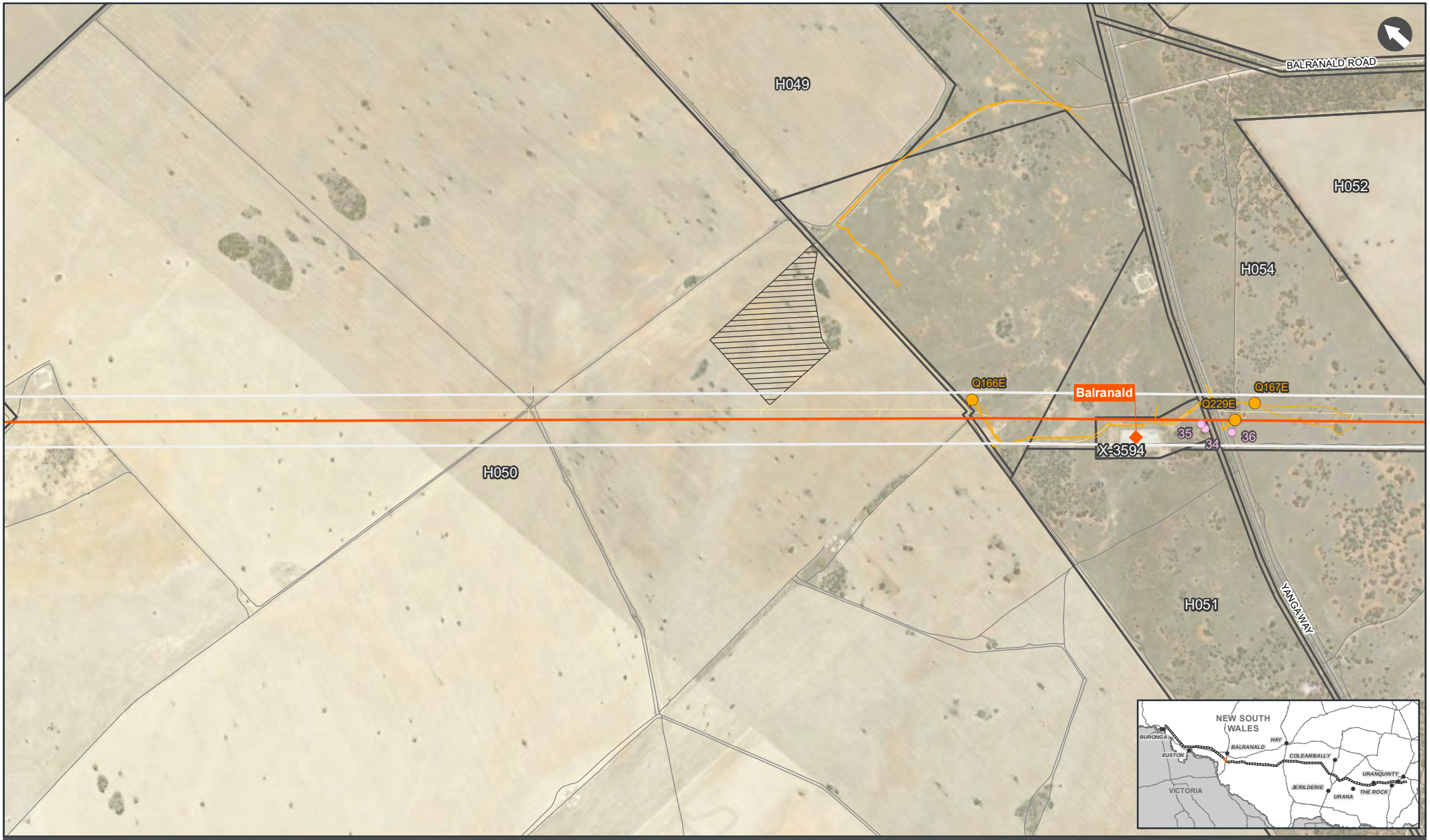


Proposed Alignment
Access Tracks
Main Construction Compounds and Accomodation Sites
Water Supply Point
Existing Substation
Built Up Areas
Waterbody
Biodiversity Study Area
Holdings **Flora Survey Effort**
Flora Survey Transect
Rapid Data Point

BDAR - Figure C-5aa
Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP

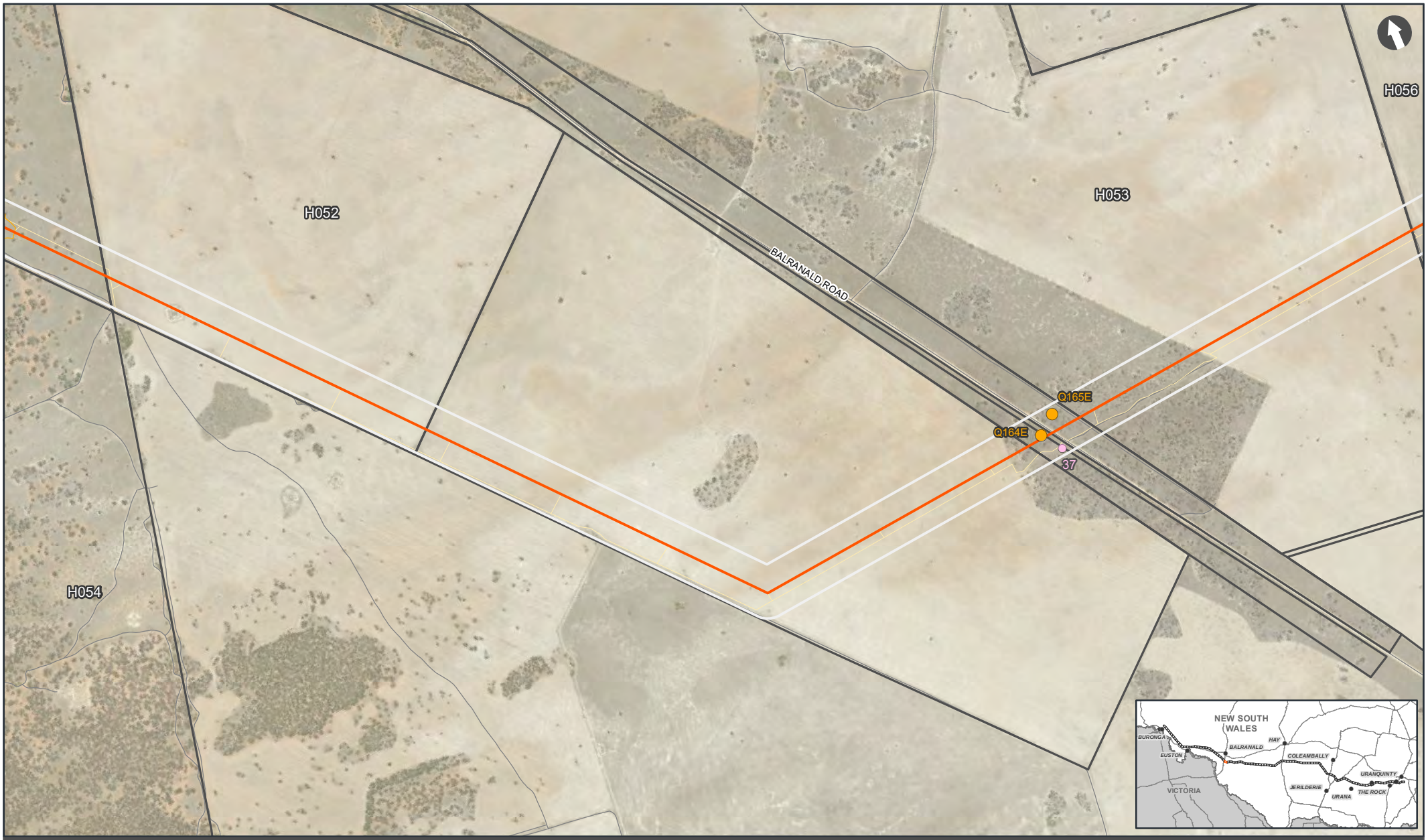


BDAR - Figure C-5ab

Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP

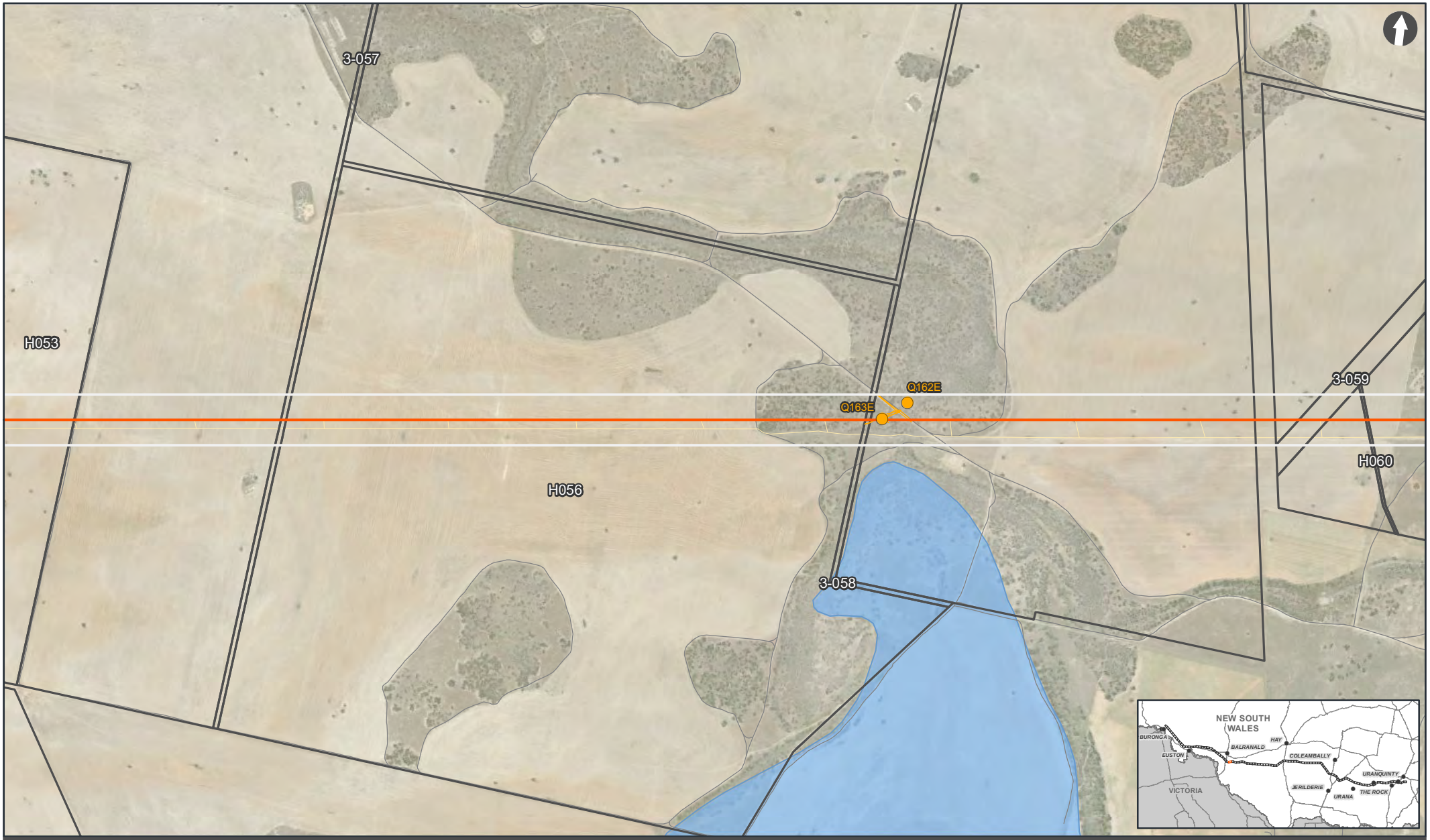


Proposed Alignment
Access Tracks
Main Construction Compounds and Accomodation Sites
Water Supply Point
Existing Substation
Built Up Areas
Waterbody
Biodiversity Study Area
Holdings **Flora Survey Effort**
Flora Survey Transect
Rapid Data Point
Quadrat

BDAR - Figure C-5ac
Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP

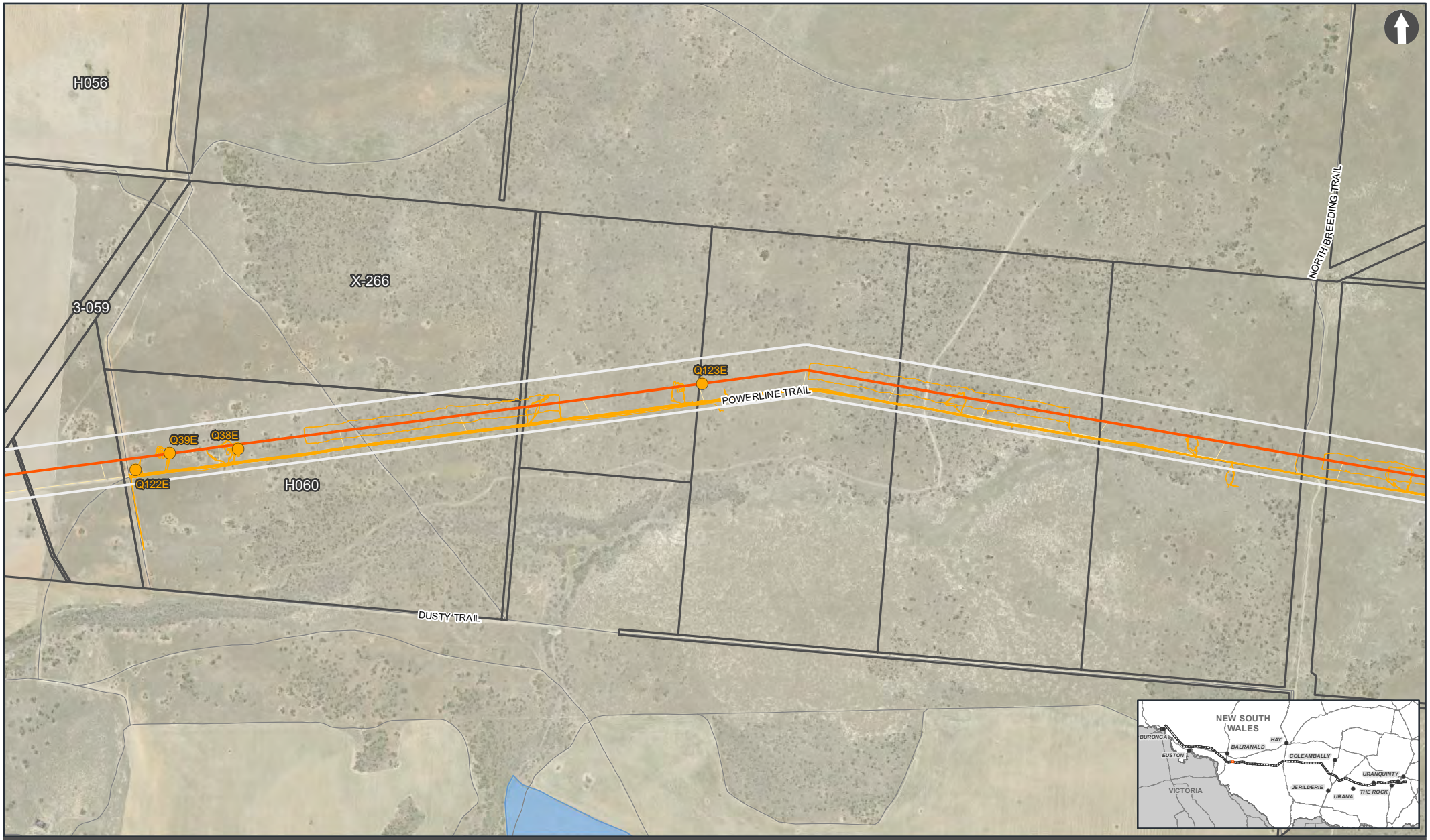


Proposed Alignment
Access Tracks
Main Construction Compounds and Accomodation Sites
Water Supply Point
Existing Substation
Built Up Areas
Waterbody
Biodiversity Study Area
Holdings **Flora Survey Effort**
Flora Survey Transect
Quadrat

BDAR - Figure C-5ad
Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



Proposed Alignment
Access Tracks
Main Construction Compounds and Accomodation Sites
Water Supply Point
Existing Substation
Built Up Areas
Waterbody
Biodiversity Study Area
Holdings **Flora Survey Effort**
Flora Survey Transect
Quadrat

BDAR - Figure C-5ae
Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP

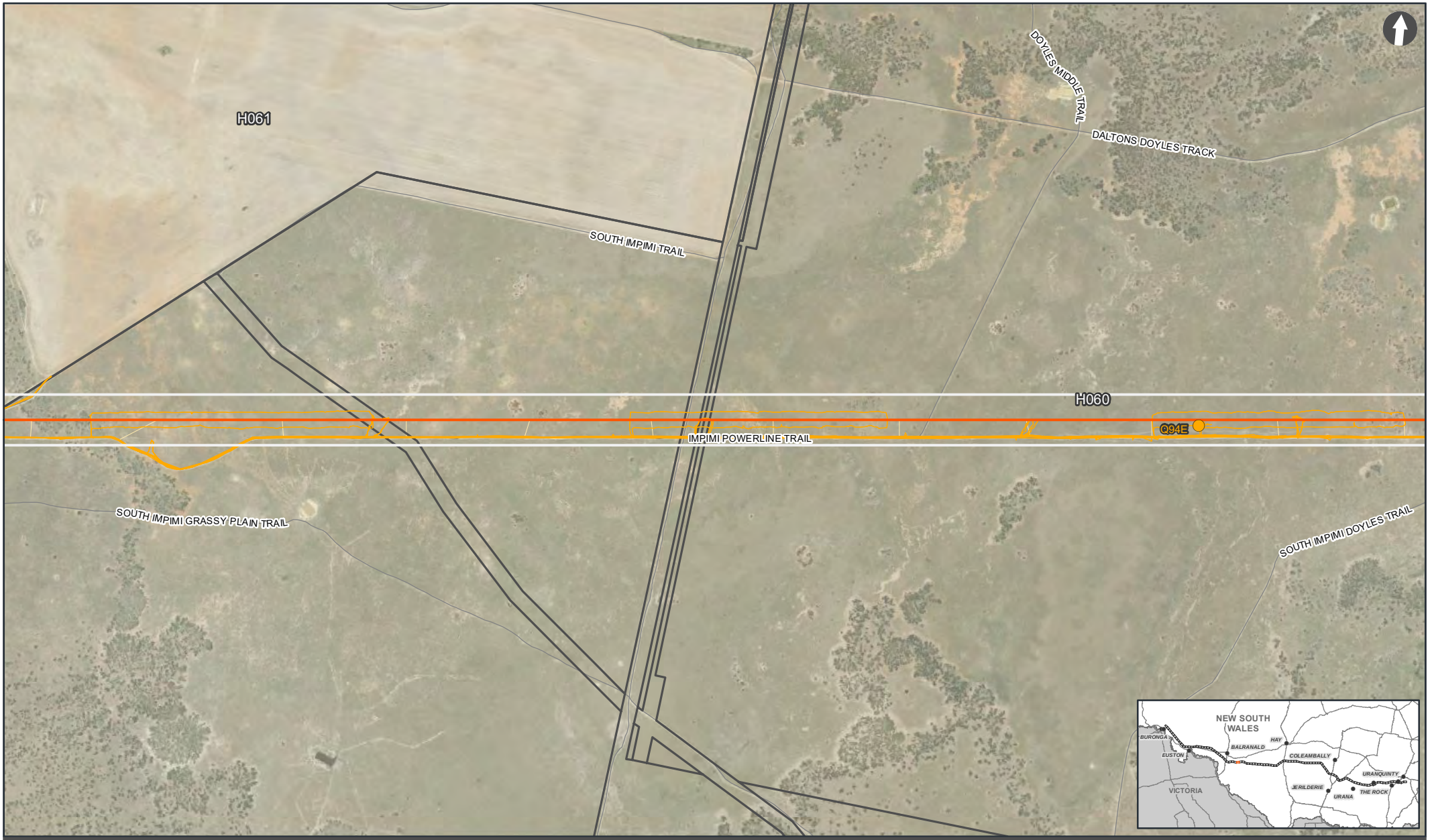


BDAR - Figure C-5af

Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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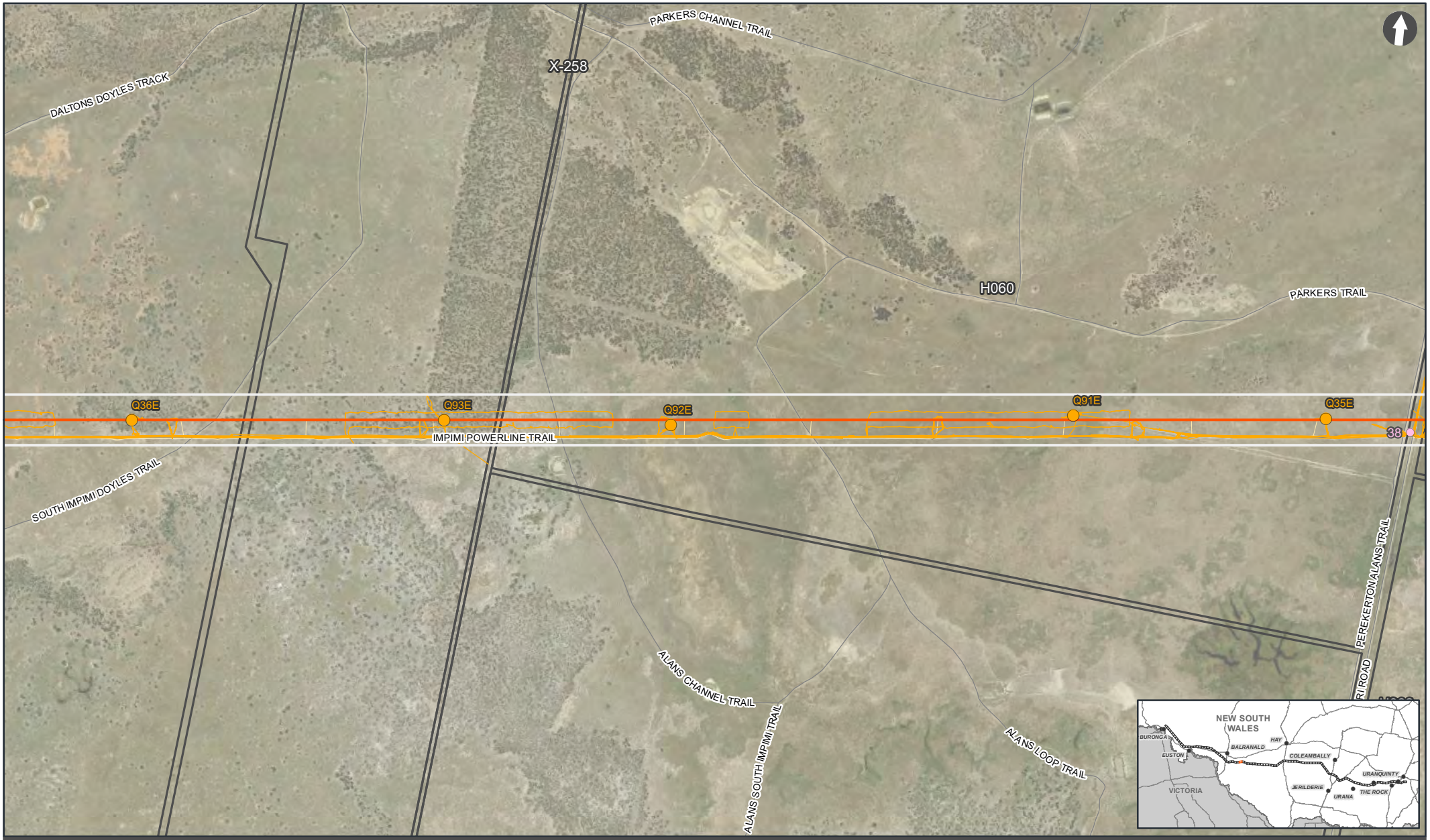
BDAR - Figure C-5ag

Threatened Flora Field Survey Effort

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Holdings **Flora Survey Effort**
- Flora Survey Transect
- Quadrat

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure C-5ah

Threatened Flora Field Survey Effort

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Holdings **Flora Survey Effort**
- Flora Survey Transect
- Rapid Data Point
- Quadrat

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Source: NSWSS, ESRI, Transgrid, WSP



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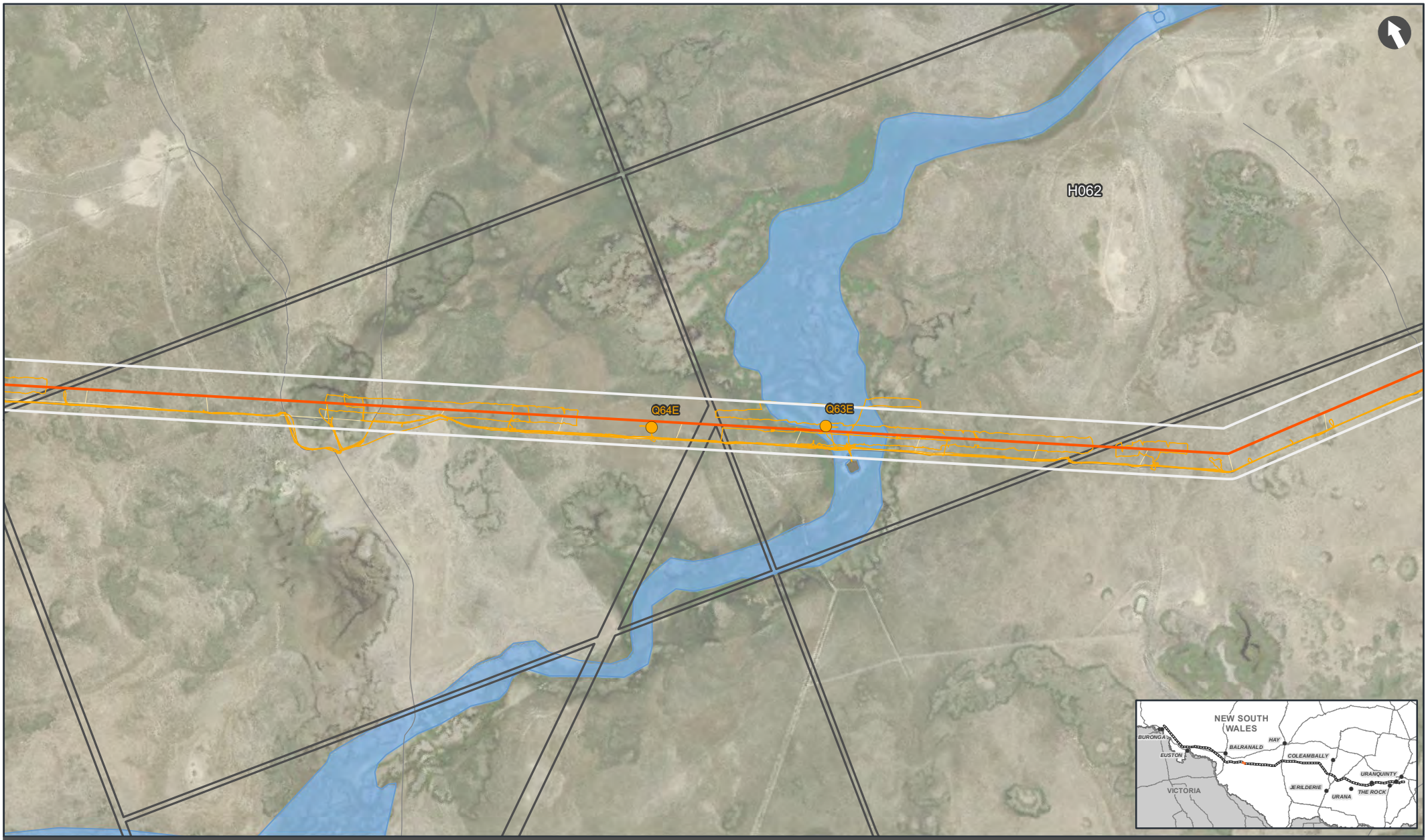
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Holdings **Flora Survey Effort**
- Flora Survey Transect
- Rapid Data Point
- Quadrat

BDAR - Figure C-5ai

Threatened Flora Field Survey Effort

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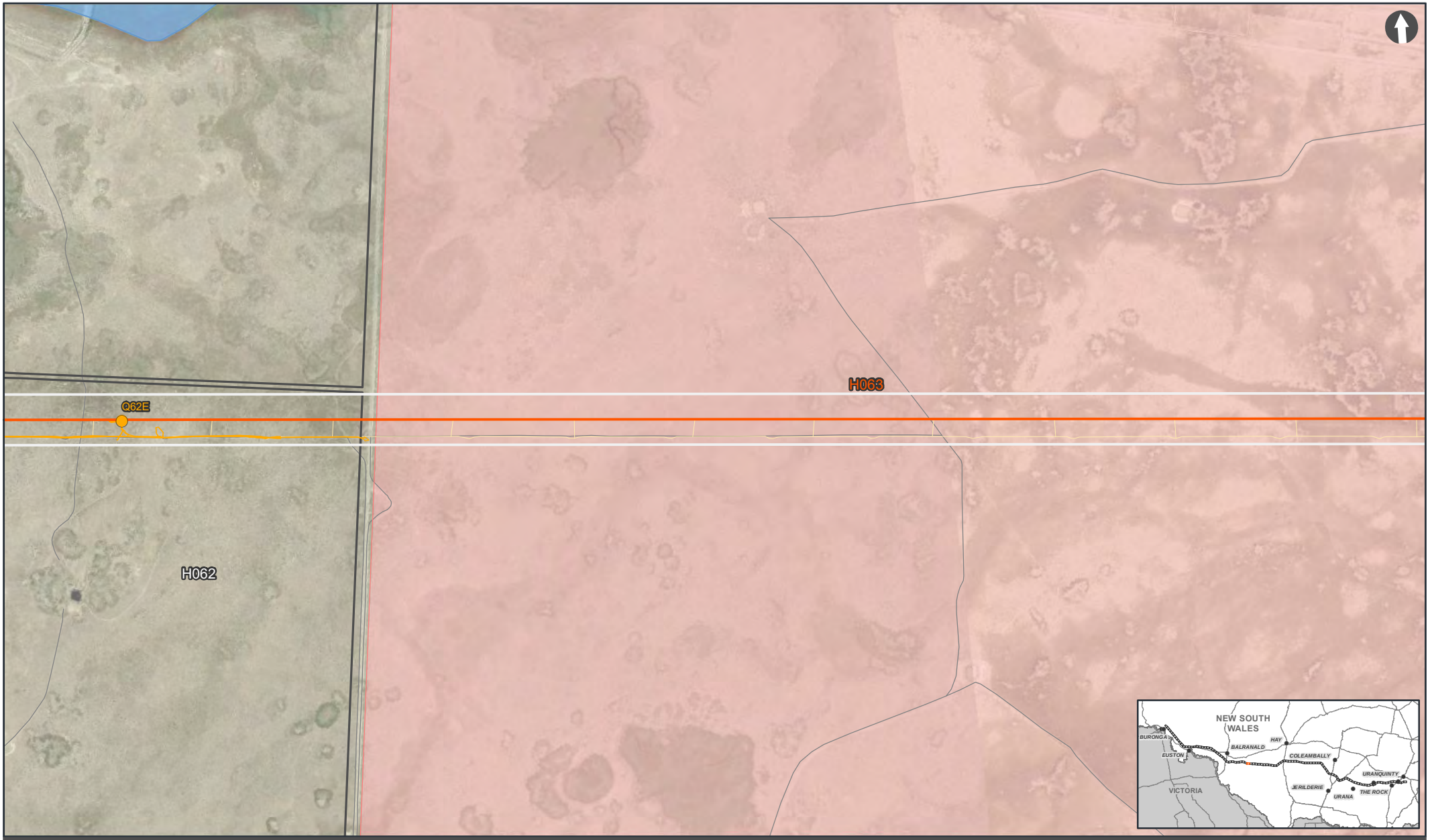


Proposed Alignment
Access Tracks
Main Construction Compounds and Accomodation Sites
Water Supply Point
Existing Substation
Built Up Areas
Waterbody
Biodiversity Study Area
Holdings **Flora Survey Effort**
Flora Survey Transect
Quadrat

BDAR - Figure C-5aj
Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Holdings
- Holdings - No Access

Flora Survey Effort

- Flora Survey Transect
- Quadrat

BDAR - Figure C-5ak

Threatened Flora Field Survey Effort

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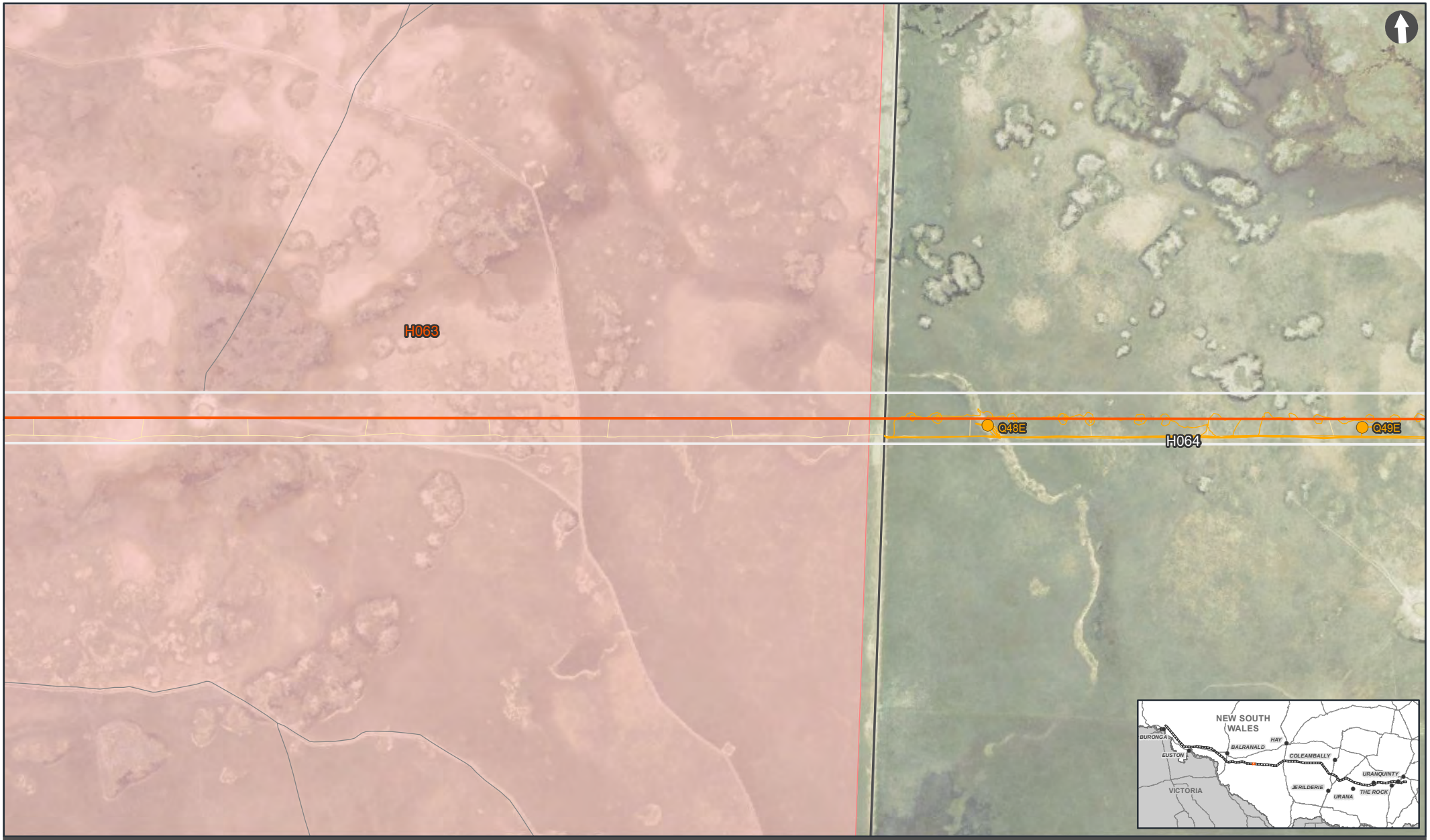


Proposed Alignment
Access Tracks
Main Construction Compounds and Accomodation Sites
Water Supply Point
Existing Substation
Built Up Areas
Waterbody
Biodiversity Study Area
Holdings
Holdings - No Access
Flora Survey Effort
Flora Survey Transect

BDAR - Figure C-5al
Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



Proposed Alignment
Access Tracks
Main Construction Compounds and Accomodation Sites
Water Supply Point
Existing Substation
Built Up Areas
Waterbody
Biodiversity Study Area
Holdings
Holdings - No Access
Flora Survey Effort
Flora Survey Transect
Quadrat

BDAR - Figure C-5am
Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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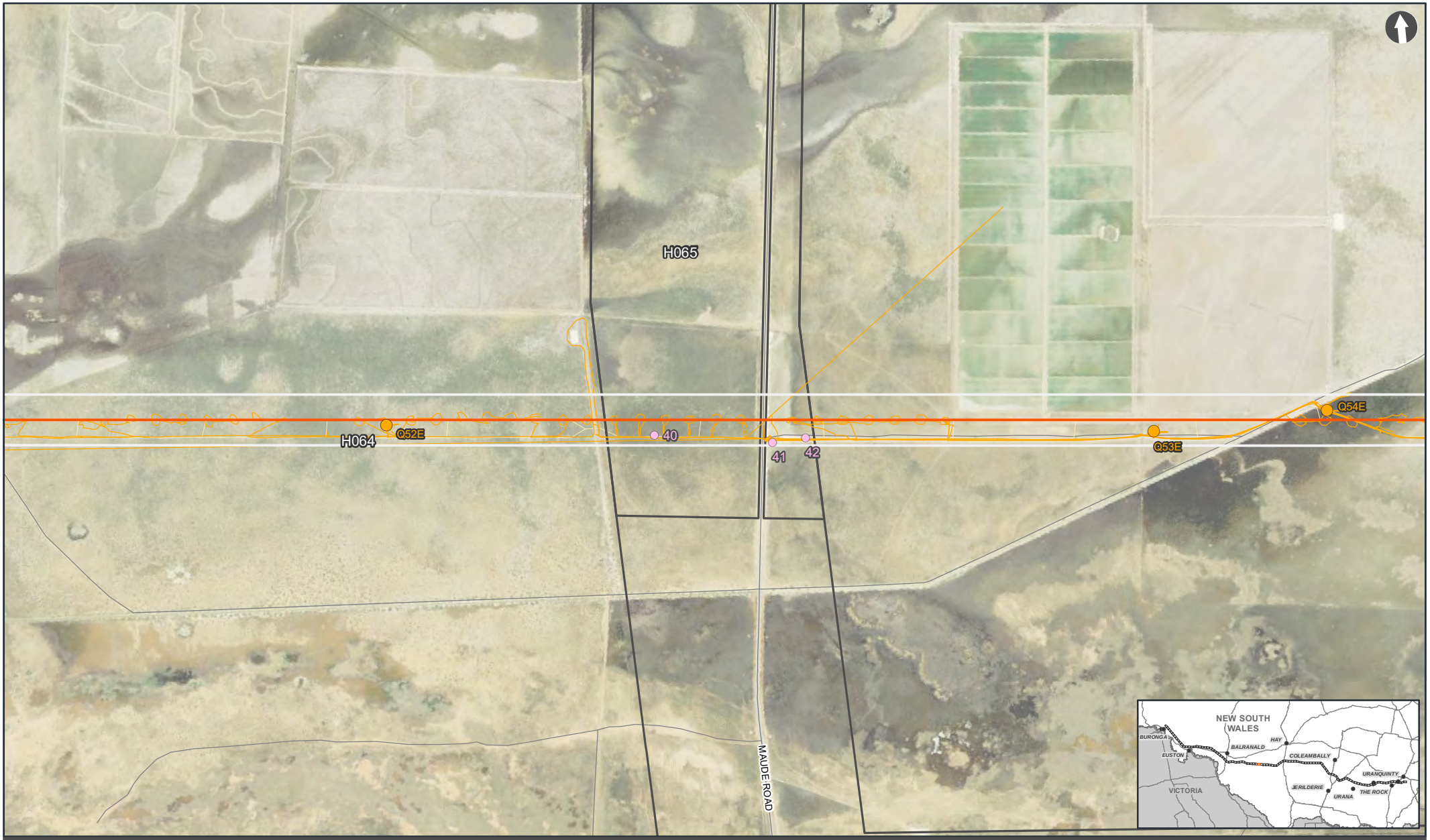
BDAR - Figure C-5an

Threatened Flora Field Survey Effort

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Holdings **Flora Survey Effort**
- Flora Survey Transect
- Rapid Data Point
- Quadrat

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Source: NSWSS, ESRI, Transgrid, WSP



Proposed Alignment
Access Tracks
Main Construction Compounds and Accomodation Sites
Water Supply Point
Existing Substation
Built Up Areas
Waterbody
Biodiversity Study Area
Holdings **Flora Survey Effort**
Flora Survey Transect
Rapid Data Point
Quadrat

BDAR - Figure C-5ao
Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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Proposed Alignment
Access Tracks
Main Construction Compounds and Accomodation Sites
Water Supply Point
Existing Substation
Built Up Areas
Waterbody
Biodiversity Study Area
Holdings **Flora Survey Effort**
Flora Survey Transect
Quadrat

BDAR - Figure C-5ap
Threatened Flora Field Survey Effort

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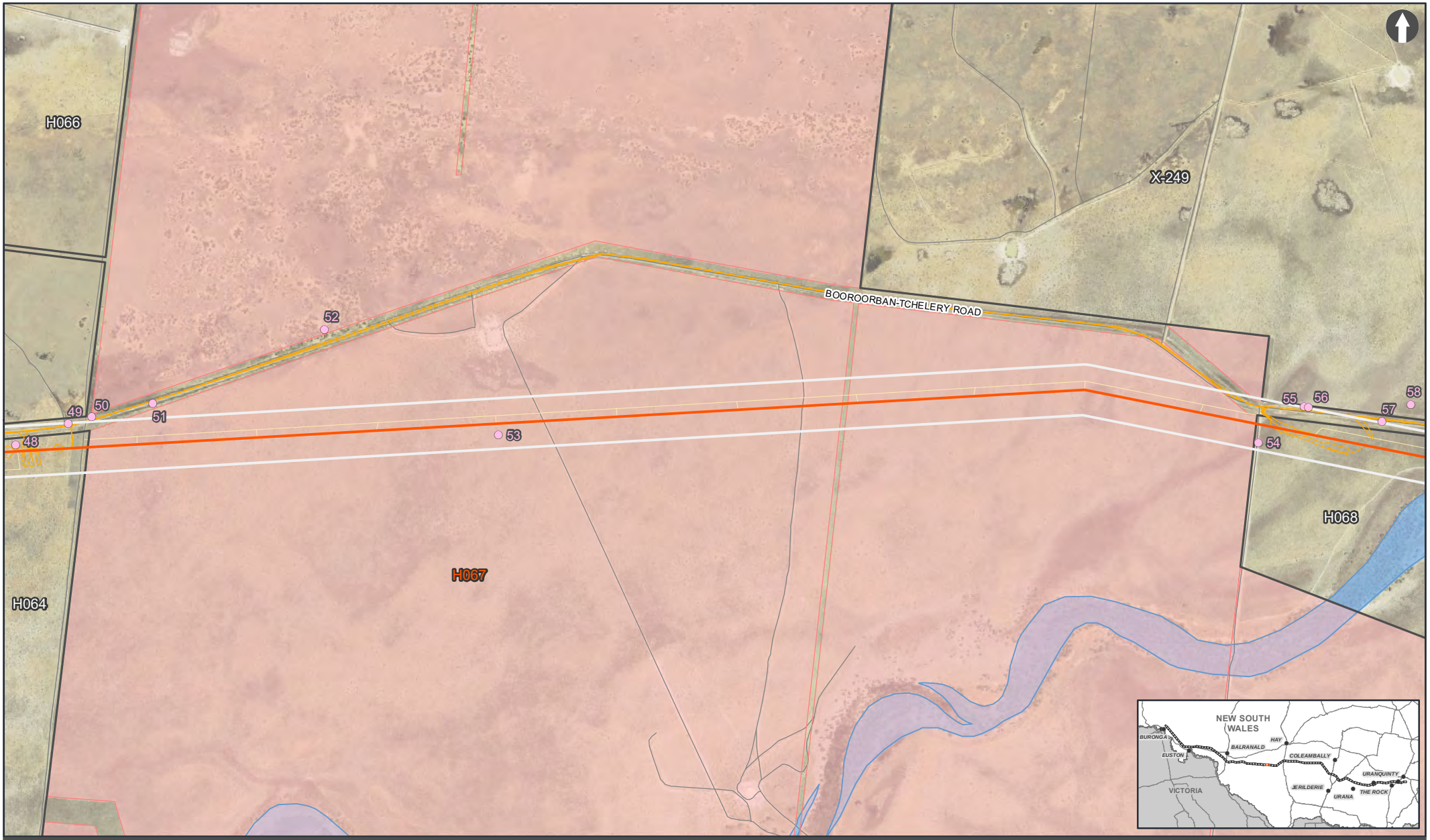


Proposed Alignment
Access Tracks
Main Construction Compounds and Accomodation Sites
Water Supply Point
Existing Substation
Built Up Areas
Waterbody
Biodiversity Study Area
Holdings
Holdings - No Access
Flora Survey Effort
Flora Survey Transect
Rapid Data Point
Quadrat

BDAR - Figure C-5aq
Threatened Flora Field Survey Effort

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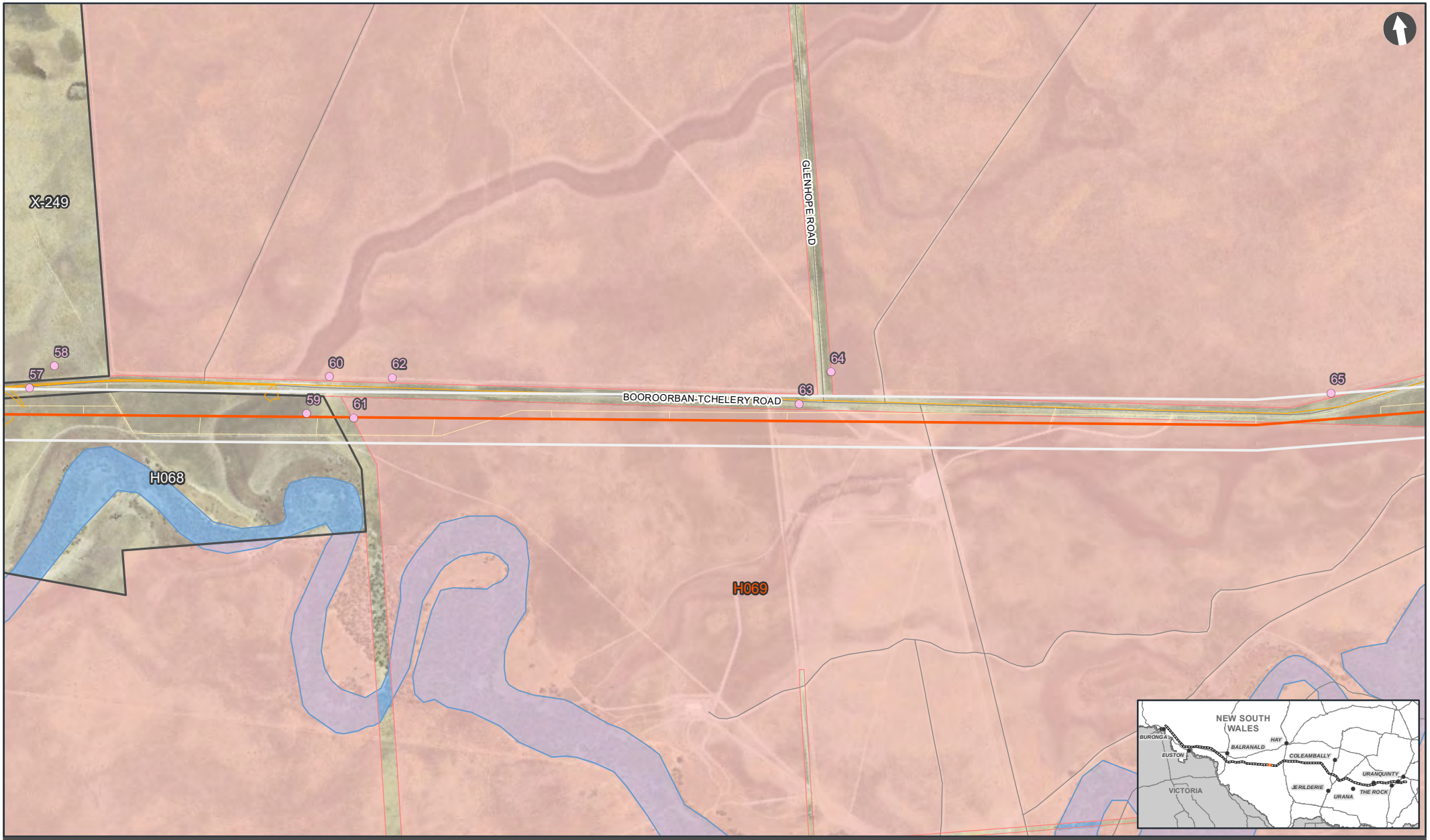


Proposed Alignment
Access Tracks
Main Construction Compounds and Accomodation Sites
Water Supply Point
Existing Substation
Built Up Areas
Waterbody
Biodiversity Study Area
Holdings
Holdings - No Access
Flora Survey Effort
Flora Survey Transect
Rapid Data Point

BDAR - Figure C-5ar
Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP

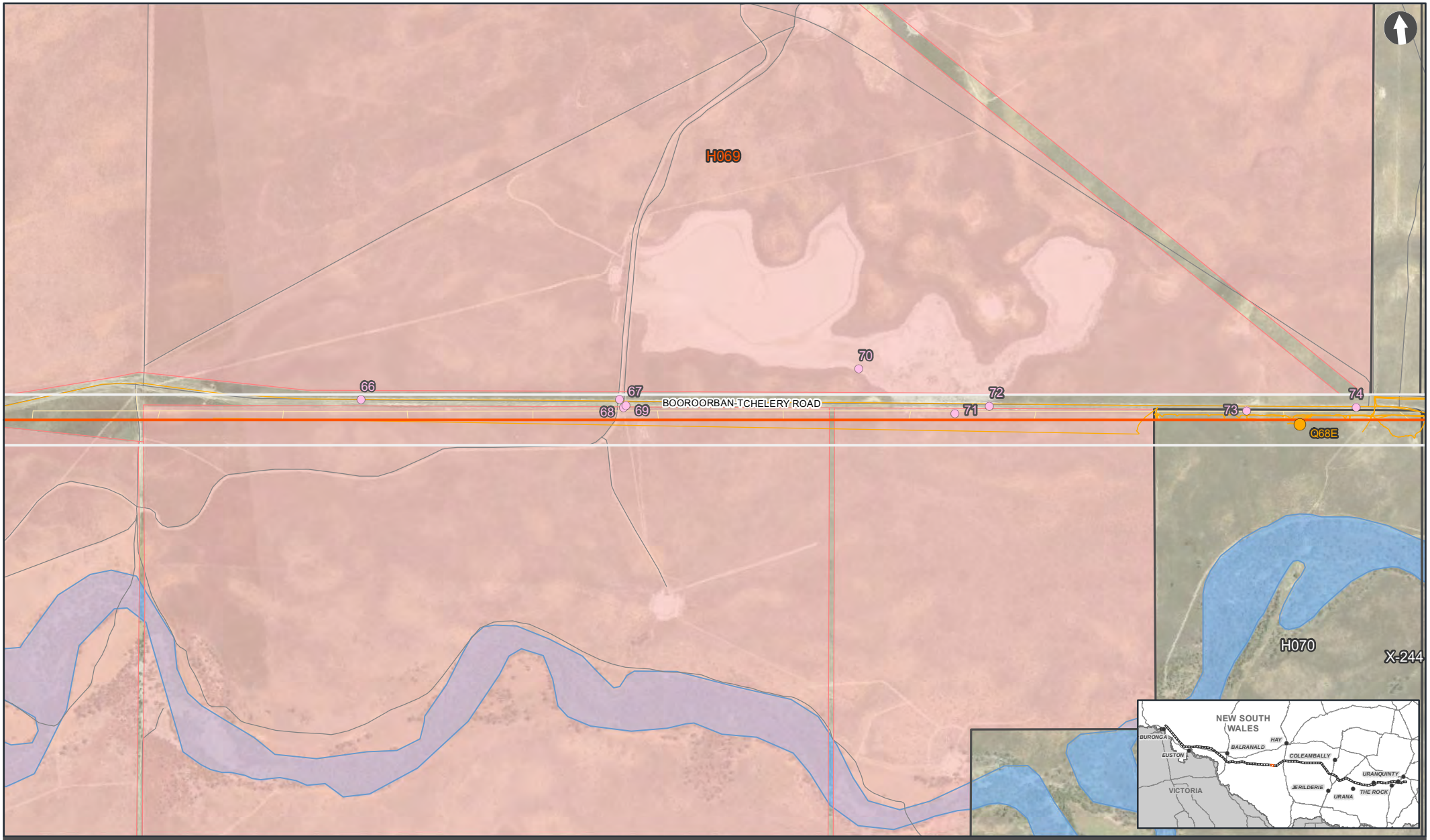


Proposed Alignment
Access Tracks
Main Construction Compounds and Accomodation Sites
Water Supply Point
Existing Substation
Built Up Areas
Waterbody
Biodiversity Study Area
Holdings
Holdings - No Access
Flora Survey Effort
Flora Survey Transect
Rapid Data Point

BDAR - Figure C-5as
Threatened Flora Field Survey Effort

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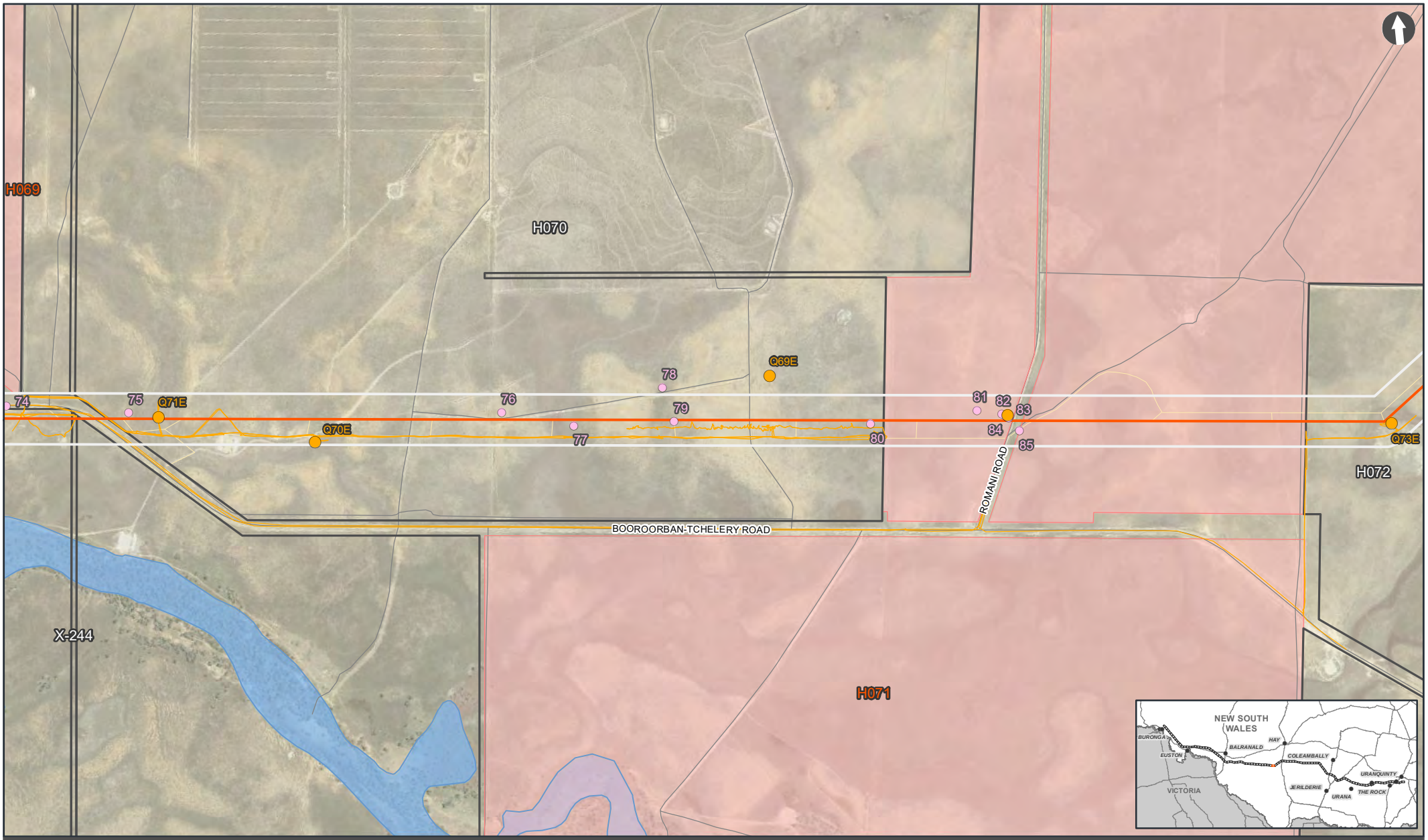


Proposed Alignment
Access Tracks
Main Construction Compounds and Accomodation Sites
Water Supply Point
Existing Substation
Built Up Areas
Waterbody
Biodiversity Study Area
Holdings
Holdings - No Access
Flora Survey Effort
Flora Survey Transect
Rapid Data Point
Quadrat

BDAR - Figure C-5at
Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP

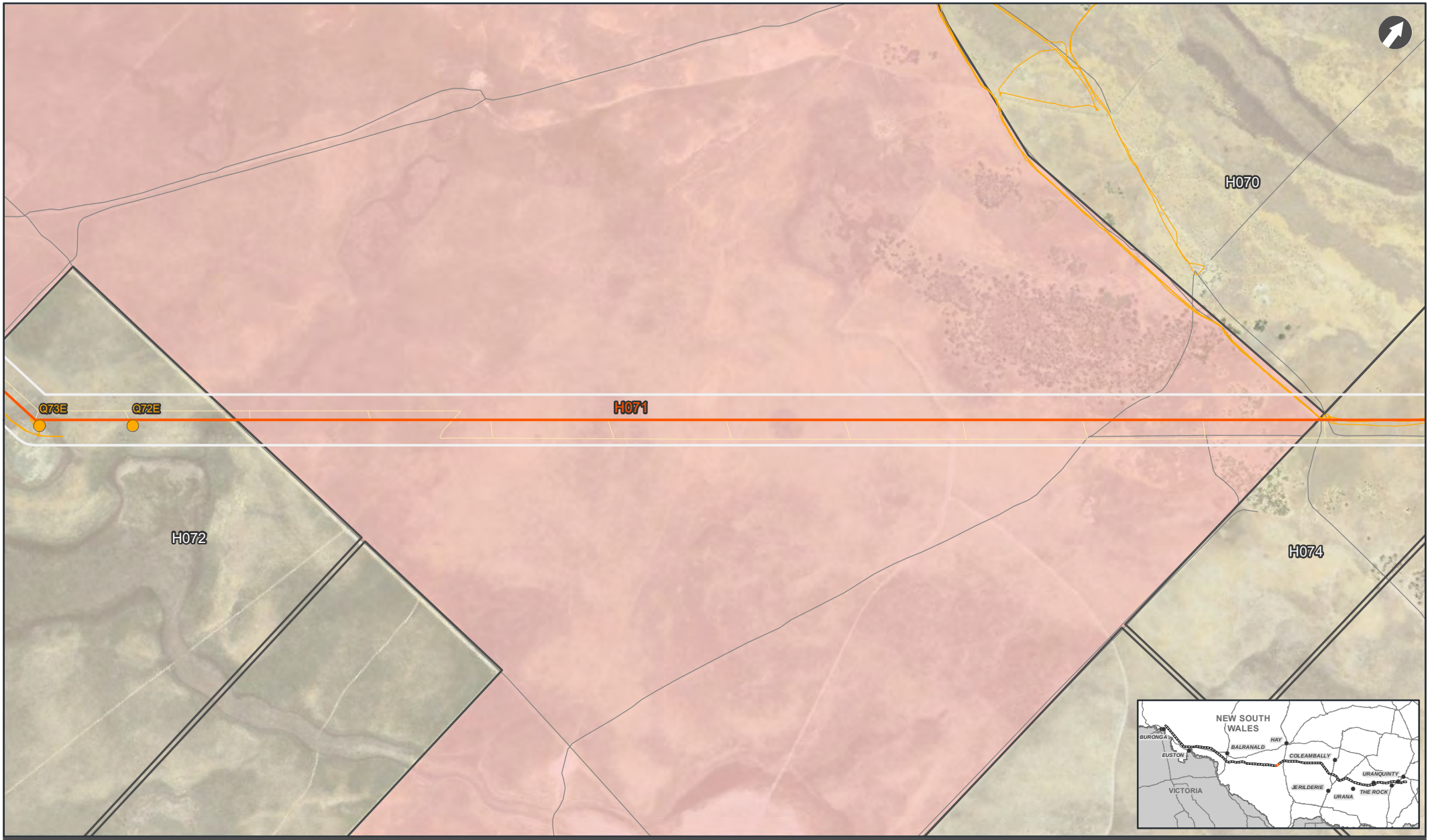


Proposed Alignment
Access Tracks
Main Construction Compounds and Accomodation Sites
Water Supply Point
Existing Substation
Built Up Areas
Waterbody
Biodiversity Study Area
Holdings
Holdings - No Access
Flora Survey Effort
Flora Survey Transect
Rapid Data Point
Quadrat

BDAR - Figure C-5au
Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure C-5av

Threatened Flora Field Survey Effort

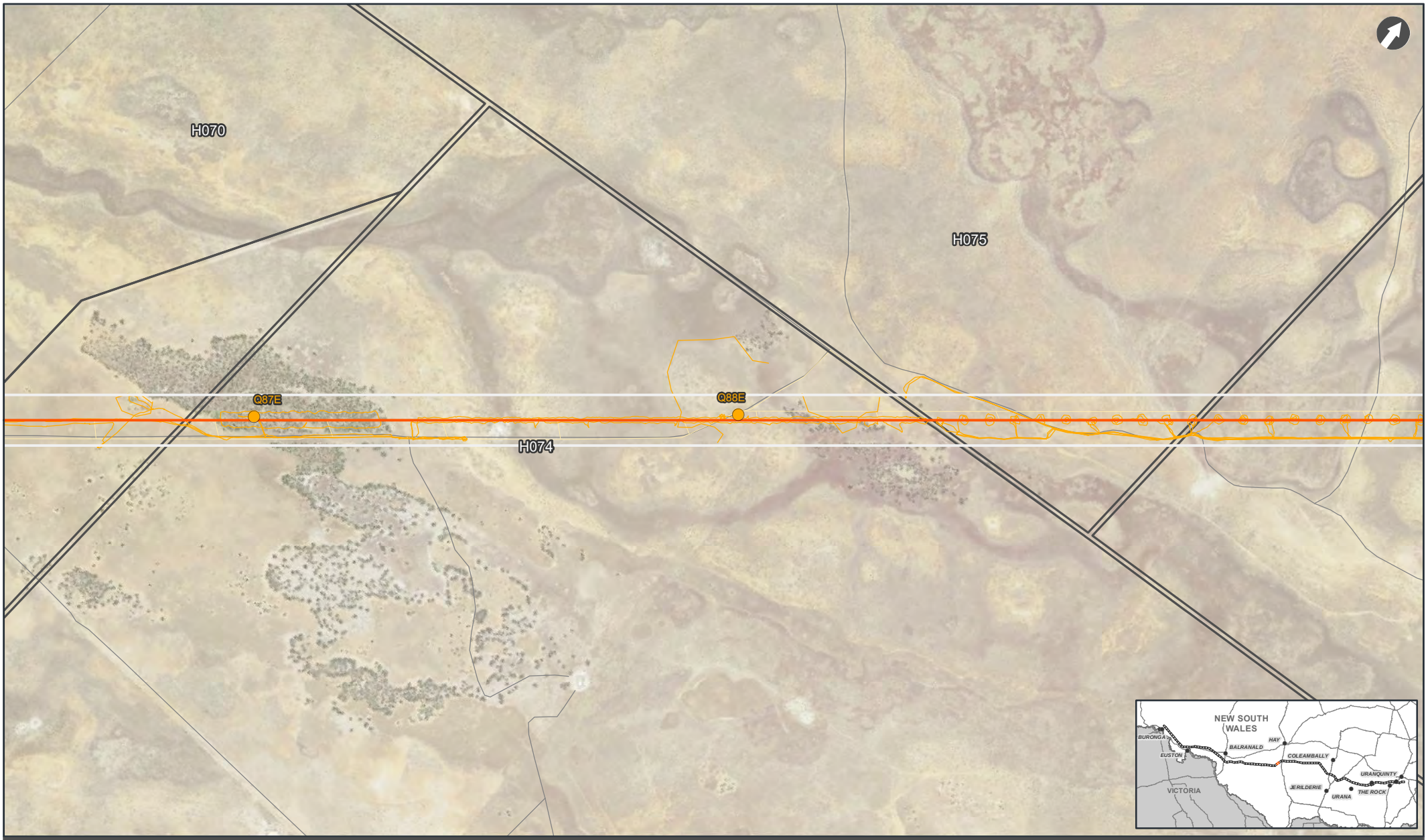
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Holdings
- Holdings - No Access

Flora Survey Effort

- Flora Survey Transect
- Quadrat

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Source: NSWSS, ESRI, Transgrid, WSP



Proposed Alignment
Access Tracks
Main Construction Compounds and Accomodation Sites
Water Supply Point
Existing Substation
Built Up Areas
Waterbody
Biodiversity Study Area
Holdings **Flora Survey Effort**
Flora Survey Transect
Quadrat

BDAR - Figure C-5aw
Threatened Flora Field Survey Effort

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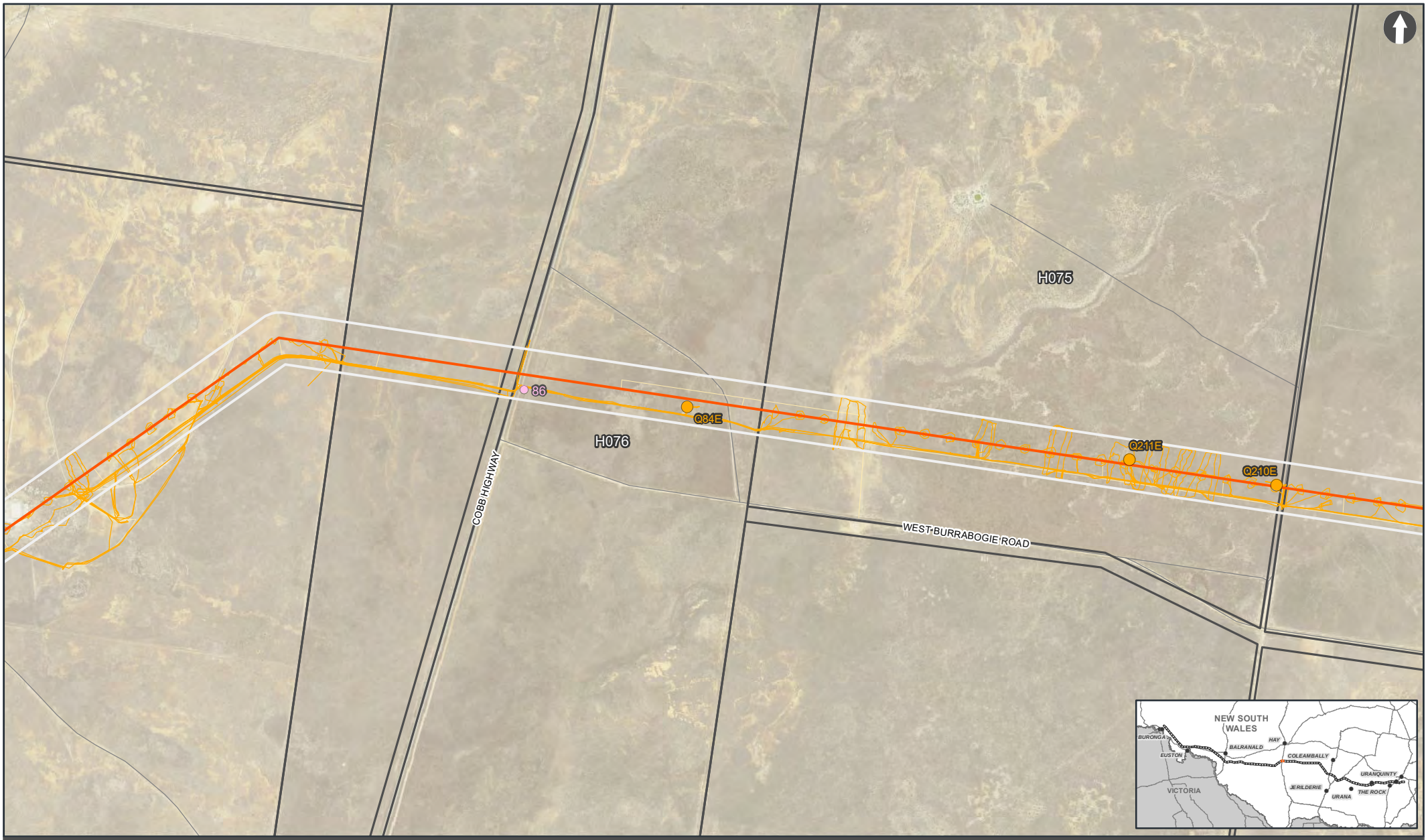
BDAR - Figure C-5ax

Threatened Flora Field Survey Effort

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Holdings **Flora Survey Effort**
- Flora Survey Transect
- Quadrat

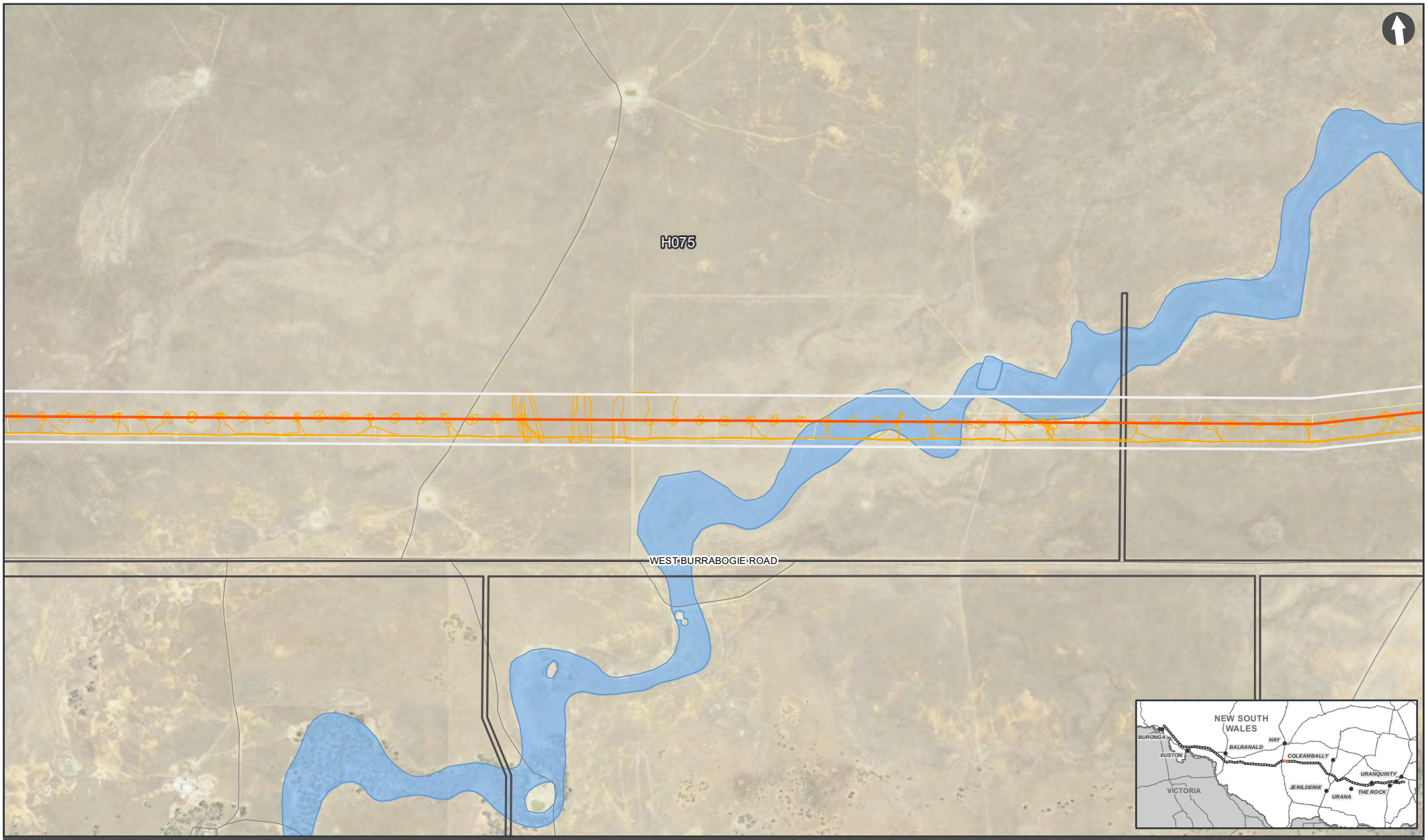
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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure C-5ay

Threatened Flora Field Survey Effort



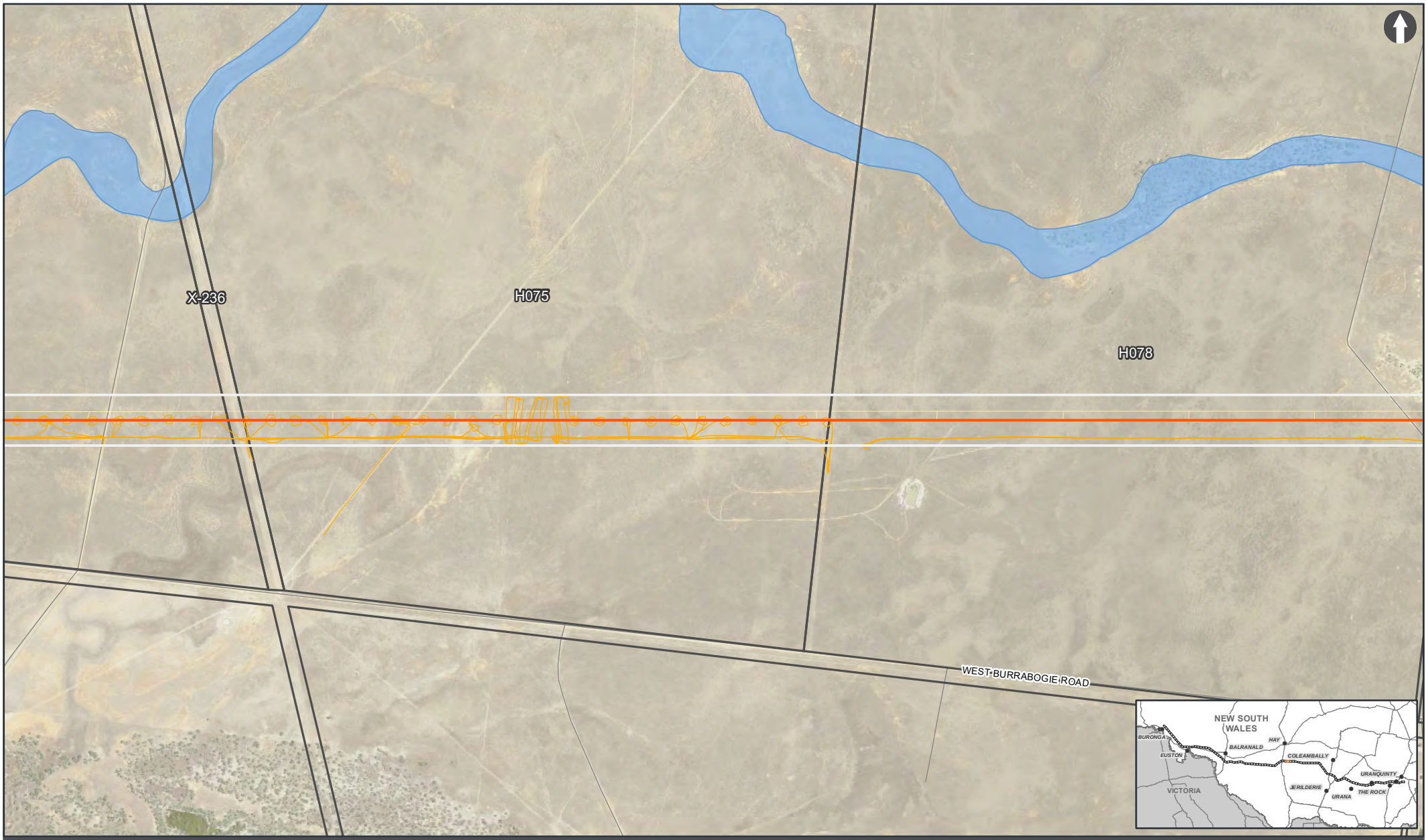
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Proposed Alignment
Access Tracks
Main Construction Compounds and Accomodation Sites
Water Supply Point
Existing Substation
Built Up Areas
Waterbody
Biodiversity Study Area
Holdings **Flora Survey Effort**
Flora Survey Transect

BDAR - Figure C-5az
Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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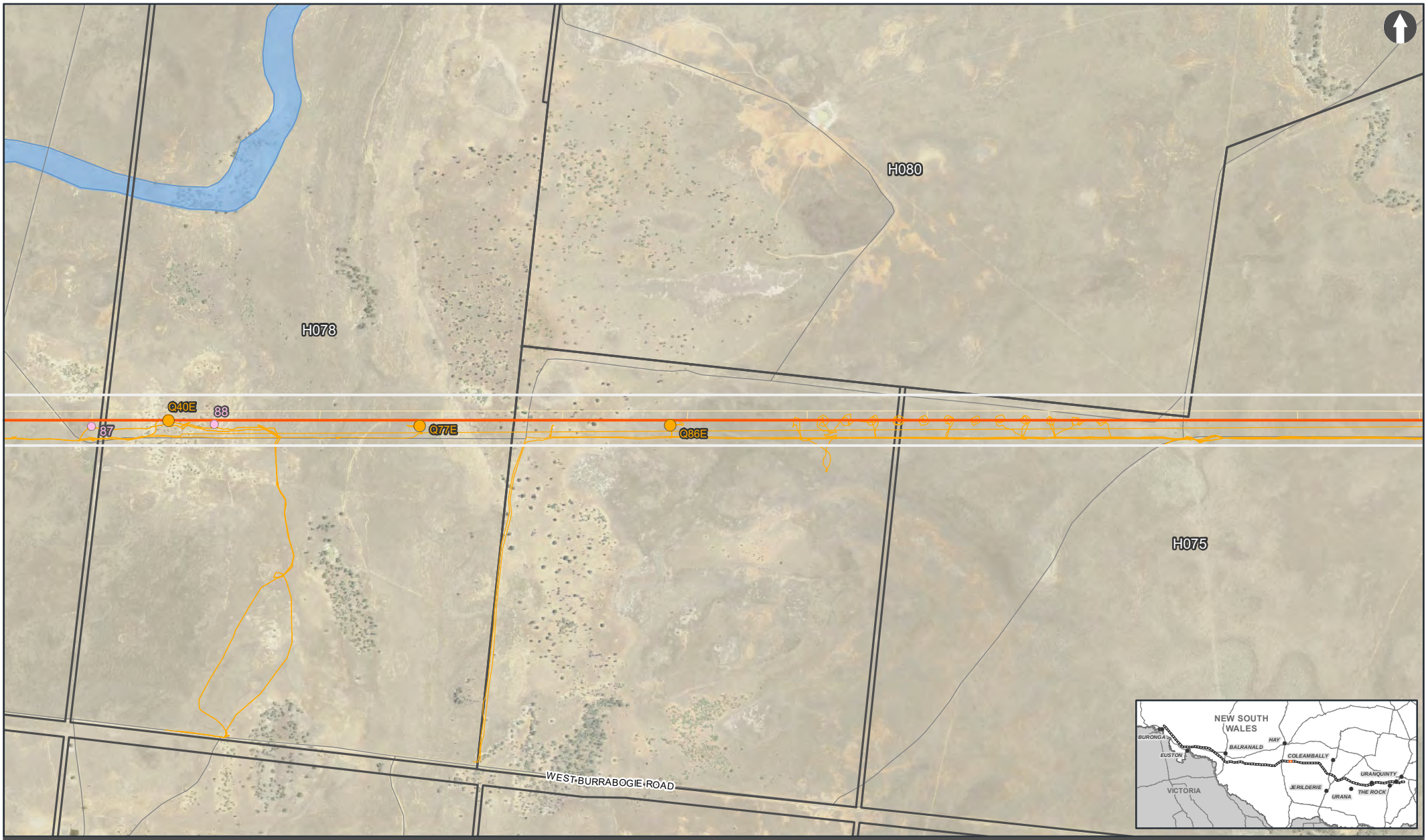
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Holdings **Flora Survey Effort**
- Flora Survey Transect

BDAR - Figure C-5ba

Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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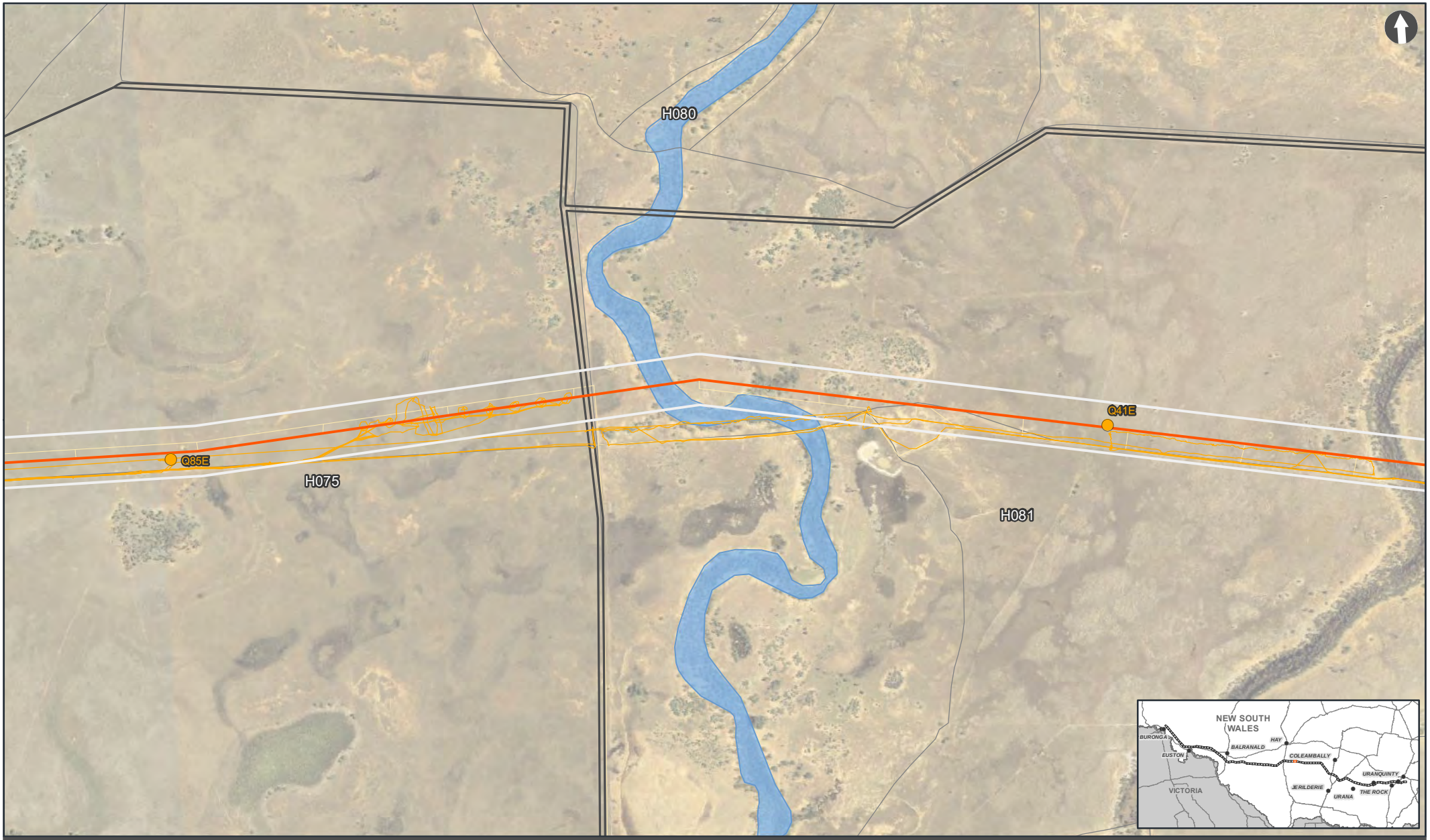
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Holdings **Flora Survey Effort**
- Flora Survey Transect
- Rapid Data Point
- Quadrat

BDAR - Figure C-5bb

Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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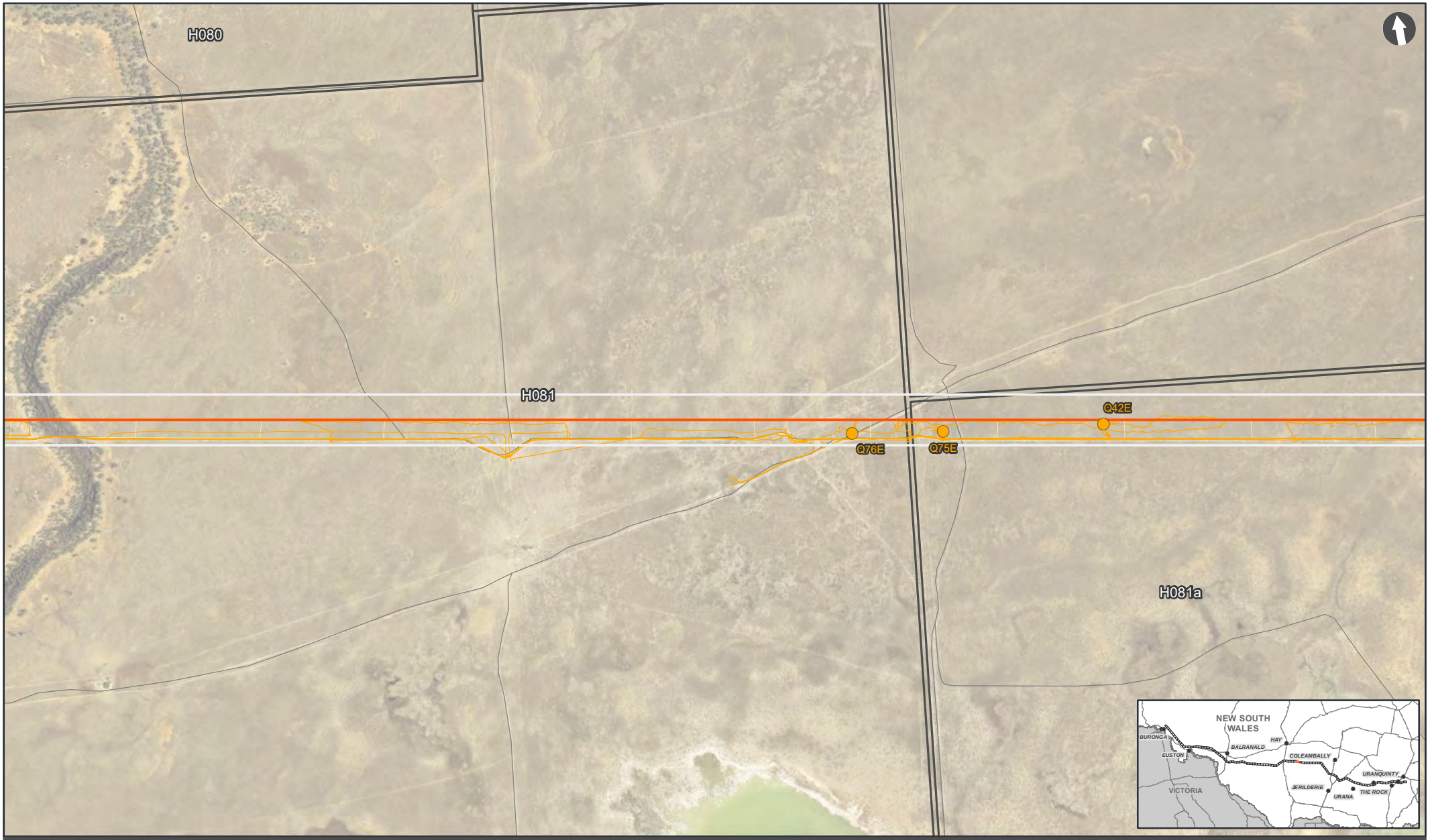
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Holdings **Flora Survey Effort**
- Flora Survey Transect
- Quadrat

BDAR - Figure C-5bc

Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP

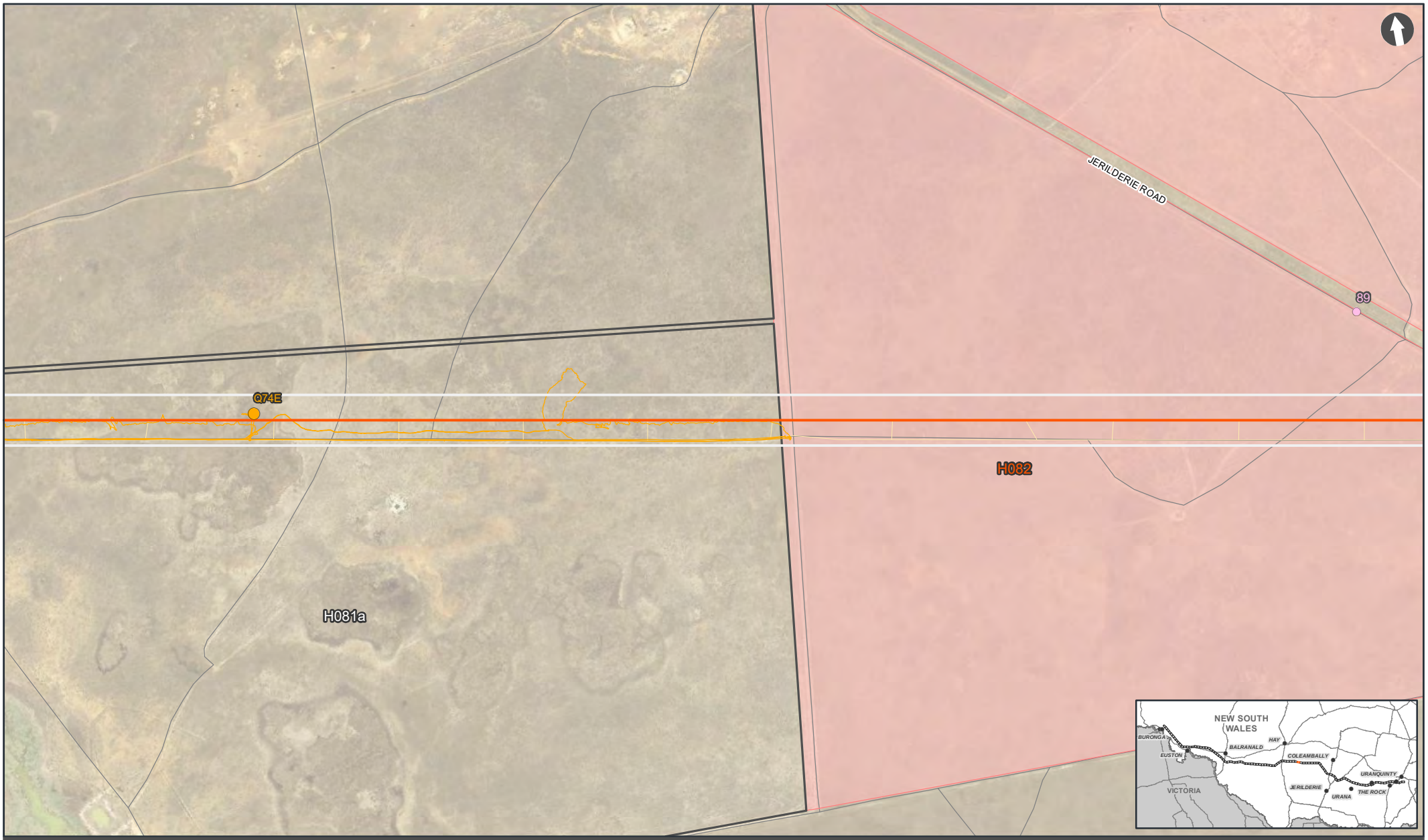


Proposed Alignment
Access Tracks
Main Construction Compounds and Accomodation Sites
Water Supply Point
Existing Substation
Built Up Areas
Waterbody
Biodiversity Study Area
Holdings **Flora Survey Effort**
Flora Survey Transect
Quadrat

BDAR - Figure C-5bd
Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-5be

Threatened Flora Field Survey Effort

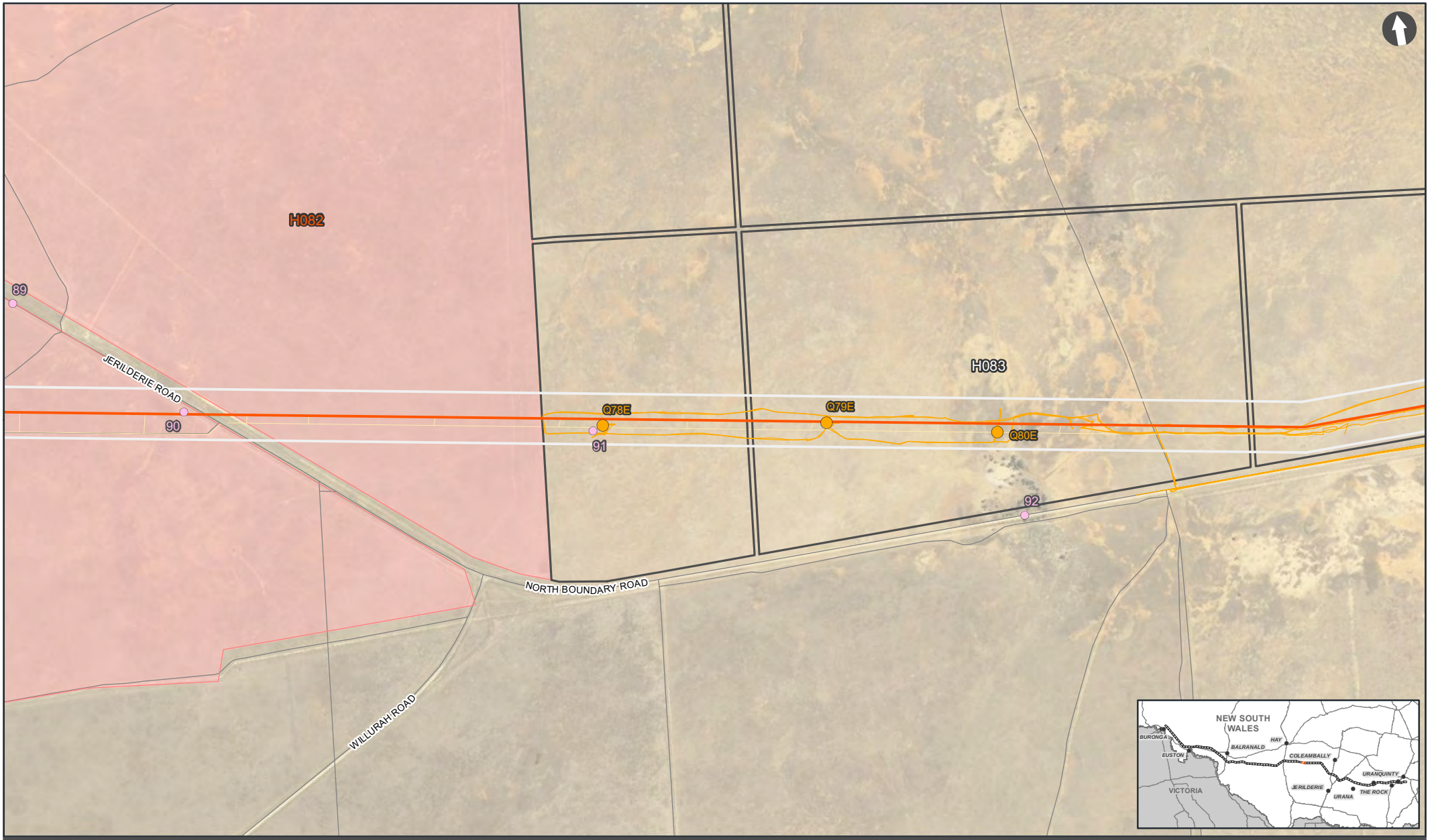
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Holdings
- Holdings - No Access

Flora Survey Effort

- Flora Survey Transect
- Rapid Data Point
- Quadrat

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Source: NSWSS, ESRI, Transgrid, WSP



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- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Holdings
- Holdings - No Access

Flora Survey Effort

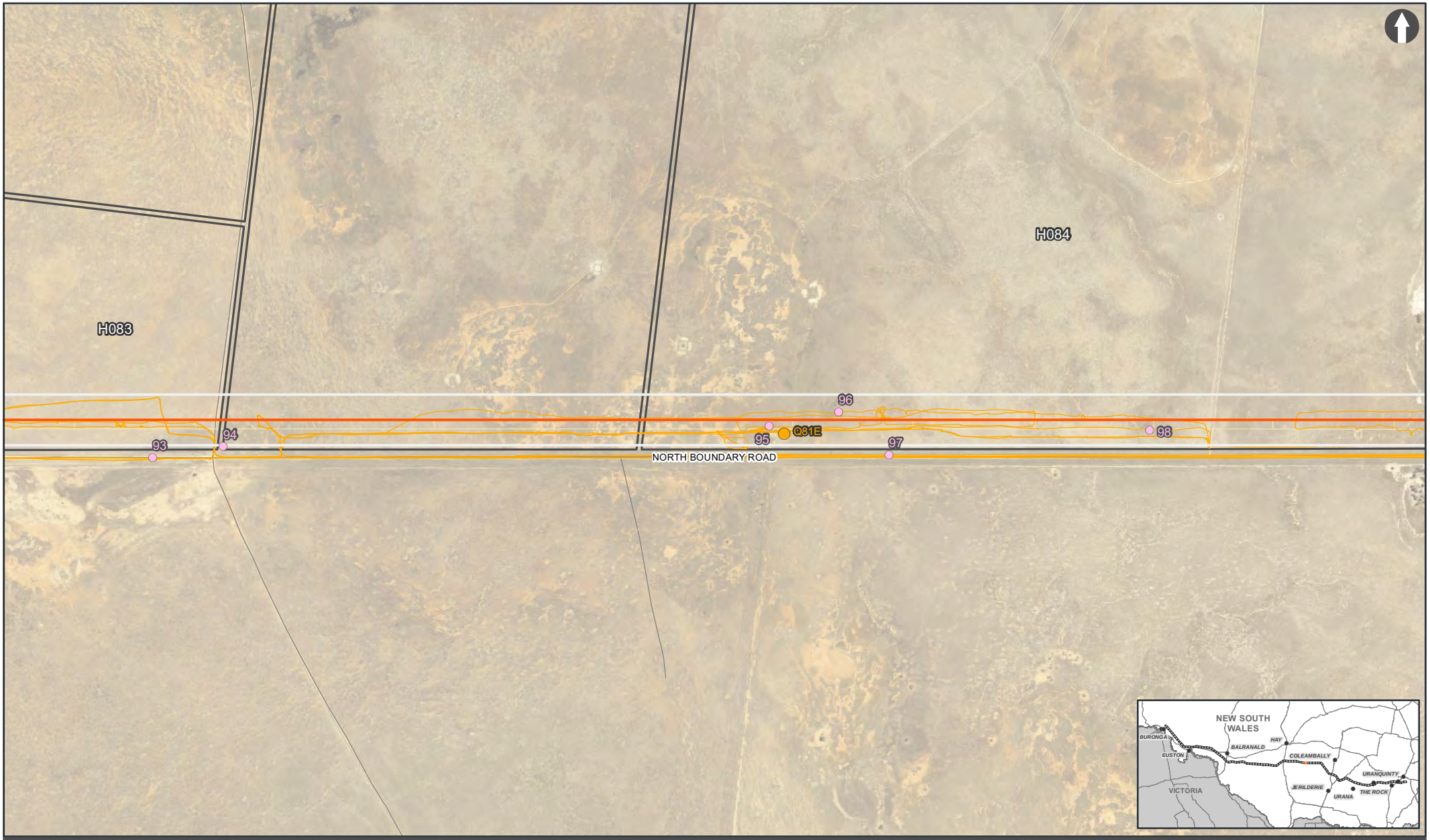
- Flora Survey Transect
- Rapid Data Point
- Quadrat

BDAR - Figure C-5bf

Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



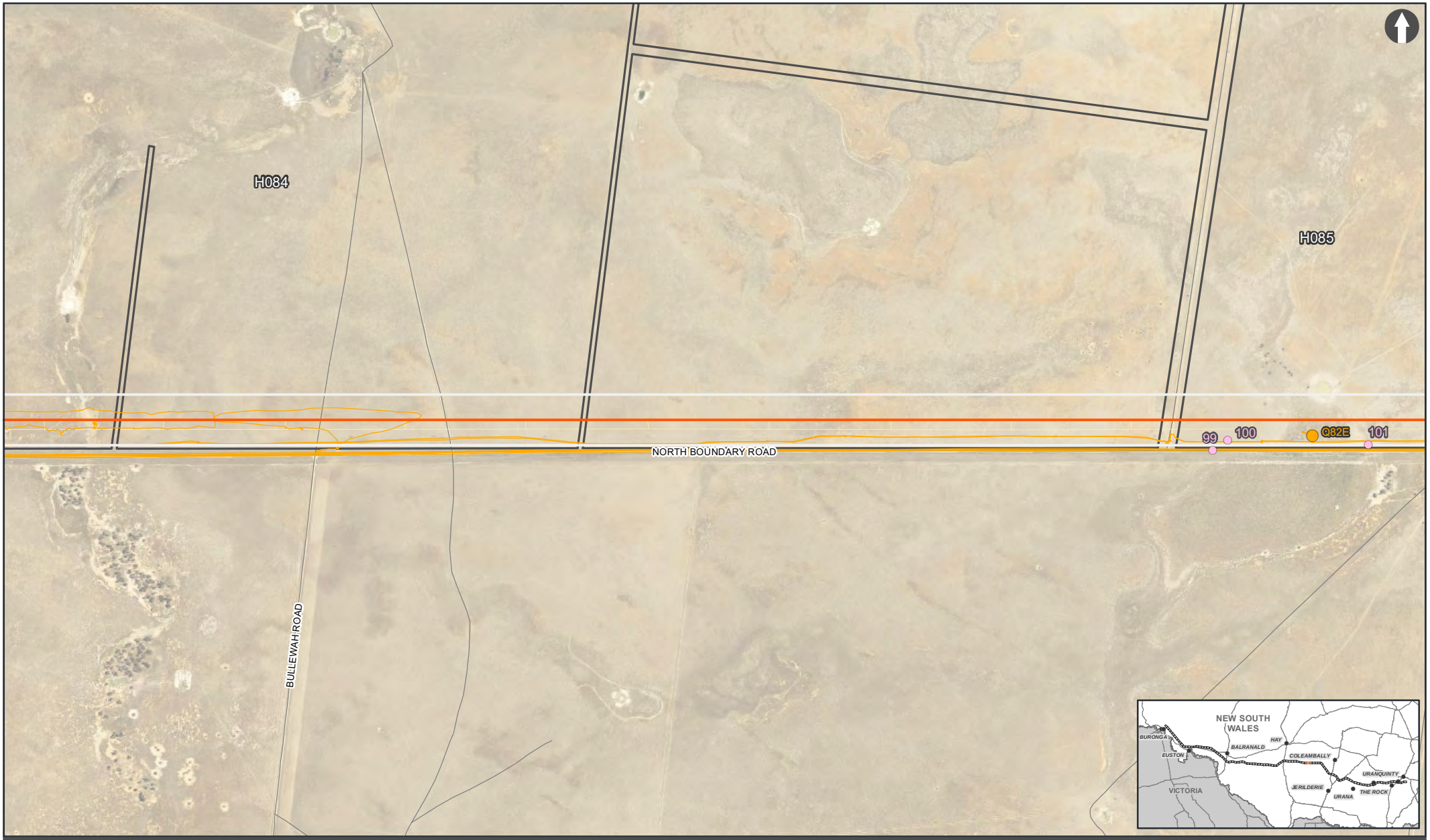
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Proposed Alignment
Access Tracks
Main Construction Compounds and Accomodation Sites
Water Supply Point
Existing Substation
Built Up Areas
Waterbody
Biodiversity Study Area
Holdings **Flora Survey Effort**
Flora Survey Transect
Rapid Data Point
Quadrat

BDAR - Figure C-5bg
Threatened Flora Field Survey Effort

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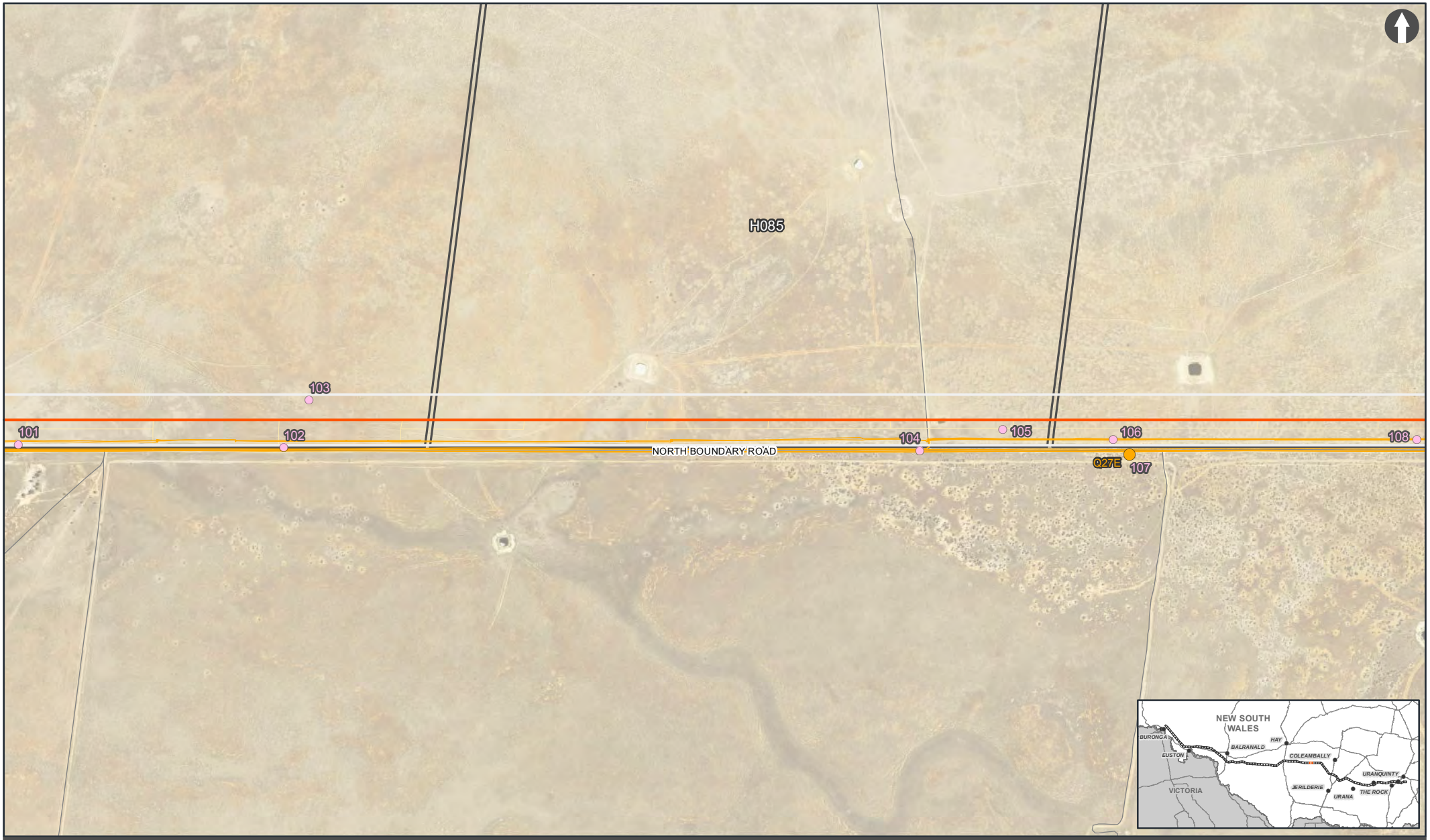


Proposed Alignment
Access Tracks
Main Construction Compounds and Accomodation Sites
Water Supply Point
Existing Substation
Built Up Areas
Waterbody
Biodiversity Study Area
Holdings **Flora Survey Effort**
Flora Survey Transect
Rapid Data Point
Quadrat

BDAR - Figure C-5bh
Threatened Flora Field Survey Effort

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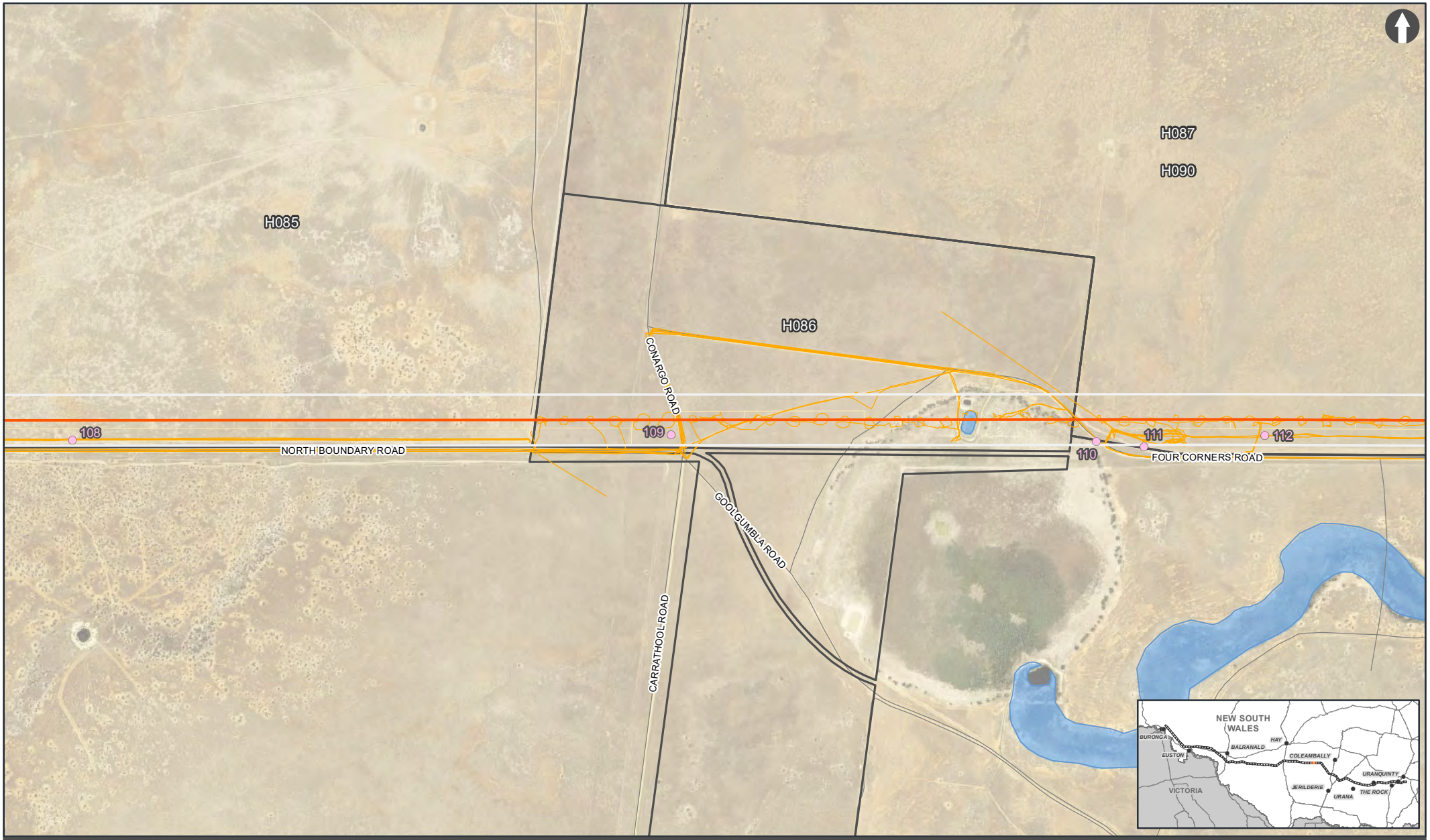


Proposed Alignment
Access Tracks
Main Construction Compounds and Accomodation Sites
Water Supply Point
Existing Substation
Built Up Areas
Waterbody
Biodiversity Study Area
Holdings **Flora Survey Effort**
Flora Survey Transect
Rapid Data Point
Quadrat

BDAR - Figure C-5bi
Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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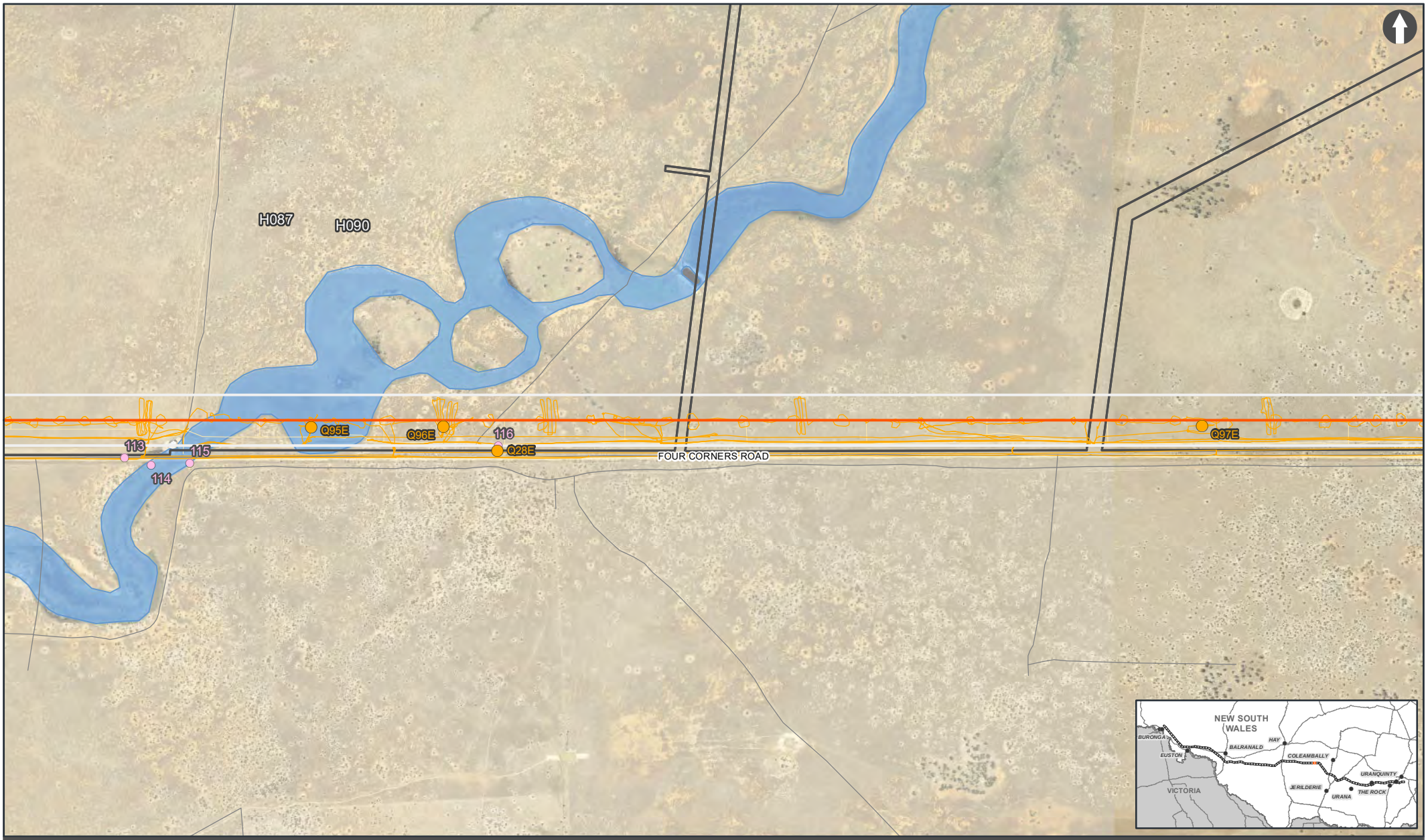
BDAR - Figure C-5bj

Threatened Flora Field Survey Effort

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Holdings **Flora Survey Effort**
- Flora Survey Transect
- Rapid Data Point

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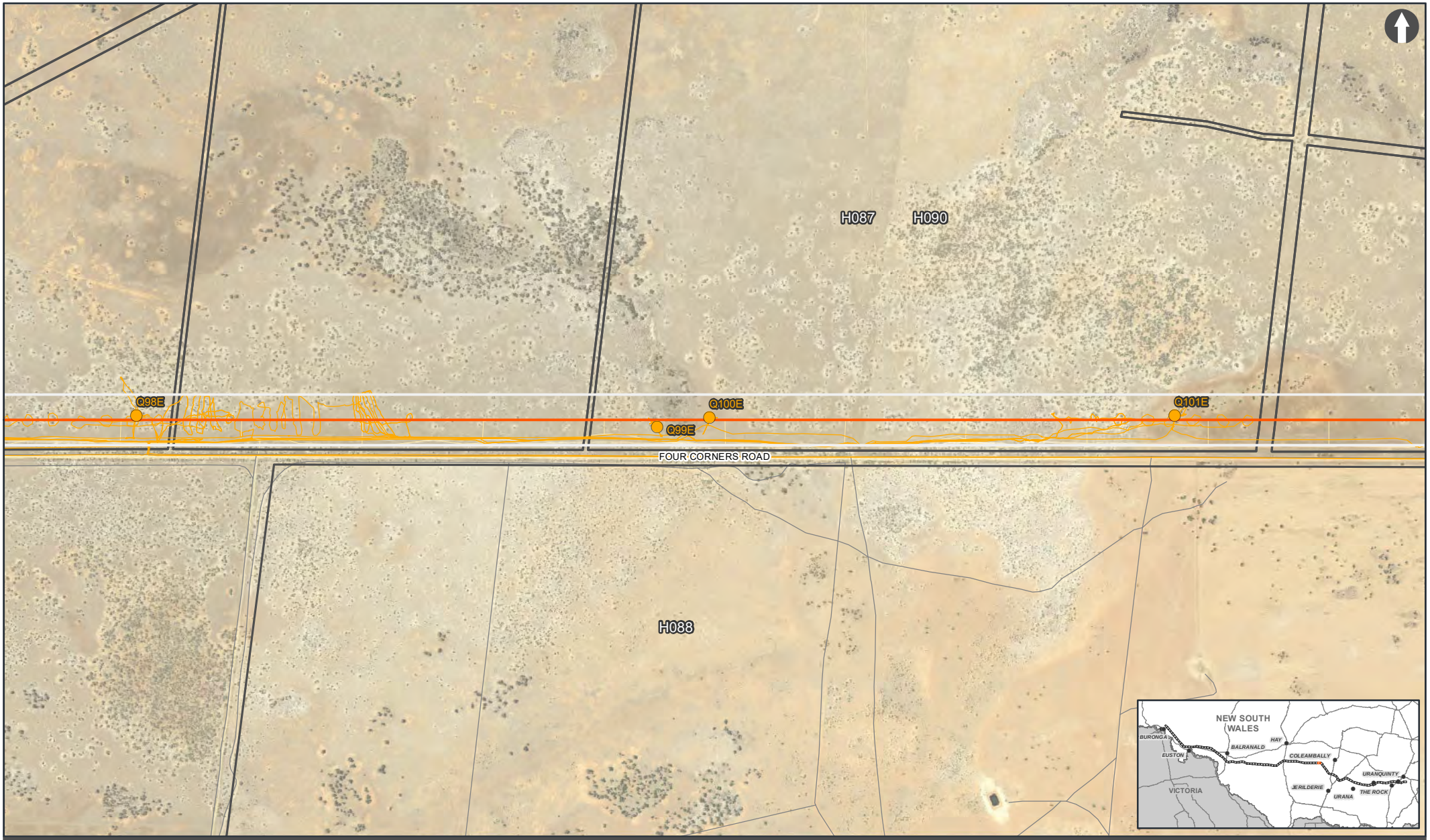


BDAR - Figure C-5bk

Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP

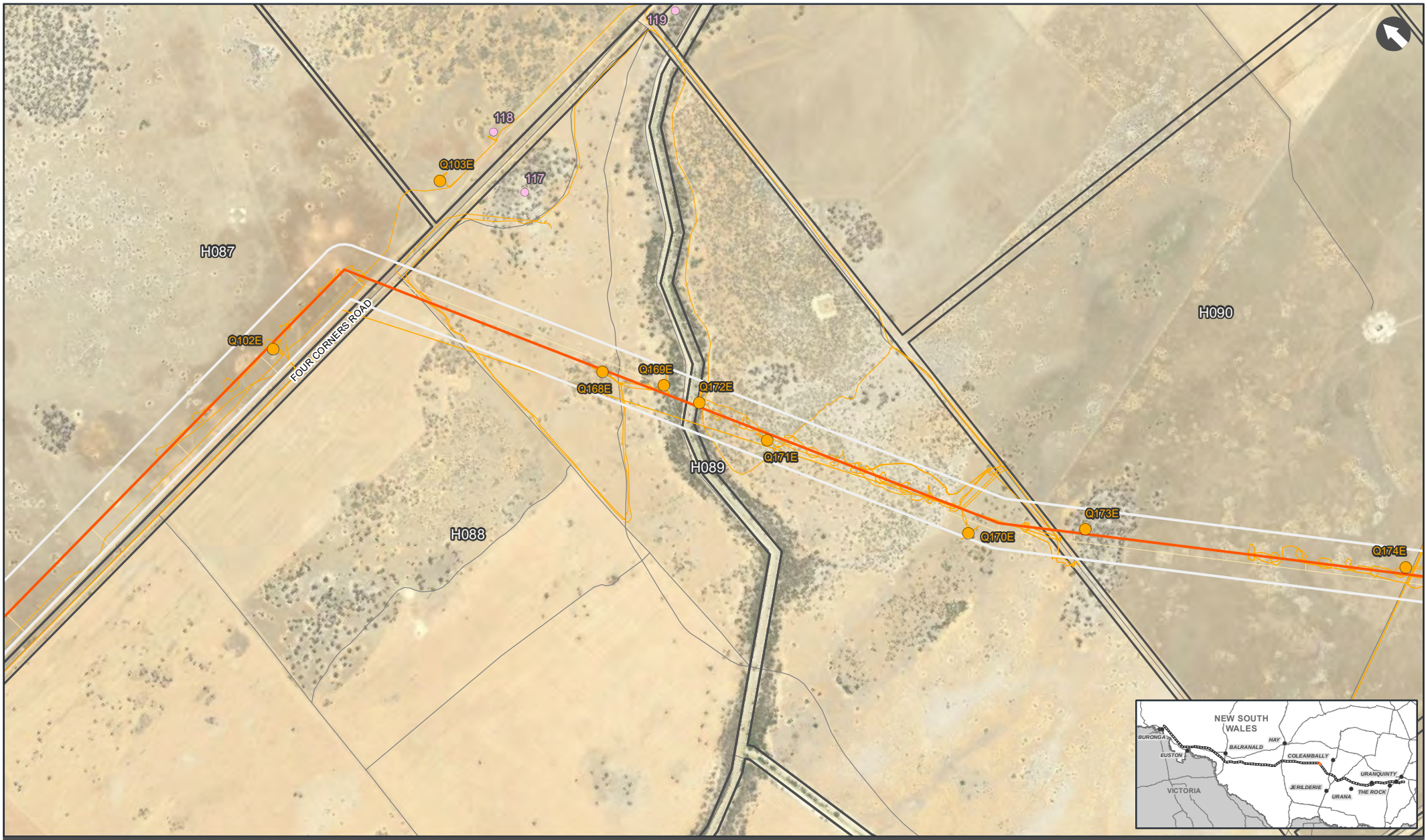


Proposed Alignment
Access Tracks
Main Construction Compounds and Accomodation Sites
Water Supply Point
Existing Substation
Built Up Areas
Waterbody
Biodiversity Study Area
Holdings **Flora Survey Effort**
Flora Survey Transect
Quadrat

BDAR - Figure C-5bl
Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP

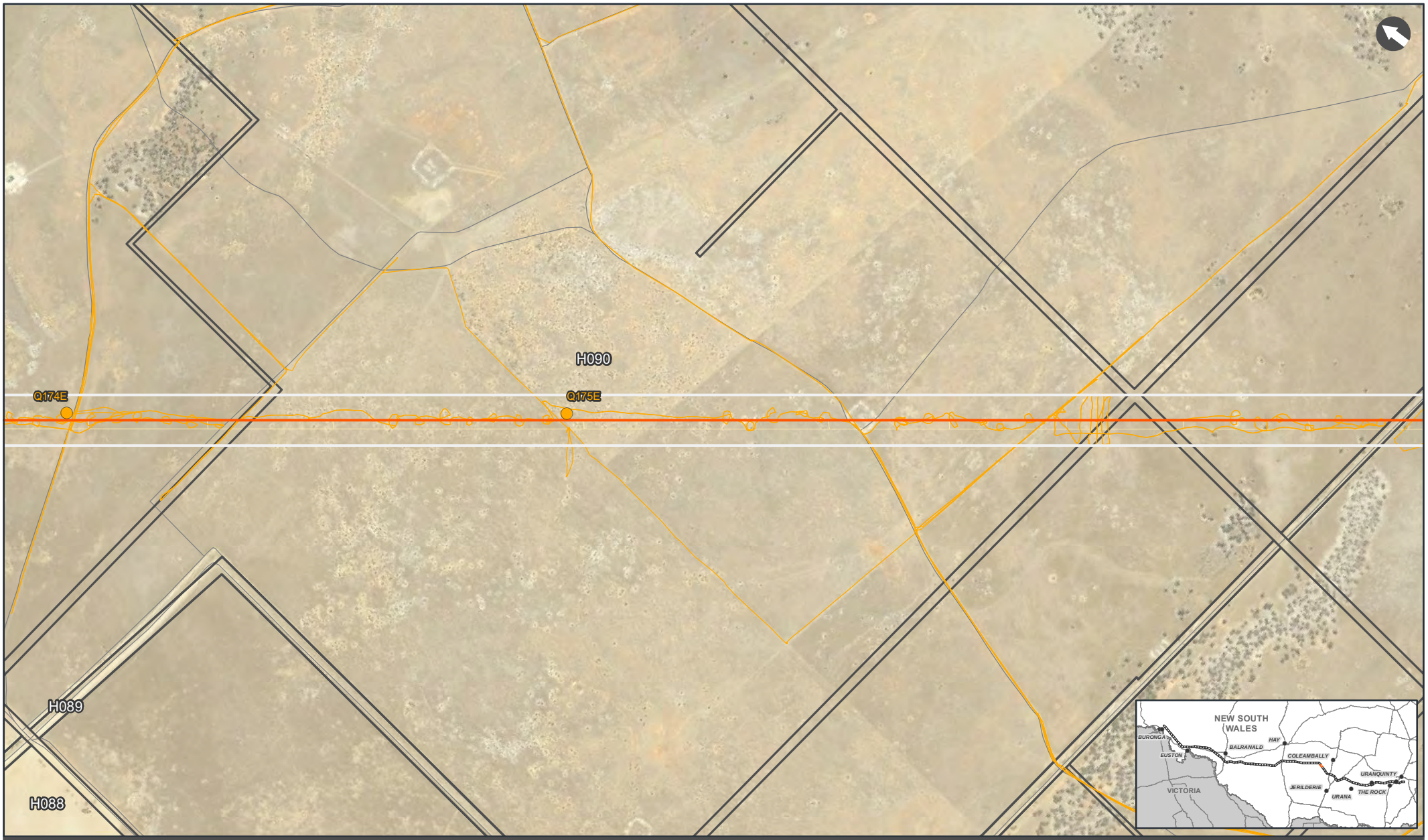


BDAR - Figure C-5bm

Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



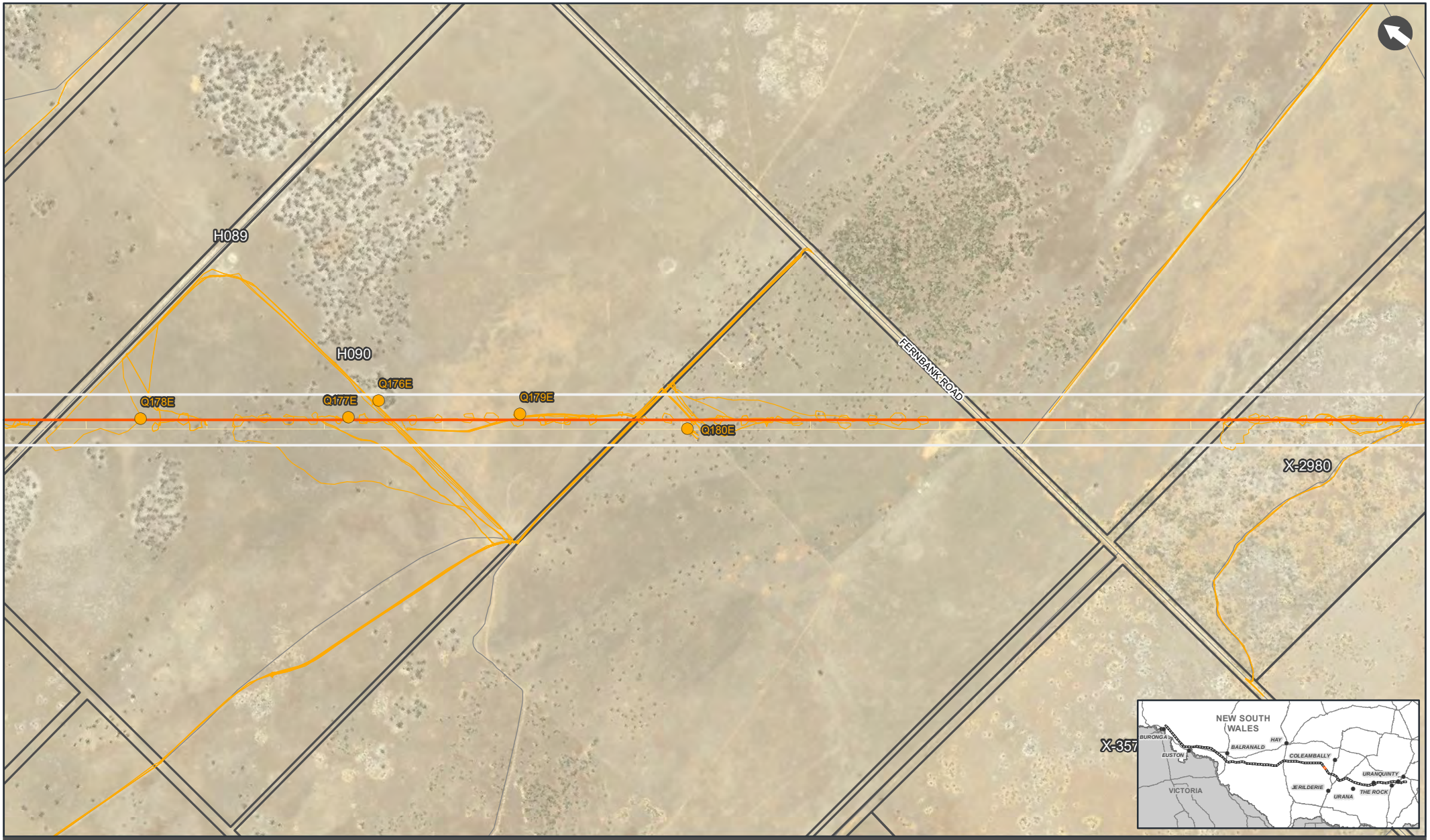
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- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Holdings **Flora Survey Effort**
- Flora Survey Transect
- Quadrat

BDAR - Figure C-5bn
Threatened Flora Field Survey Effort

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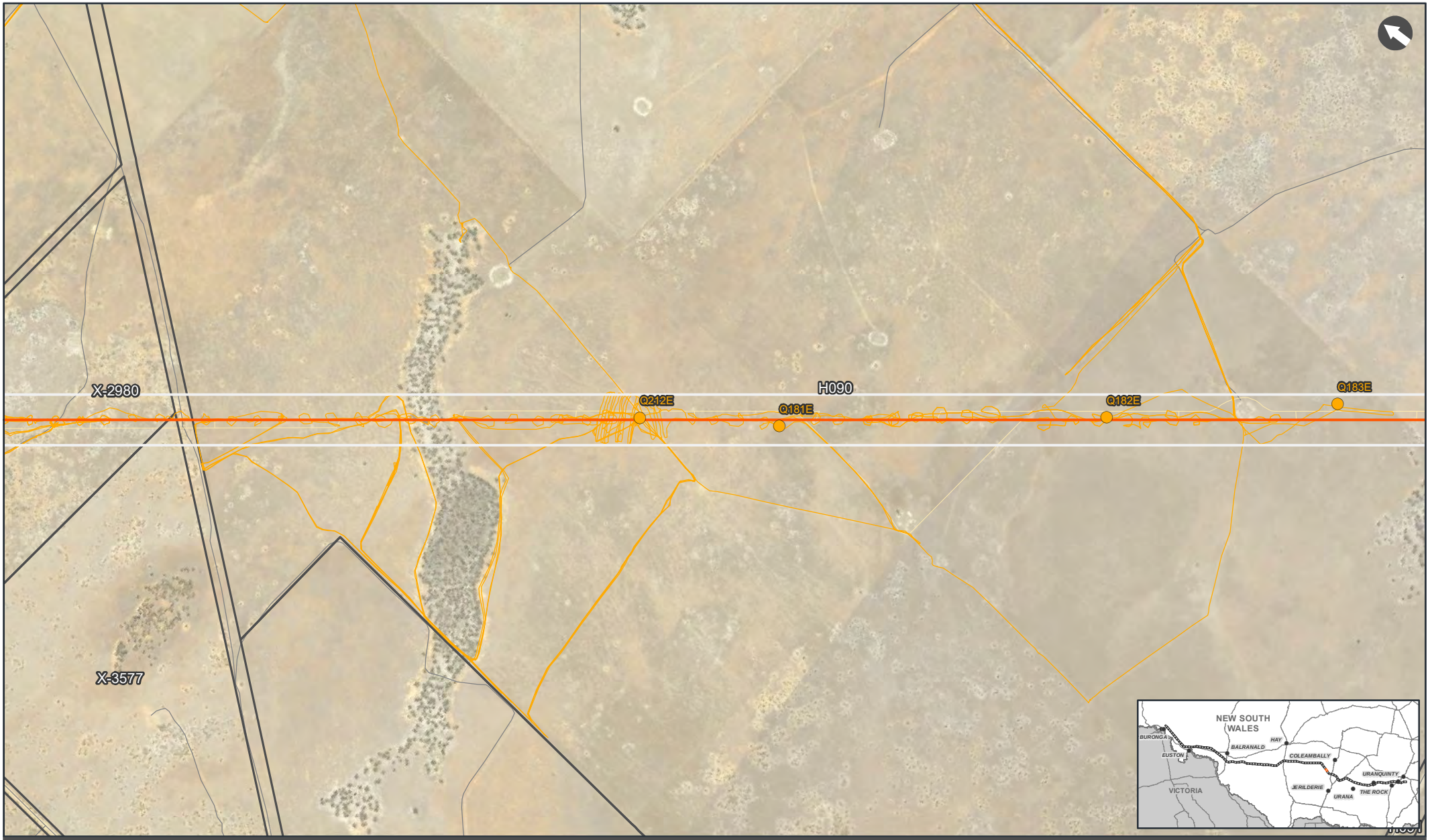


Proposed Alignment
Access Tracks
Main Construction Compounds and Accomodation Sites
Water Supply Point
Existing Substation
Built Up Areas
Waterbody
Biodiversity Study Area
Holdings **Flora Survey Effort**
Flora Survey Transect
Quadrat

BDAR - Figure C-5bo
Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP

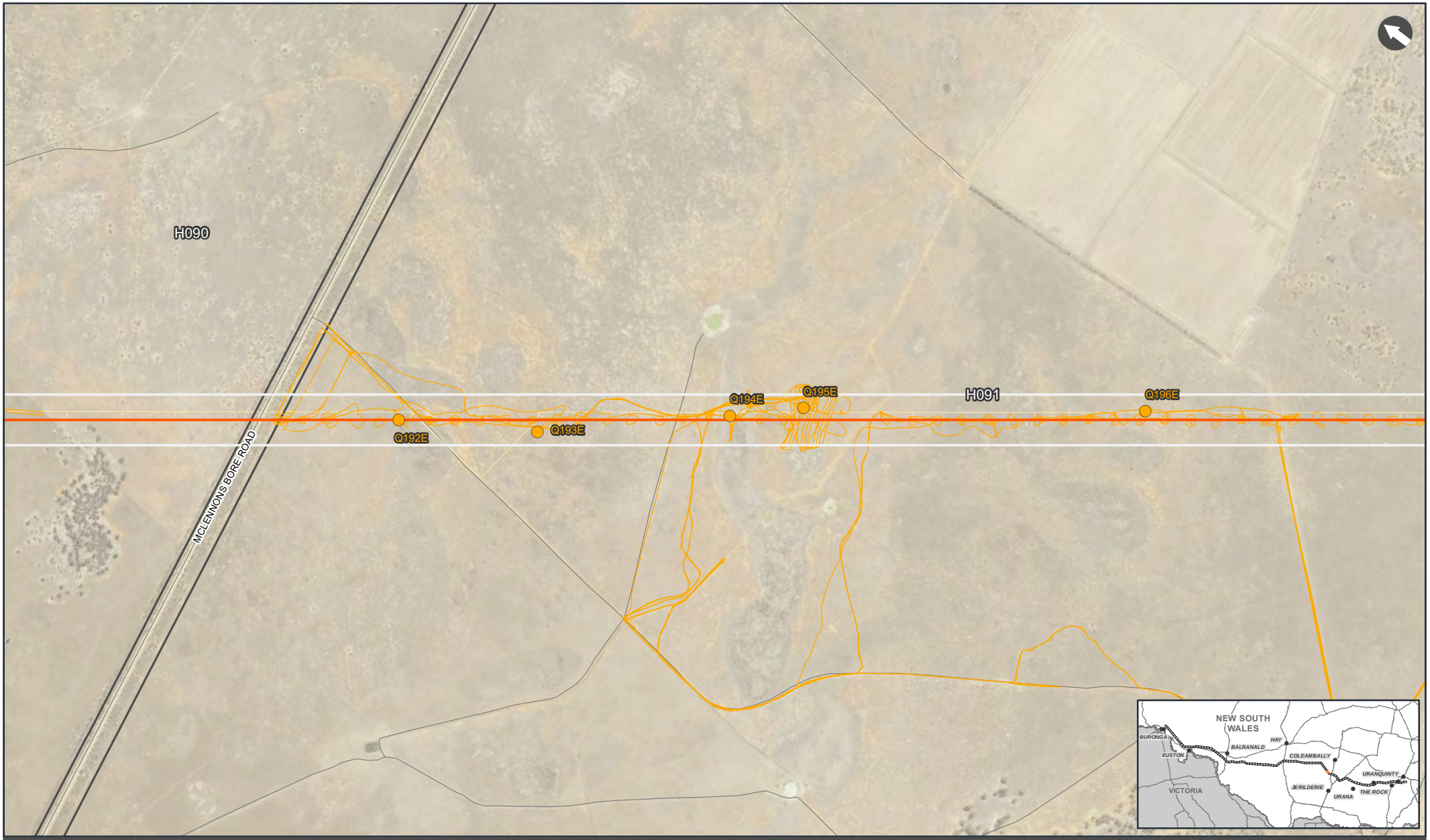


Proposed Alignment
Access Tracks
Main Construction Compounds and Accomodation Sites
Water Supply Point
Existing Substation
Built Up Areas
Waterbody
Biodiversity Study Area
Holdings **Flora Survey Effort**
Flora Survey Transect
Quadrat

BDAR - Figure C-5bp
Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



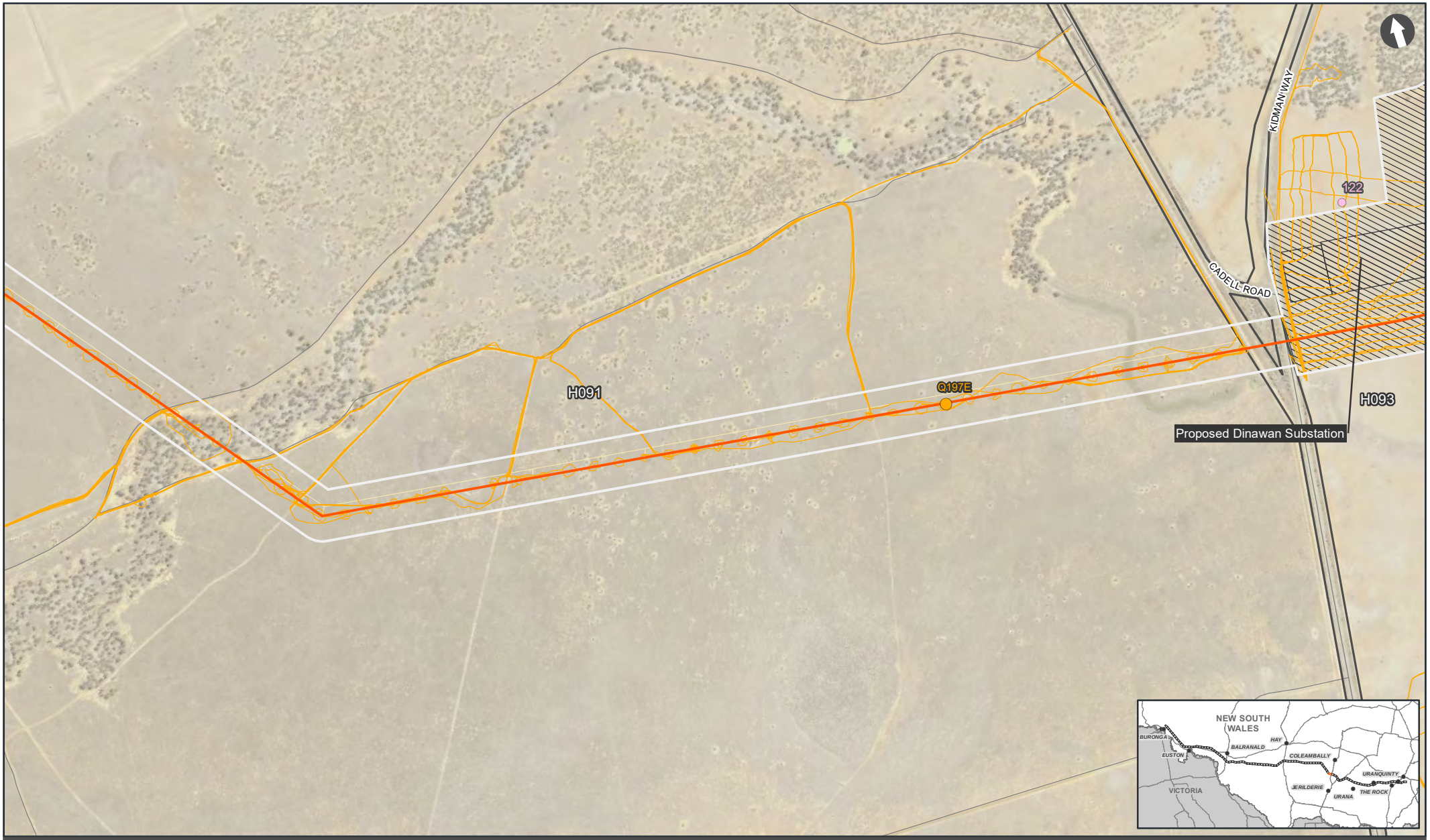
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Proposed Alignment
Access Tracks
Main Construction Compounds and Accomodation Sites
Water Supply Point
Existing Substation
Built Up Areas
Waterbody
Biodiversity Study Area
Holdings **Flora Survey Effort**
Flora Survey Transect
Quadrat

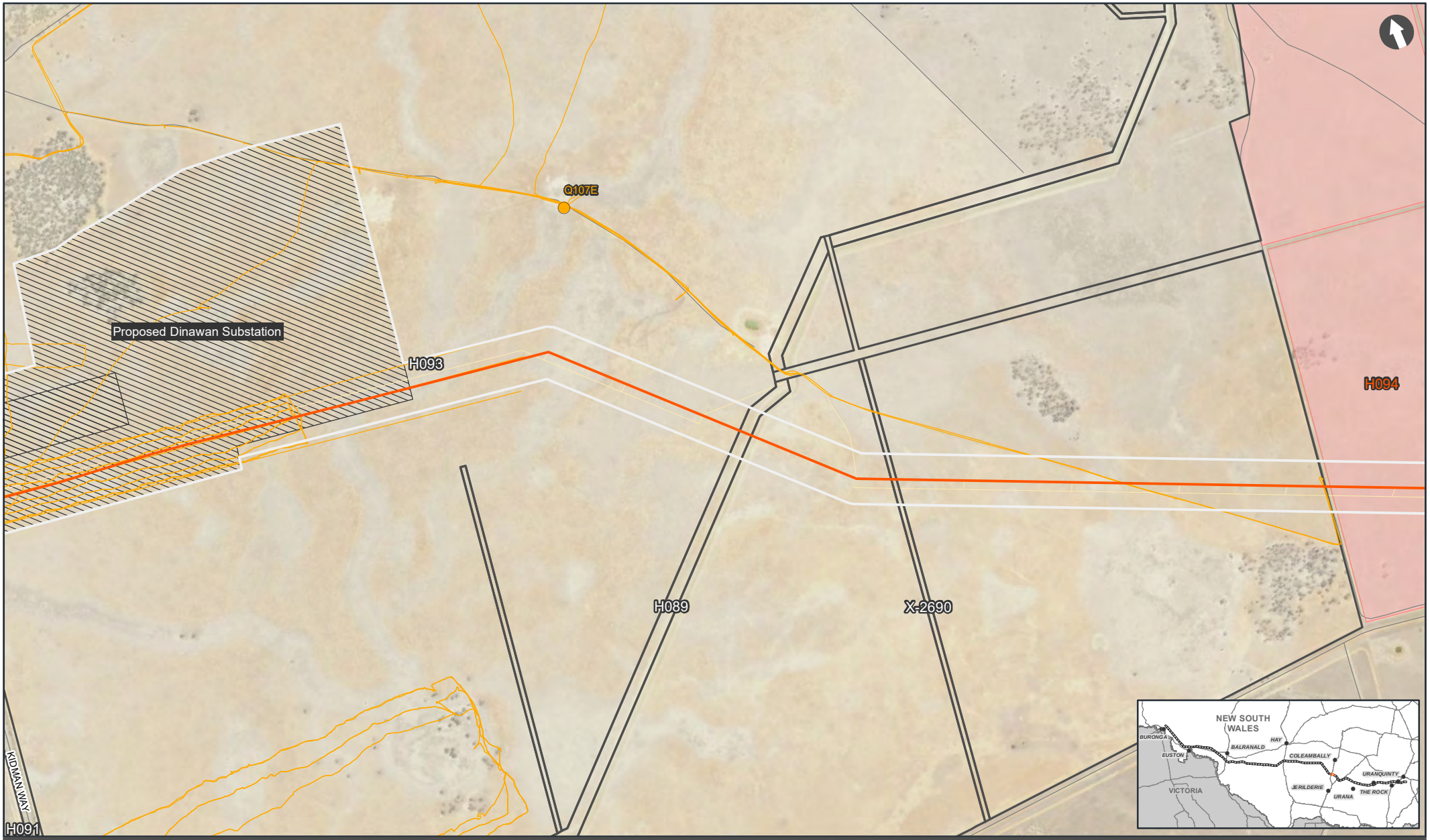
BDAR - Figure C-5bq
Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure C-5br
Threatened Flora Field Survey Effort

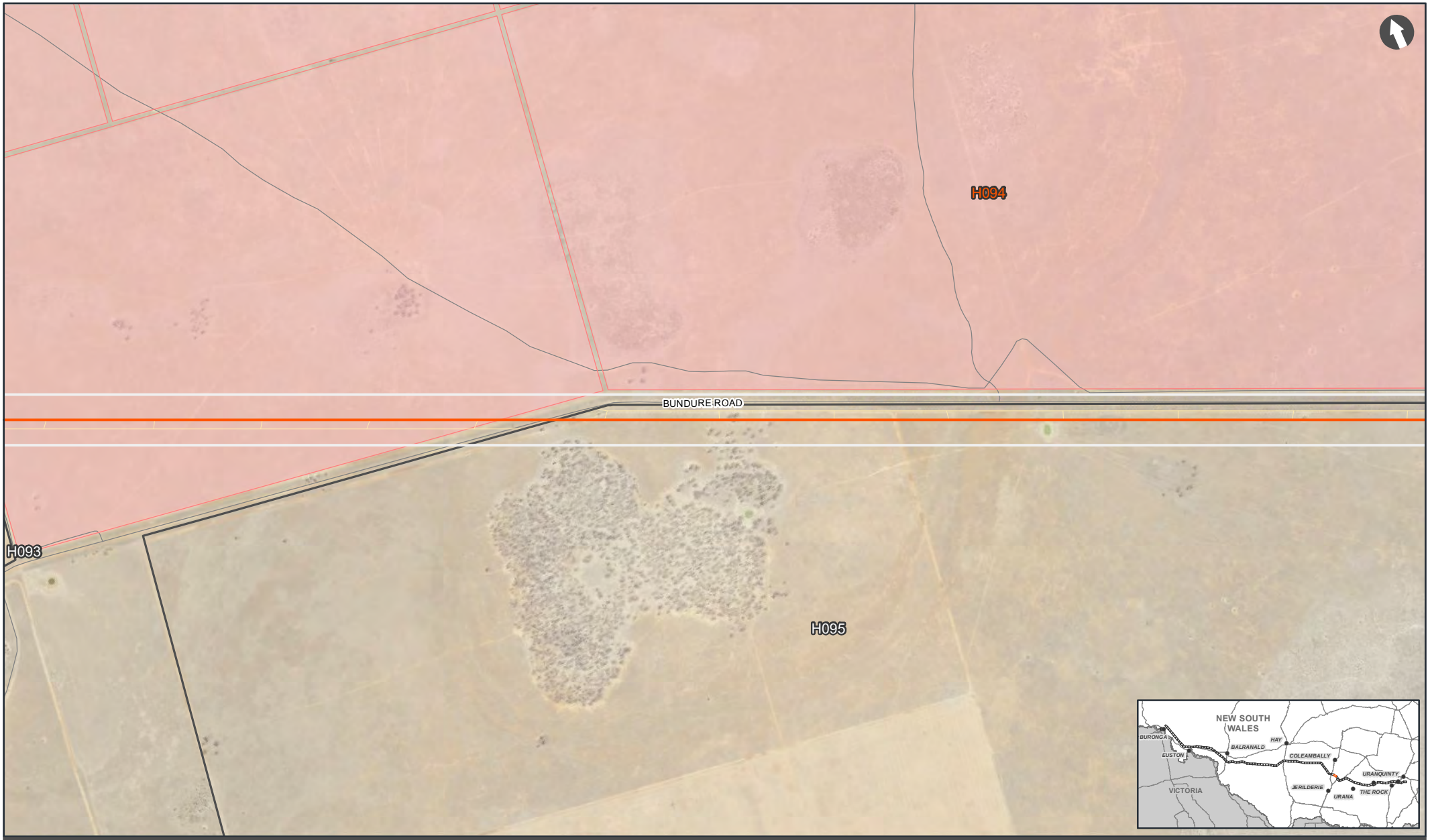


Proposed Alignment
Access Tracks
Main Construction Compounds and Accomodation Sites
Water Supply Point
Existing Substation
Built Up Areas
Waterbody
Biodiversity Study Area
Holdings
Holdings - No Access
Flora Survey Effort
Flora Survey Transect
Quadrat

BDAR - Figure C-5bs
Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP

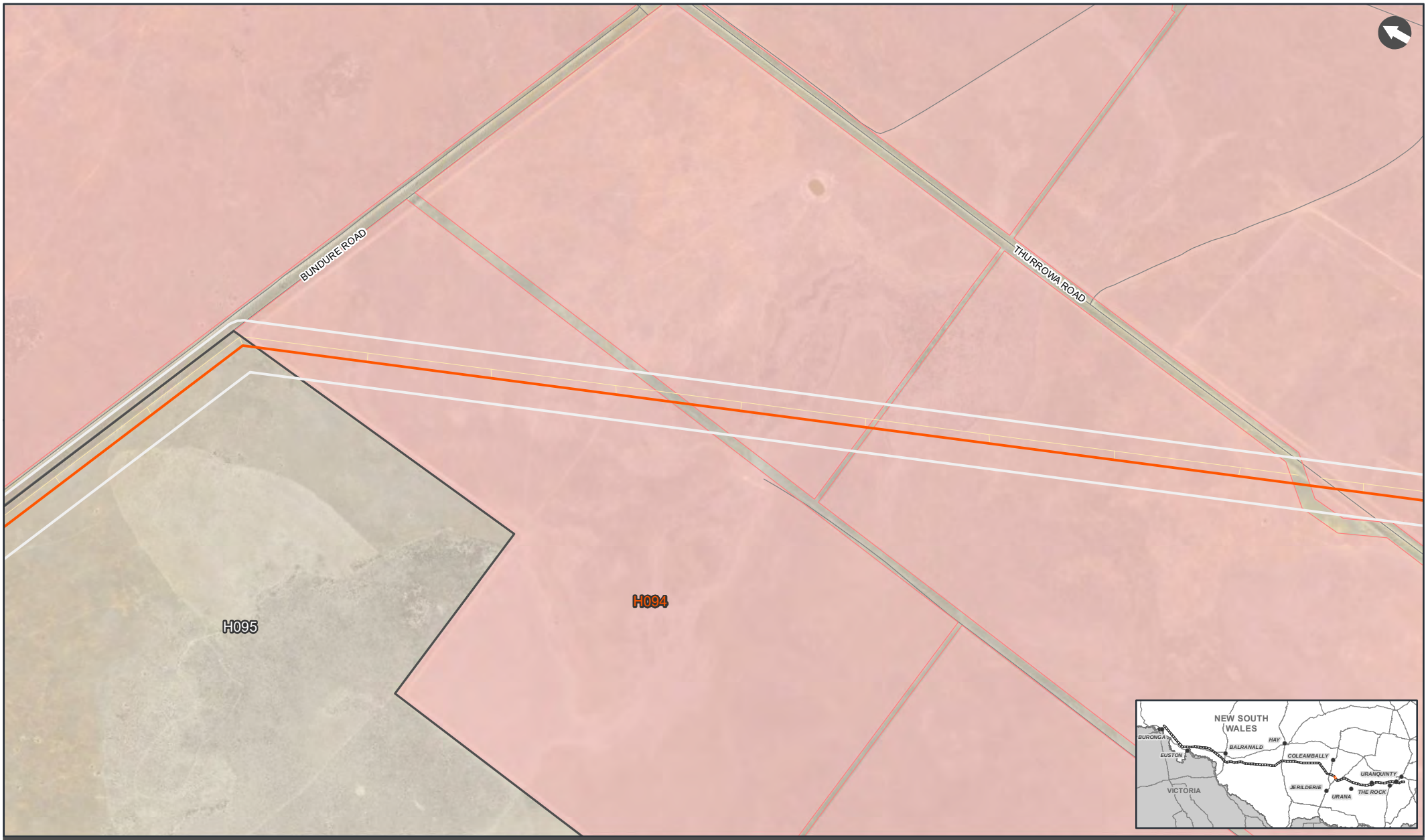


Proposed Alignment
Access Tracks
Main Construction Compounds and Accomodation Sites
Water Supply Point
Existing Substation
Built Up Areas
Waterbody
Biodiversity Study Area
Holdings
Holdings - No Access
Flora Survey Effort
Flora Survey Transect

BDAR - Figure C-5bt
Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure C-5bu

Threatened Flora Field Survey Effort

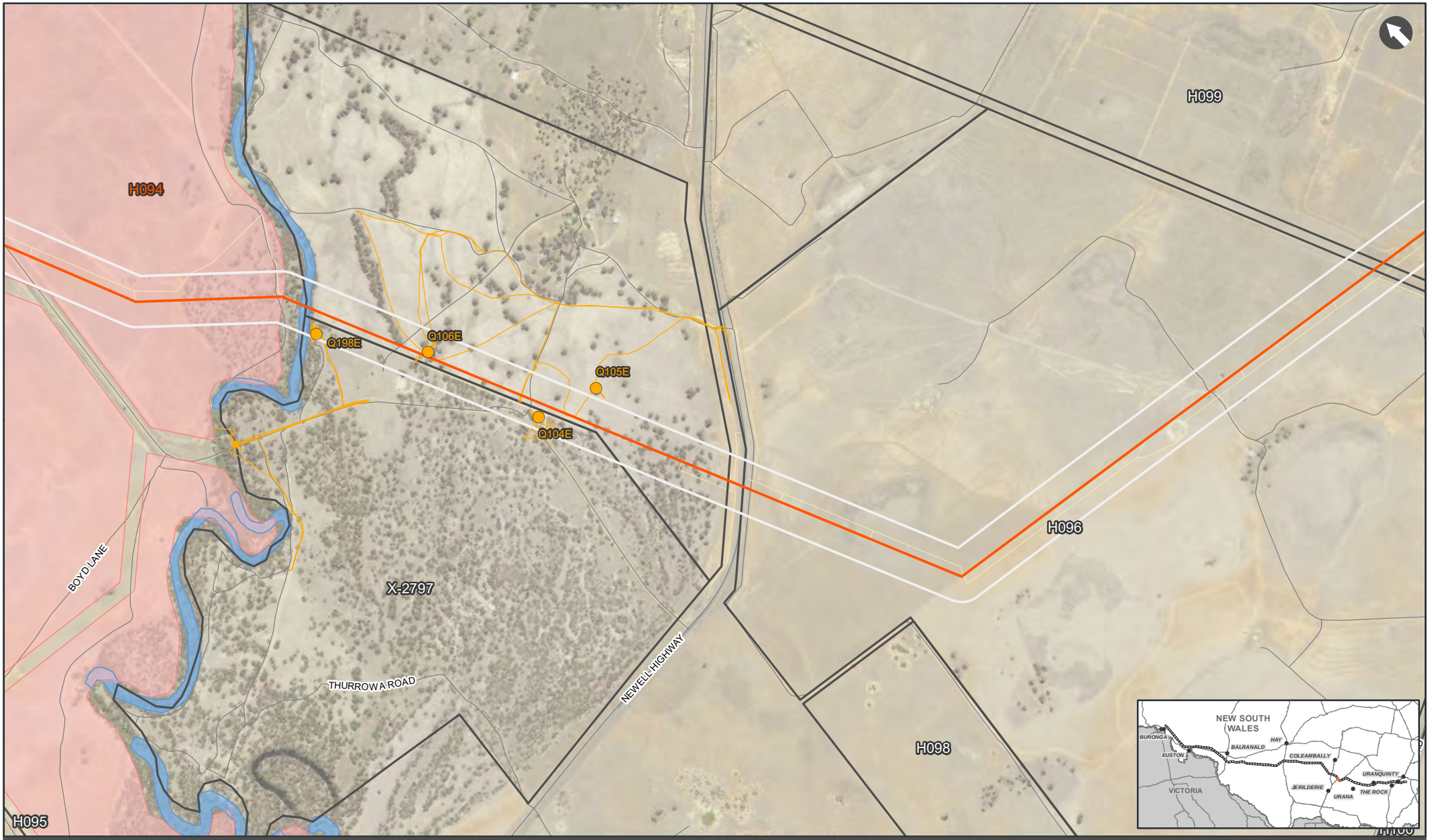
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Holdings
- Holdings - No Access

Flora Survey Effort

- Flora Survey Transect

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure C-5bv

Threatened Flora Field Survey Effort

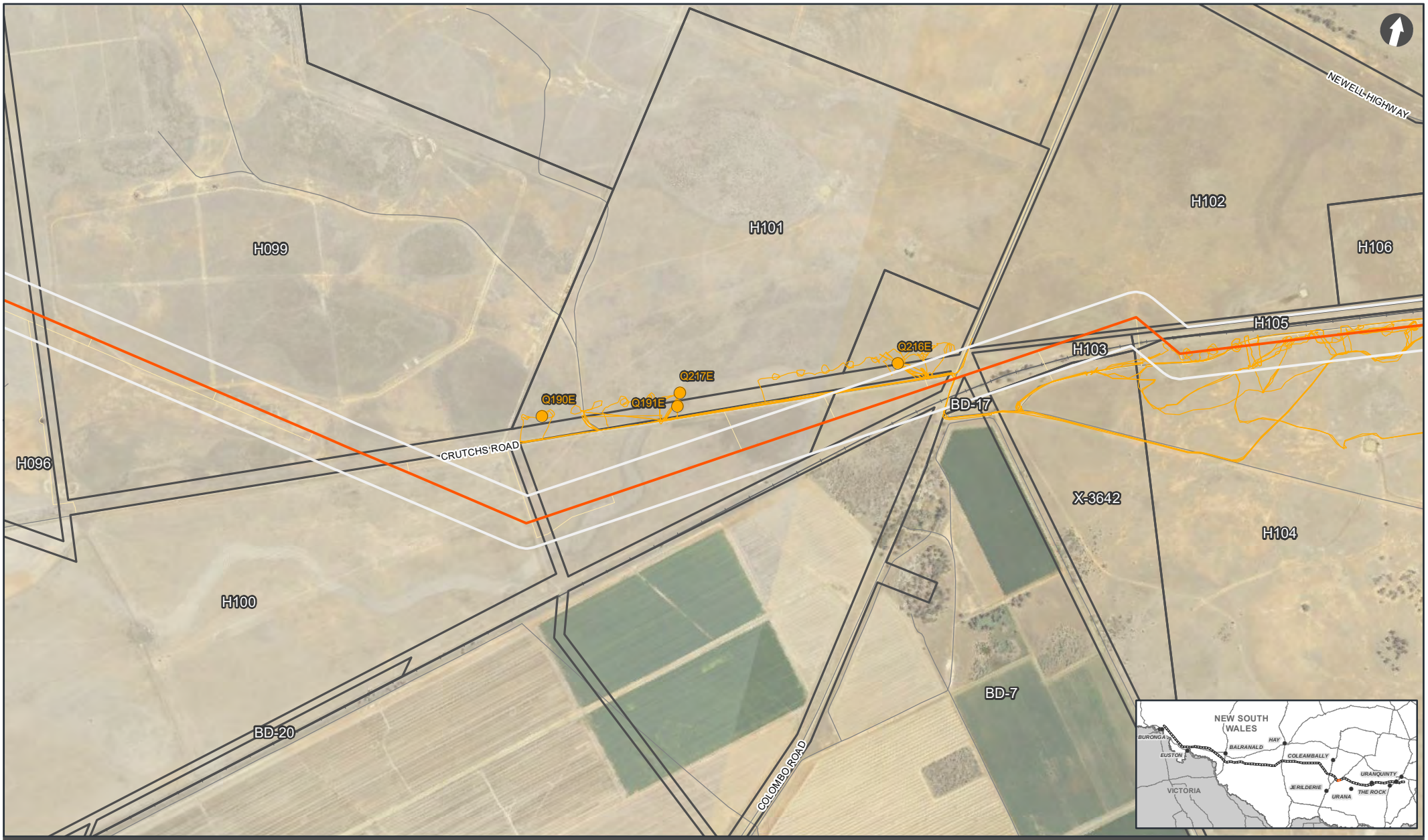
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Holdings
- Holdings - No Access

Flora Survey Effort

- Flora Survey Transect
- Quadrat

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Source: NSWSS, ESRI, Transgrid, WSP

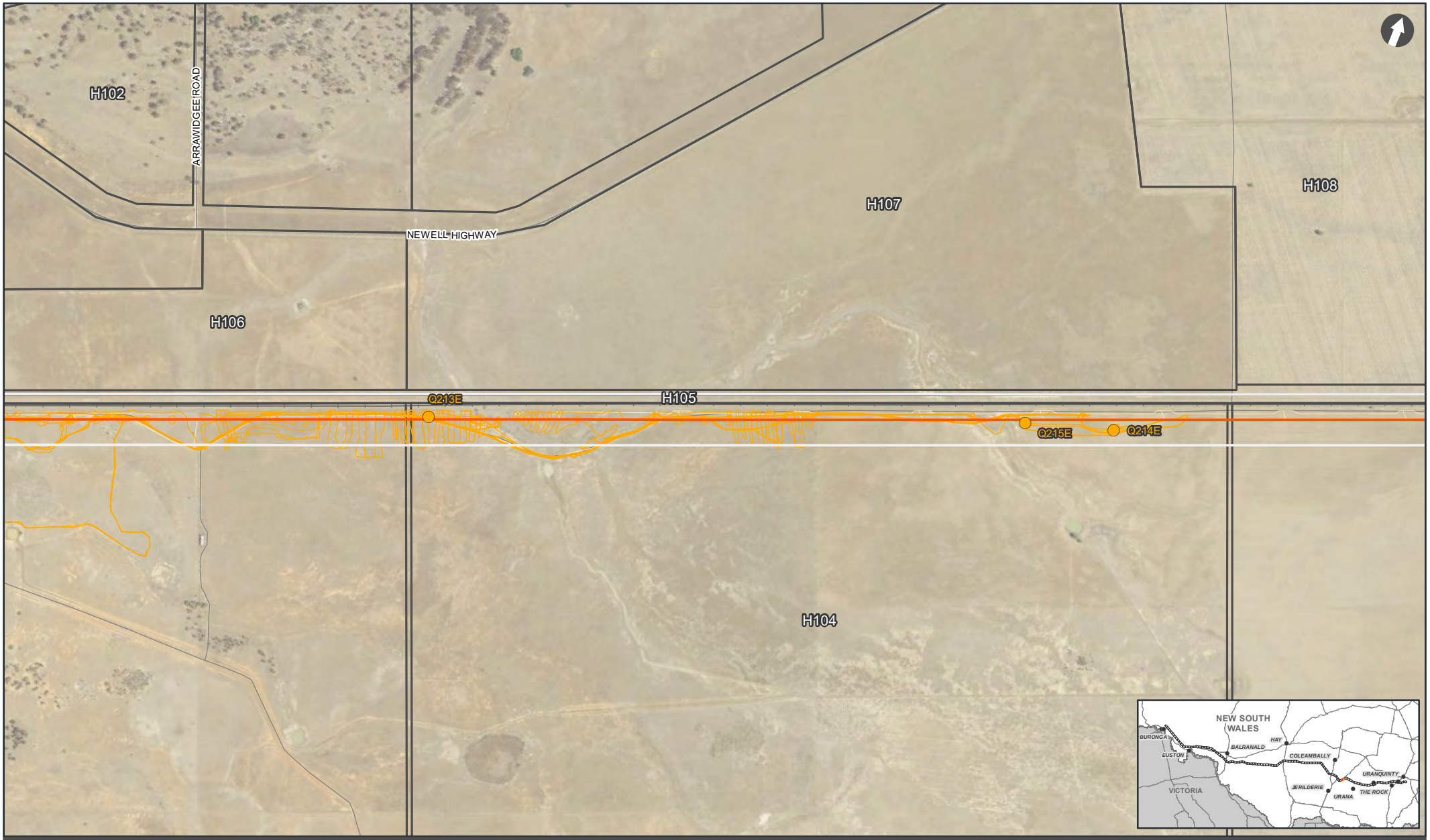


Proposed Alignment
Access Tracks
Main Construction Compounds and Accomodation Sites
Water Supply Point
Existing Substation
Built Up Areas
Waterbody
Biodiversity Study Area
Holdings **Flora Survey Effort**
Flora Survey Transect
Quadrat

BDAR - Figure C-5bw
Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure C-5bx

Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



0 0.25 0.5 KM

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Holdings **Flora Survey Effort**
- Flora Survey Transect
- Quadrat

BDAR - Figure C-5by
Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



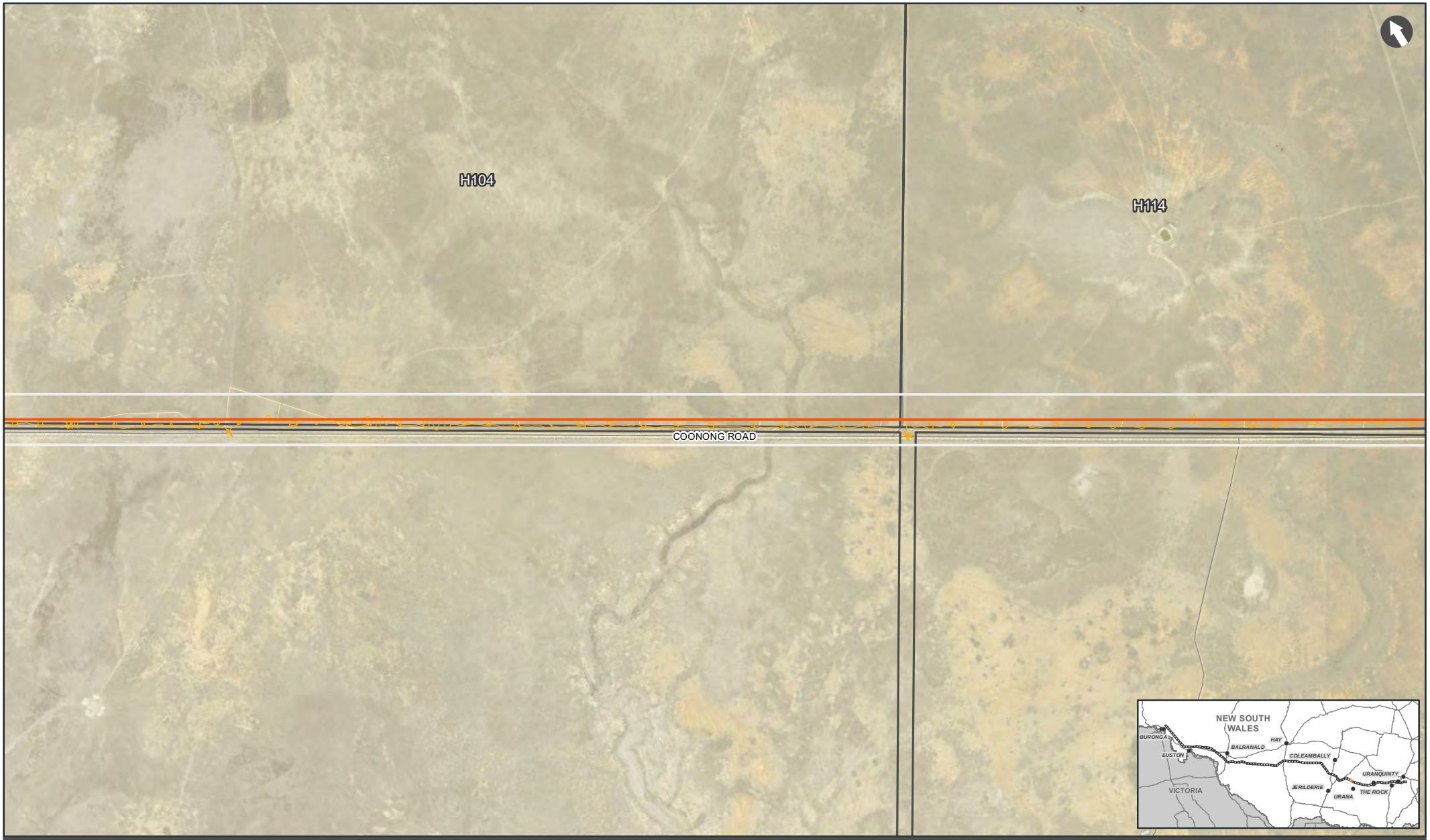
BDAR - Figure C-5bz

Threatened Flora Field Survey Effort

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Holdings **Flora Survey Effort**
- Flora Survey Transect
- Quadrat

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Source: NSWSS, ESRI, Transgrid, WSP



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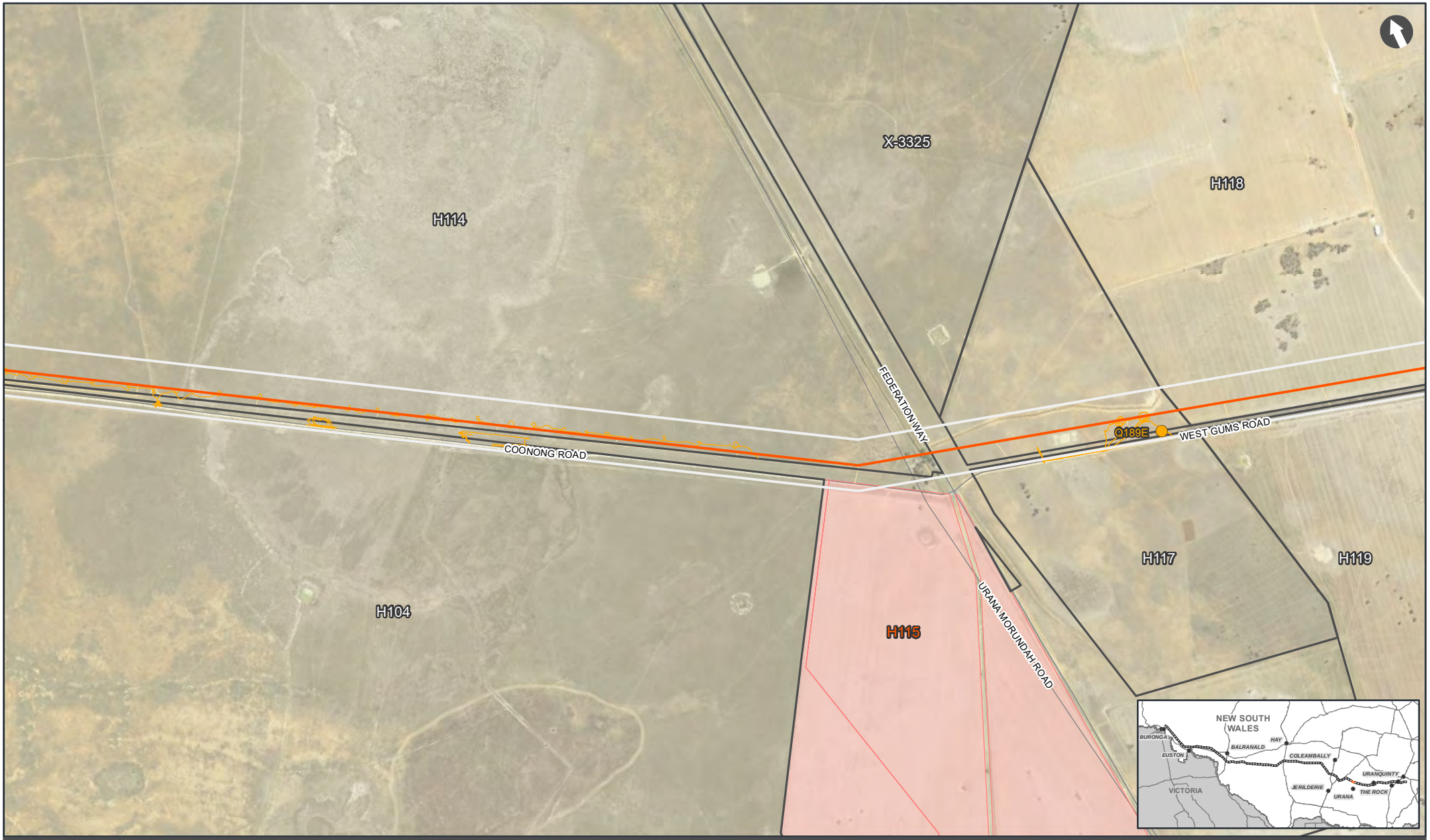
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Holdings **Flora Survey Effort**
- Flora Survey Transect

BDAR - Figure C-5ca

Threatened Flora Field Survey Effort

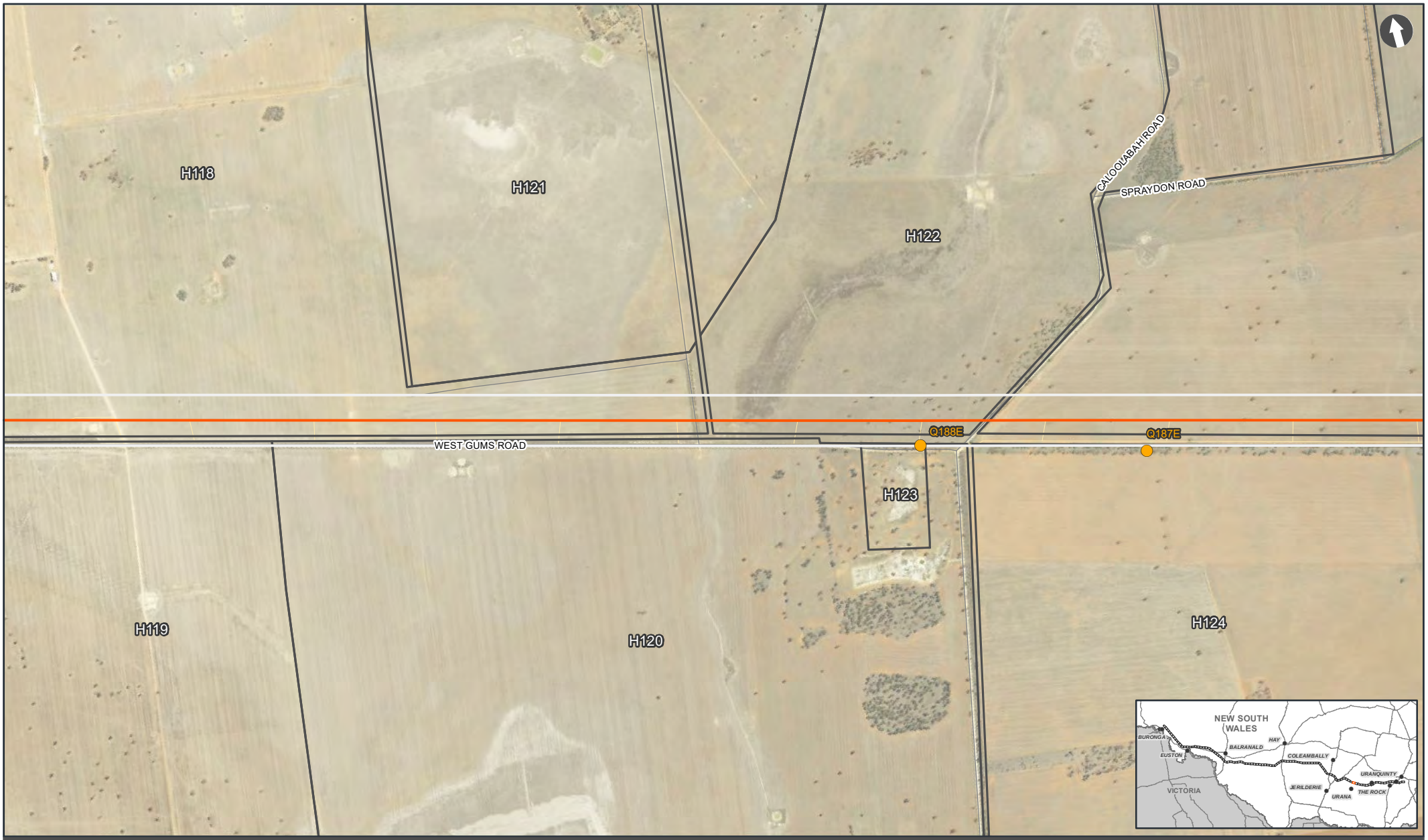
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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure C-5cb

Threatened Flora Field Survey Effort



BDAR - Figure C-5cc

Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



Proposed Alignment
Access Tracks
Main Construction Compounds and Accomodation Sites
Water Supply Point
Existing Substation
Built Up Areas
Waterbody
Biodiversity Study Area
Holdings **Flora Survey Effort**
Flora Survey Transect
Quadrat

BDAR - Figure C-5cd
Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



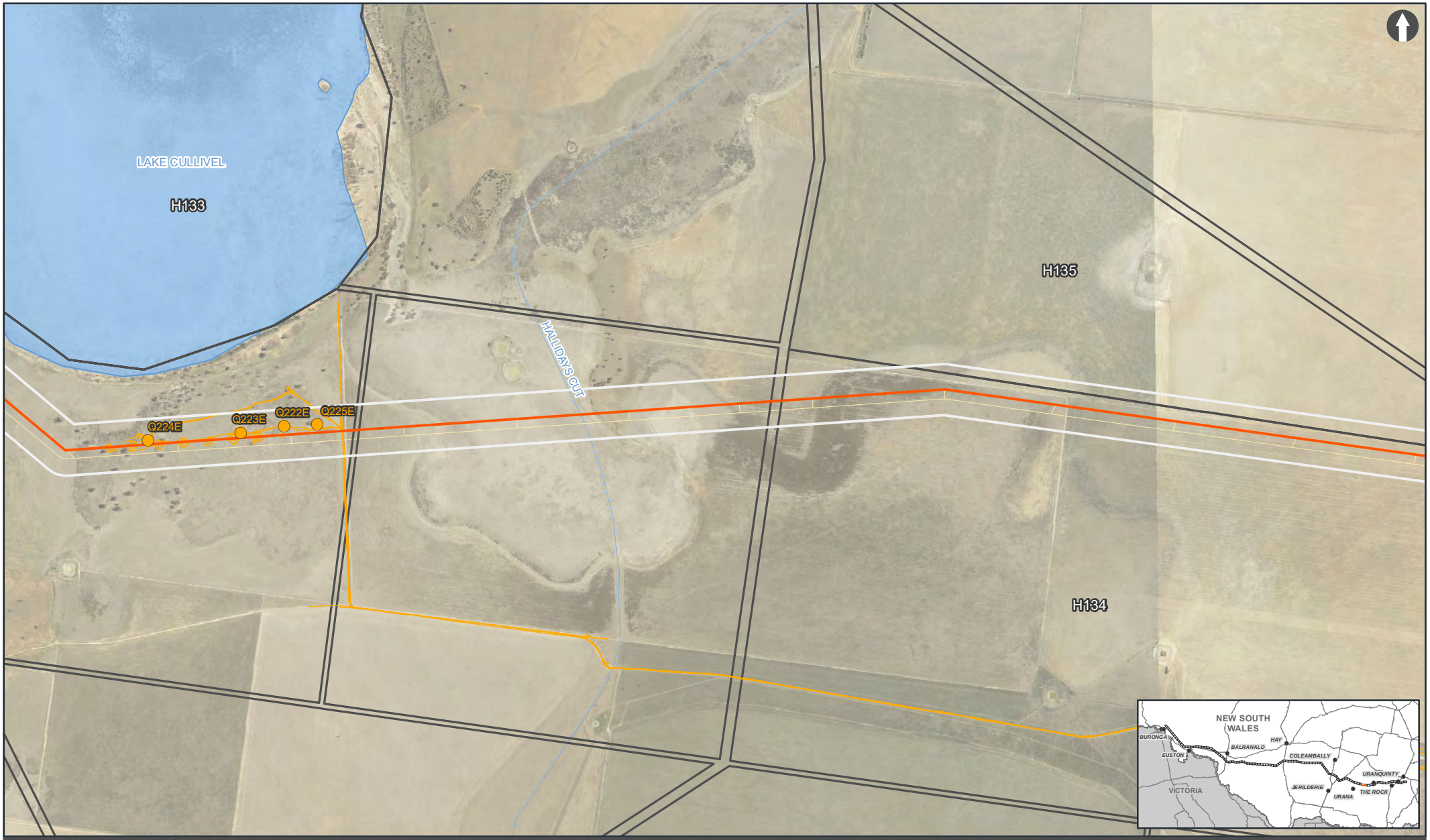
BDAR - Figure C-5ce

Threatened Flora Field Survey Effort

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Holdings **Flora Survey Effort**
- Flora Survey Transect
- Quadrat

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Source: NSWSS, ESRI, Transgrid, WSP



Proposed Alignment
Access Tracks
Main Construction Compounds and Accomodation Sites
Water Supply Point
Existing Substation
Built Up Areas
Waterbody
Biodiversity Study Area
Holdings **Flora Survey Effort**
Flora Survey Transect
Quadrat

BDAR - Figure C-5cf
Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP

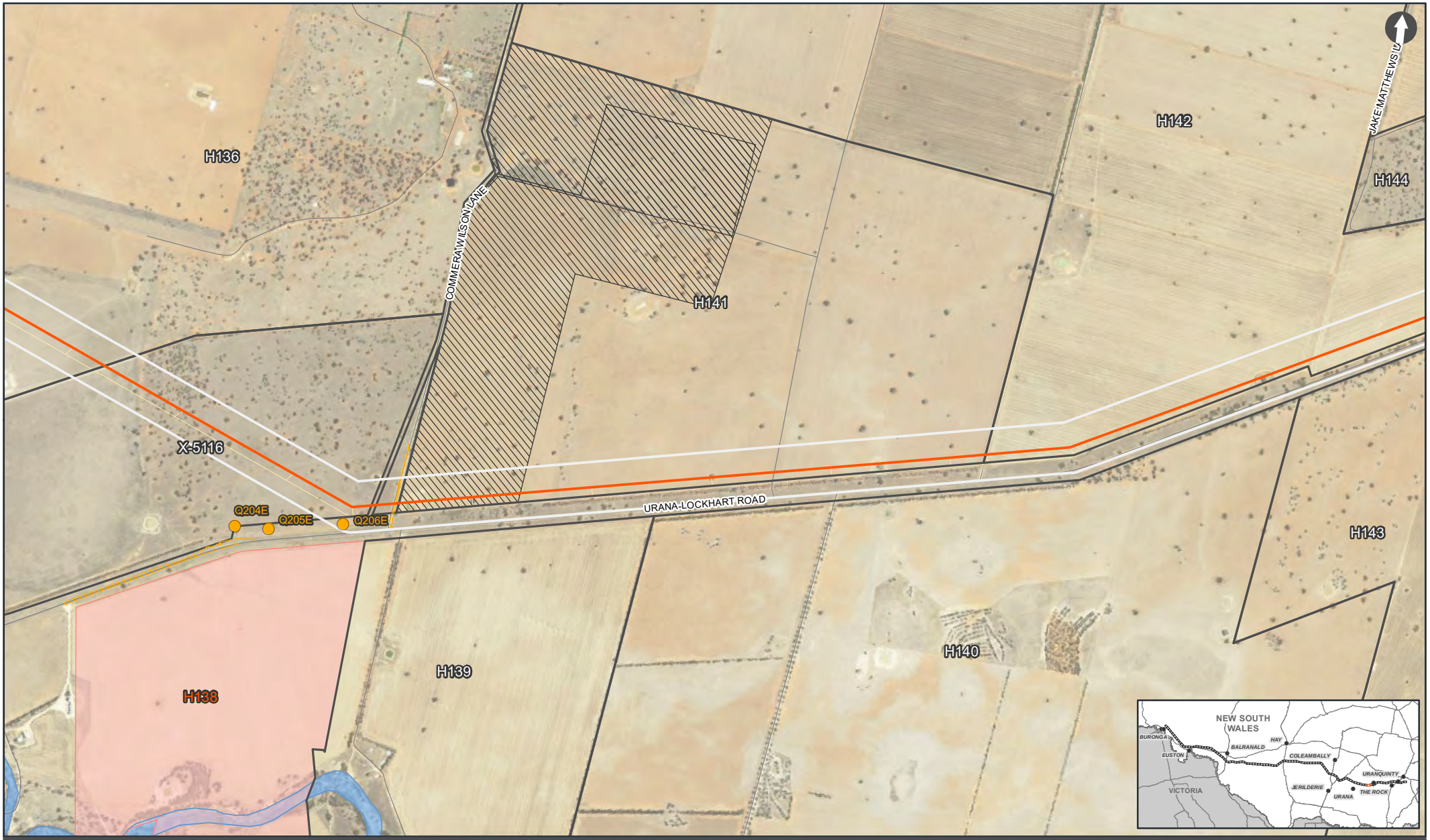


Proposed Alignment
Access Tracks
Main Construction Compounds and Accomodation Sites
Water Supply Point
Existing Substation
Built Up Areas
Waterbody
Biodiversity Study Area
Holdings **Flora Survey Effort**
Flora Survey Transect

BDAR - Figure C-5cg
Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP

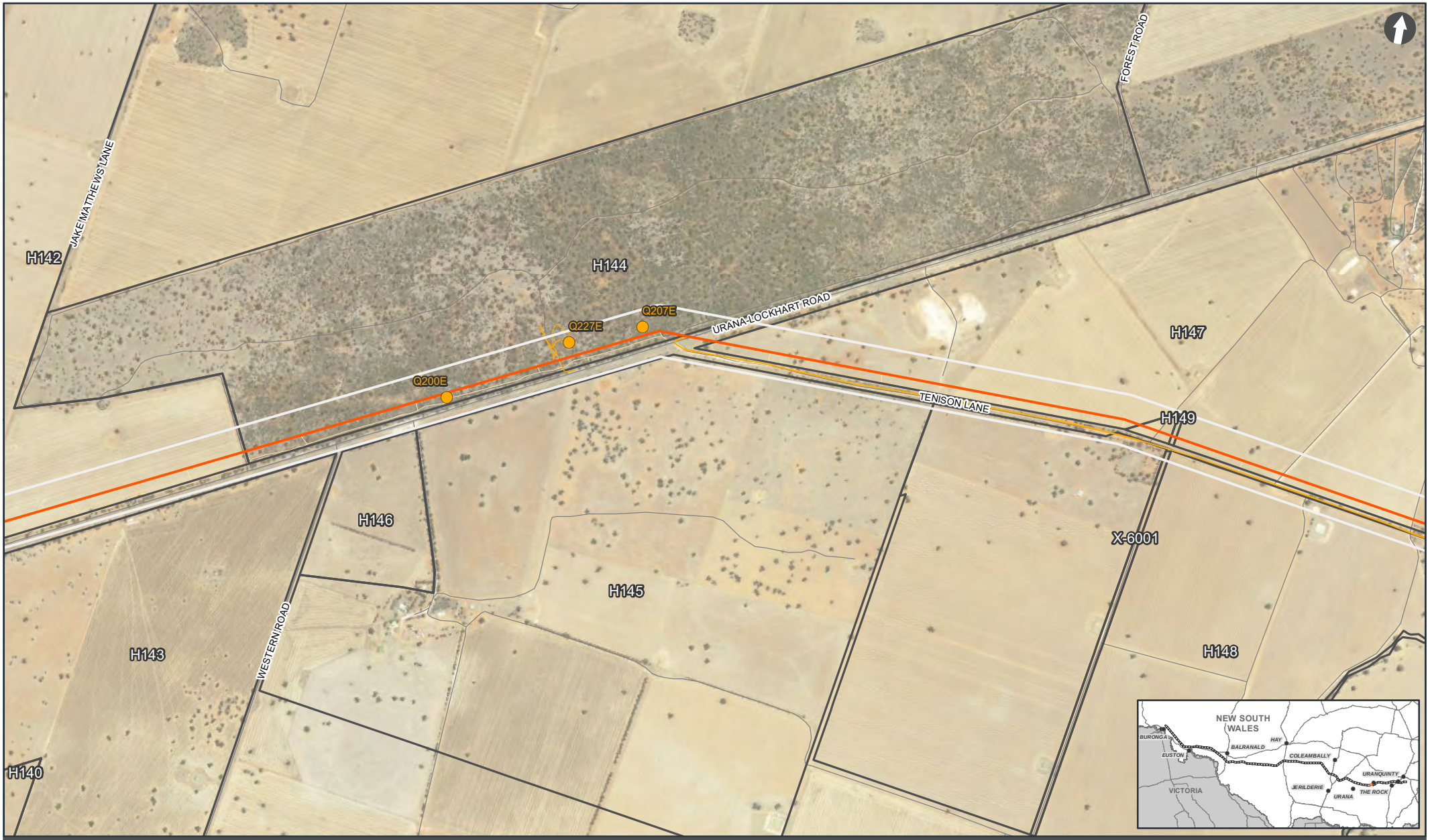


Proposed Alignment
Access Tracks
Main Construction Compounds and Accomodation Sites
Water Supply Point
Existing Substation
Built Up Areas
Waterbody
Biodiversity Study Area
Holdings
Holdings - No Access
Flora Survey Effort
Flora Survey Transect
Quadrat

BDAR - Figure C-5ch
Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure C-5ci

Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP

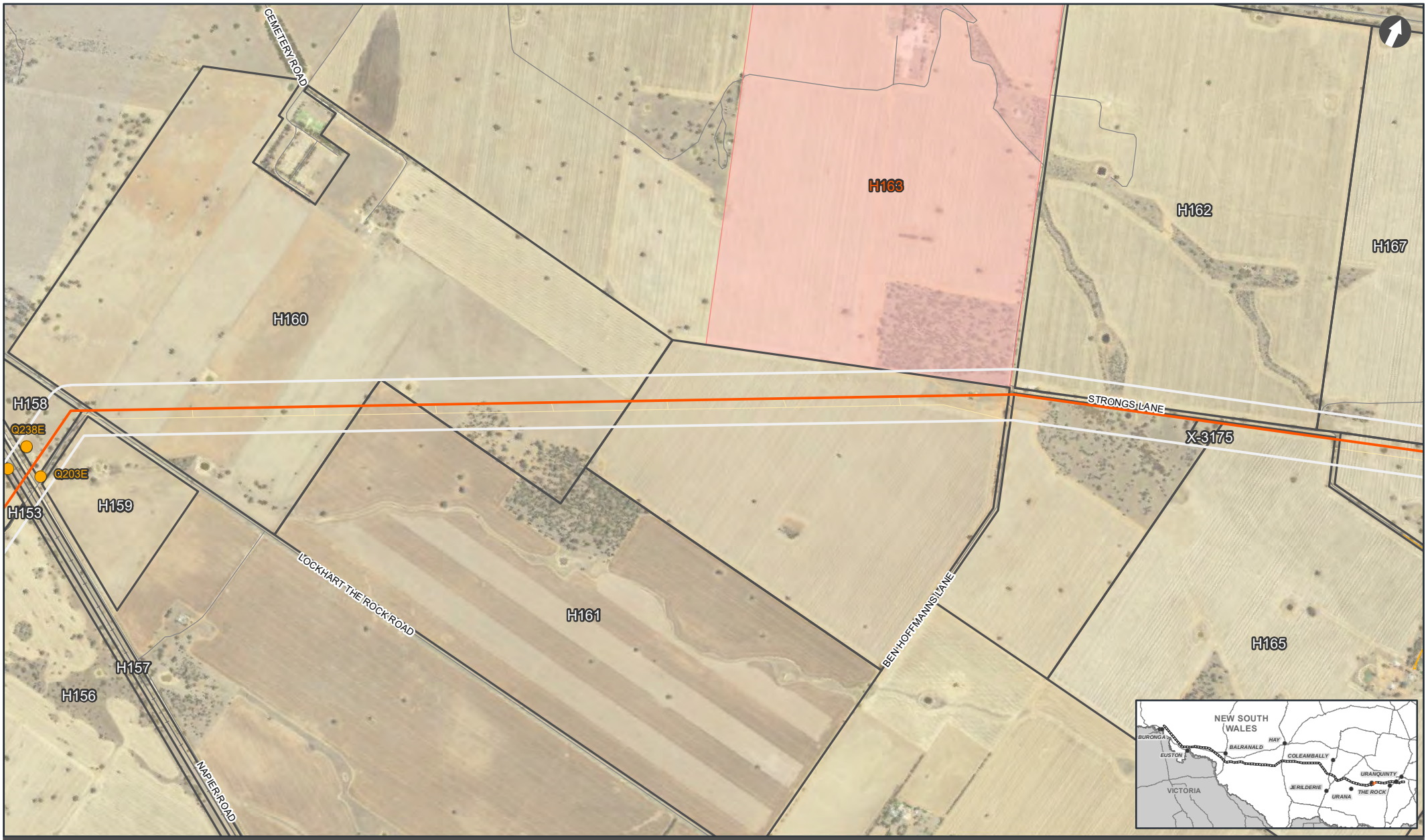


Proposed Alignment
Access Tracks
Main Construction Compounds and Accomodation Sites
Water Supply Point
Existing Substation
Built Up Areas
Waterbody
Biodiversity Study Area
Holdings **Flora Survey Effort**
Flora Survey Transect
Quadrat

BDAR - Figure C-5cj
Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP

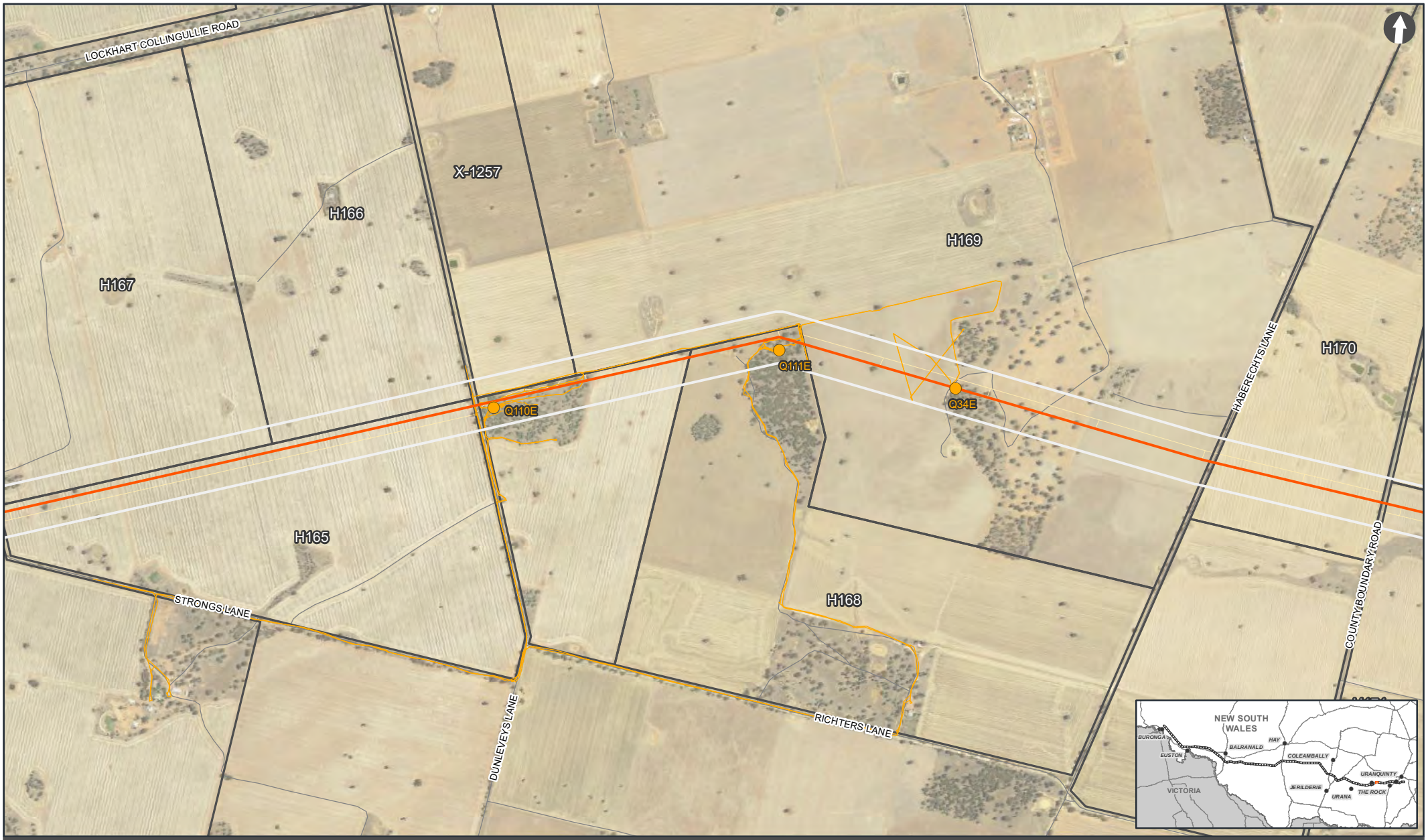


BDAR - Figure C-5ck

Threatened Flora Field Survey Effort

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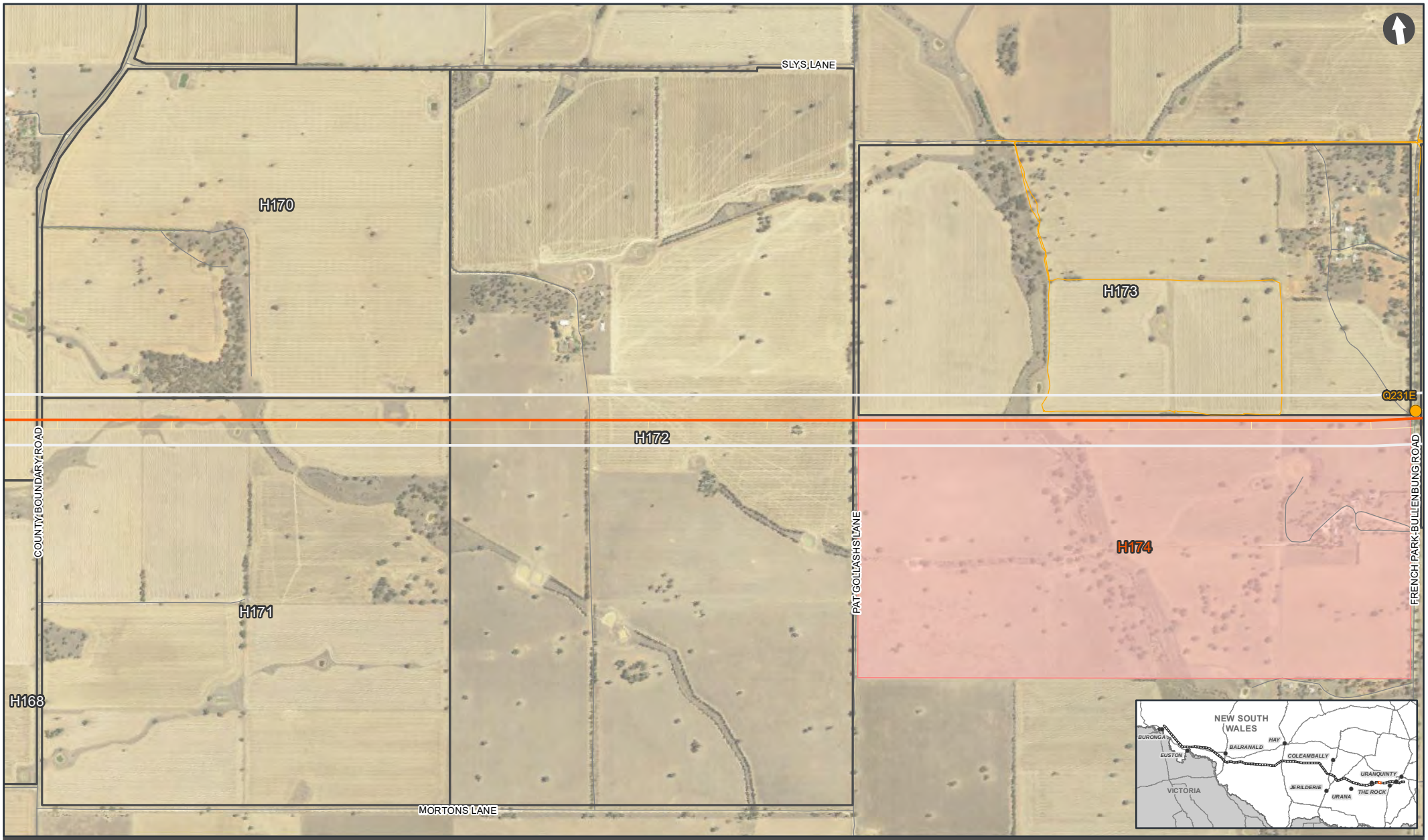
Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure C-5cm
Threatened Flora Field Survey Effort

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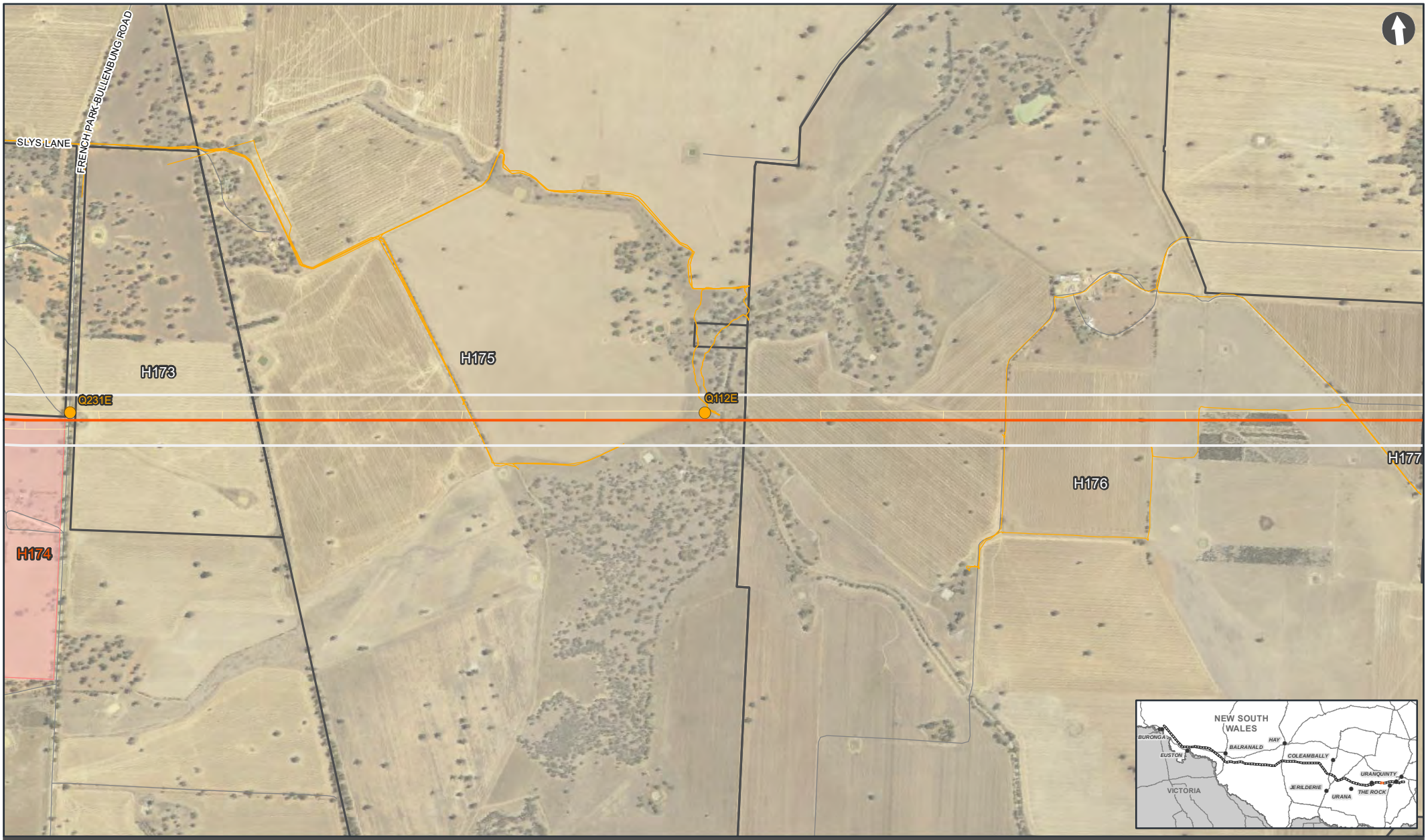


Proposed Alignment
Access Tracks
Main Construction Compounds and Accomodation Sites
Water Supply Point
Existing Substation
Built Up Areas
Waterbody
Biodiversity Study Area
Holdings
Holdings - No Access
Flora Survey Effort
Flora Survey Transect
Quadrat

BDAR - Figure C-5cn
Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



0 0.25 0.5 KM

BDAR - Figure C-5co

Threatened Flora Field Survey Effort

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Holdings
- Holdings - No Access

Flora Survey Effort

- Flora Survey Transect
- Quadrat

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Source: NSWSS, ESRI, Transgrid, WSP



0 0.25 0.5 KM

BDAR - Figure C-5cp

Threatened Flora Field Survey Effort

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Holdings **Flora Survey Effort**
- Flora Survey Transect

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure C-5cq

Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure C-5cr

Threatened Flora Field Survey Effort



Proposed Alignment
Access Tracks
Main Construction Compounds and Accomodation Sites
Water Supply Point
Existing Substation
Built Up Areas
Waterbody
Biodiversity Study Area
Holdings **Flora Survey Effort**
Flora Survey Transect
Quadrat

BDAR - Figure C-5cs
Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP

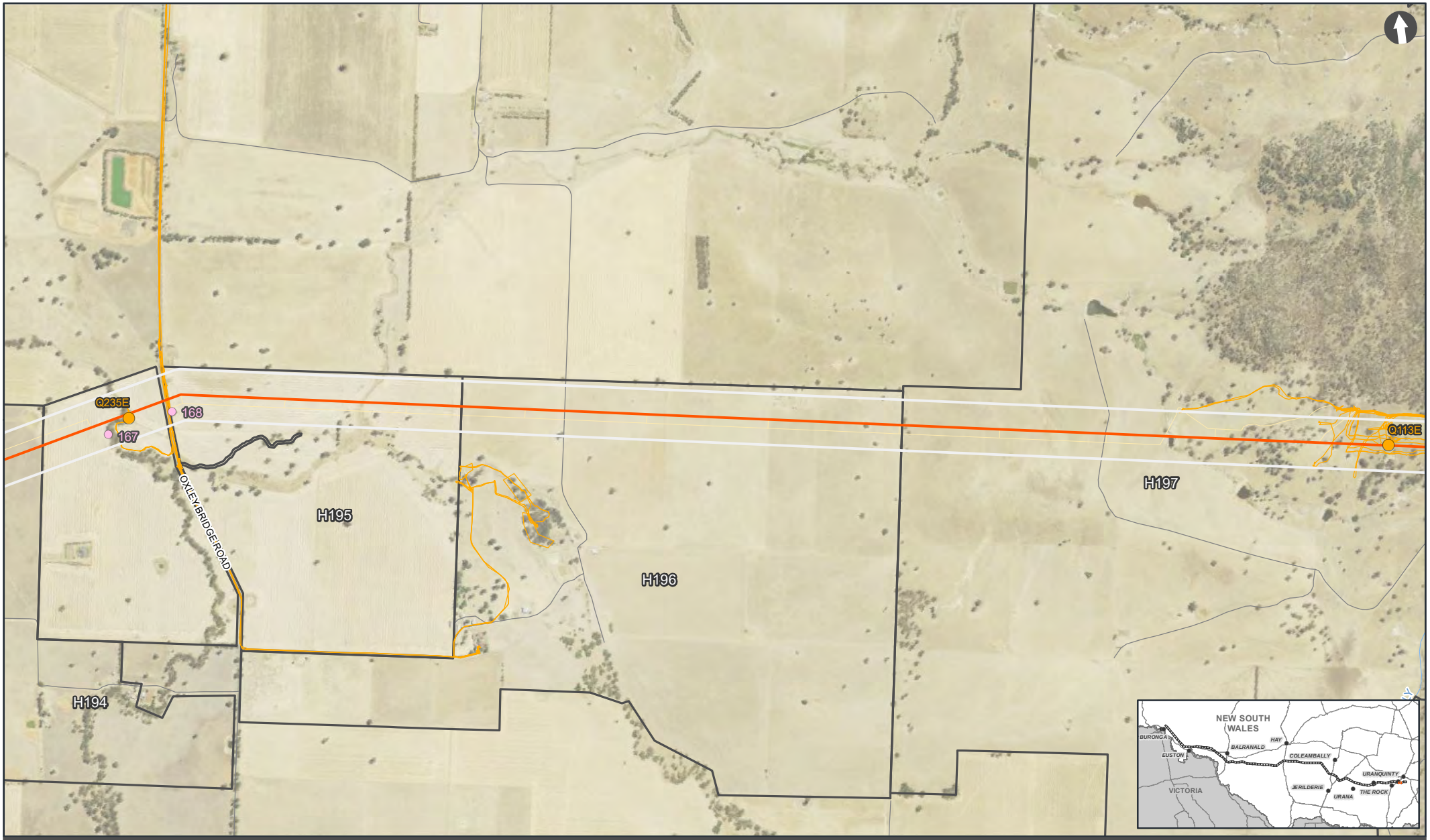


Proposed Alignment
Access Tracks
Main Construction Compounds and Accomodation Sites
Water Supply Point
Existing Substation
Built Up Areas
Waterbody
Biodiversity Study Area
Holdings **Flora Survey Effort**
Flora Survey Transect
Rapid Data Point

BDAR - Figure C-5ct
Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP

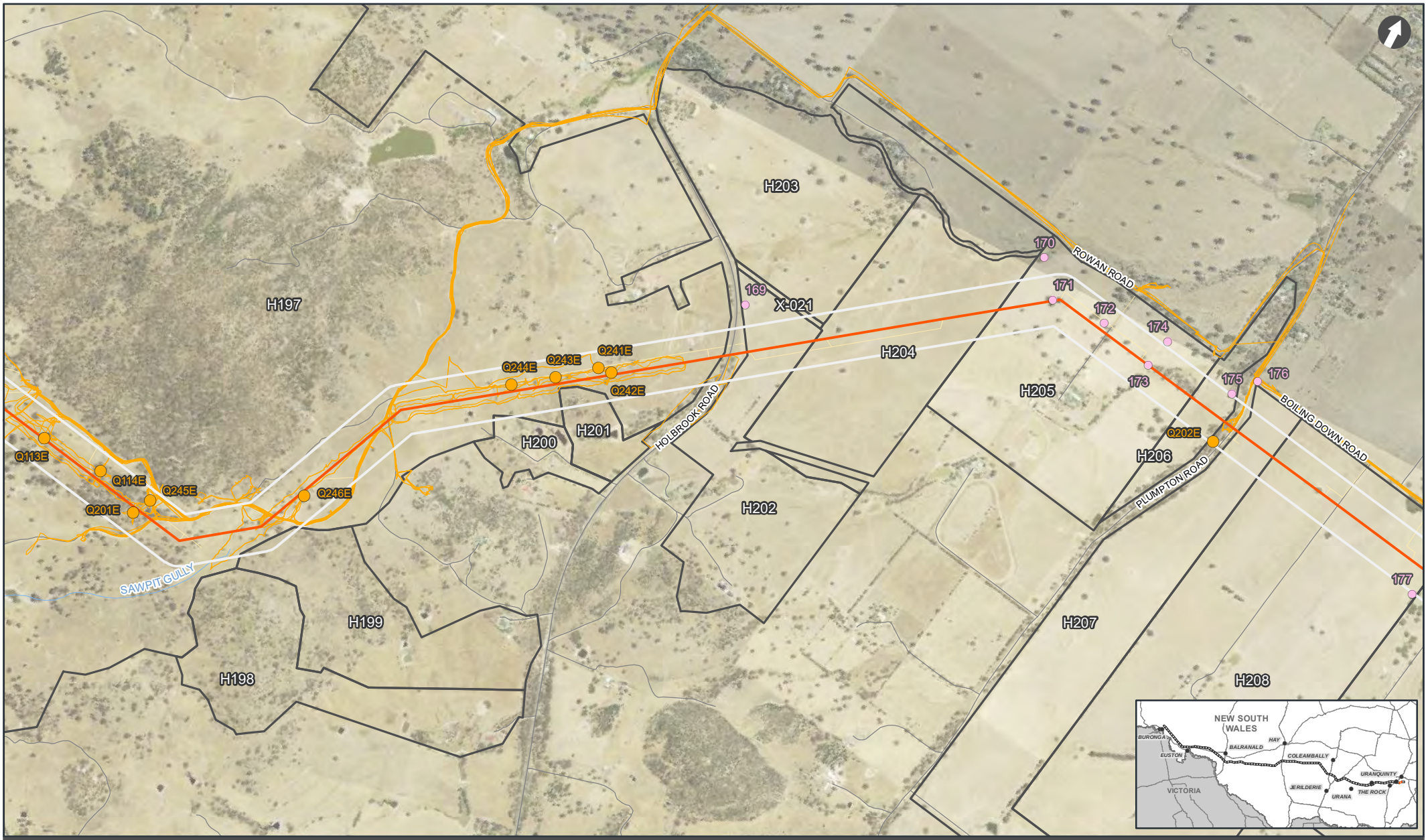


BDAR - Figure C-5cu

Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP

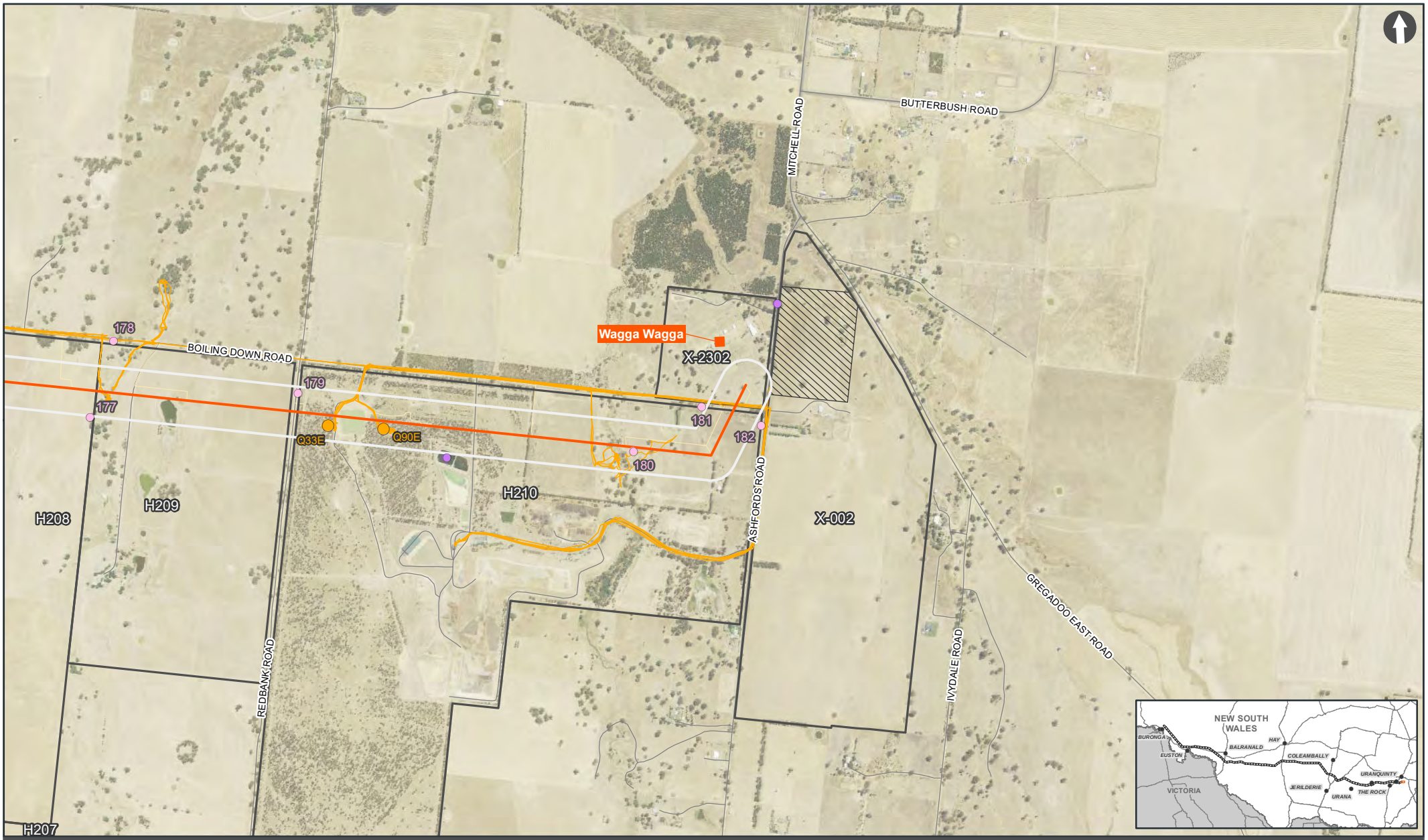


BDAR - Figure C-5cv

Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



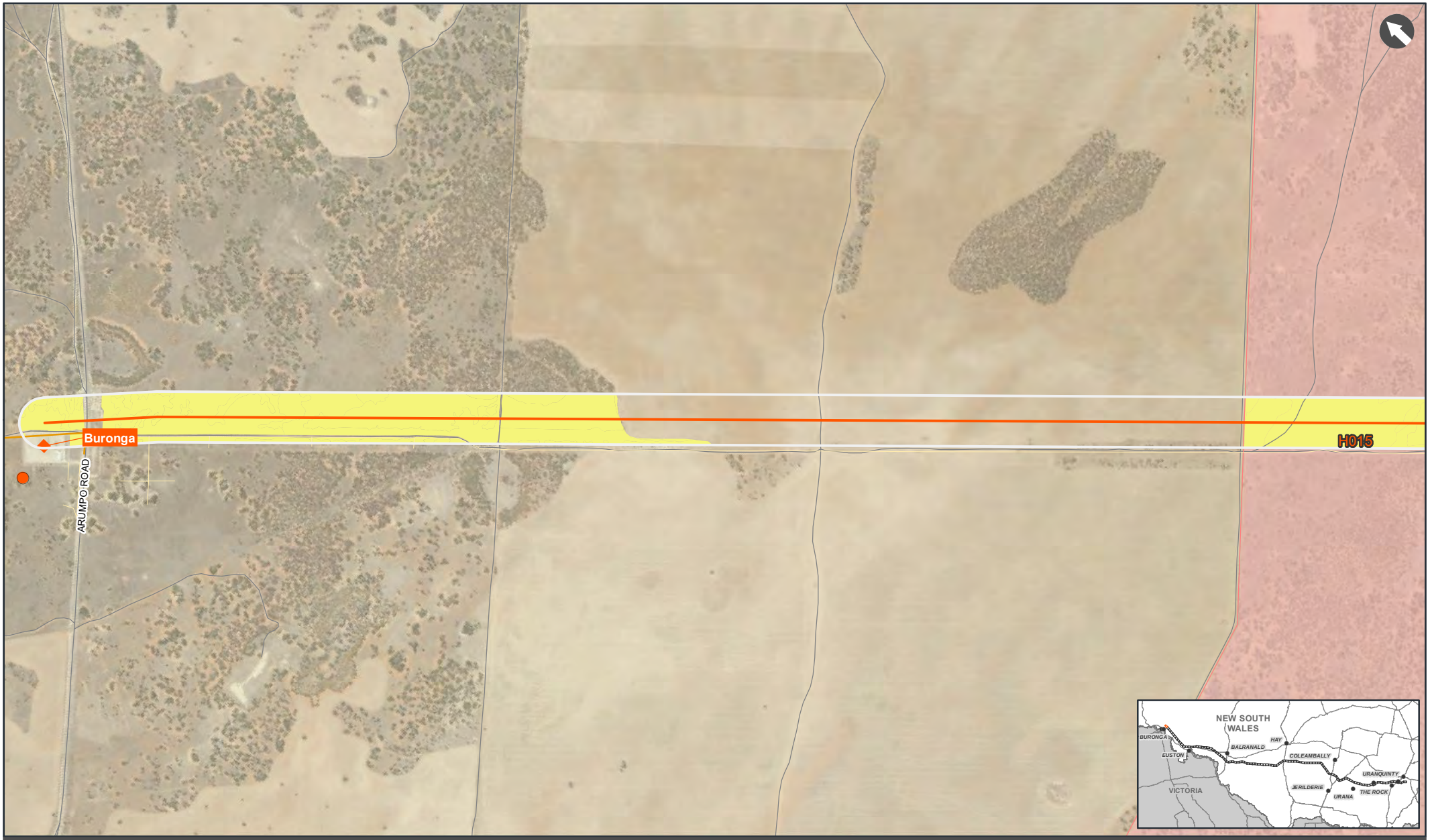
Proposed Alignment
Access Tracks
Main Construction Compounds and Accomodation Sites
Water Supply Point
Existing Substation
Built Up Areas
Waterbody
Biodiversity Study Area
Holdings **Flora Survey Effort**
Flora Survey Transect
Rapid Data Point
Quadrat

BDAR - Figure C-5CW
Threatened Flora Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP

APPENDIX C-6
Threatened fauna field survey effort map



0 0.25 0.5 KM

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Holdings - No Access
- Fauna Survey Transect

Fauna Stratification

- Arid woodland/shrublands

Fauna Survey Effort

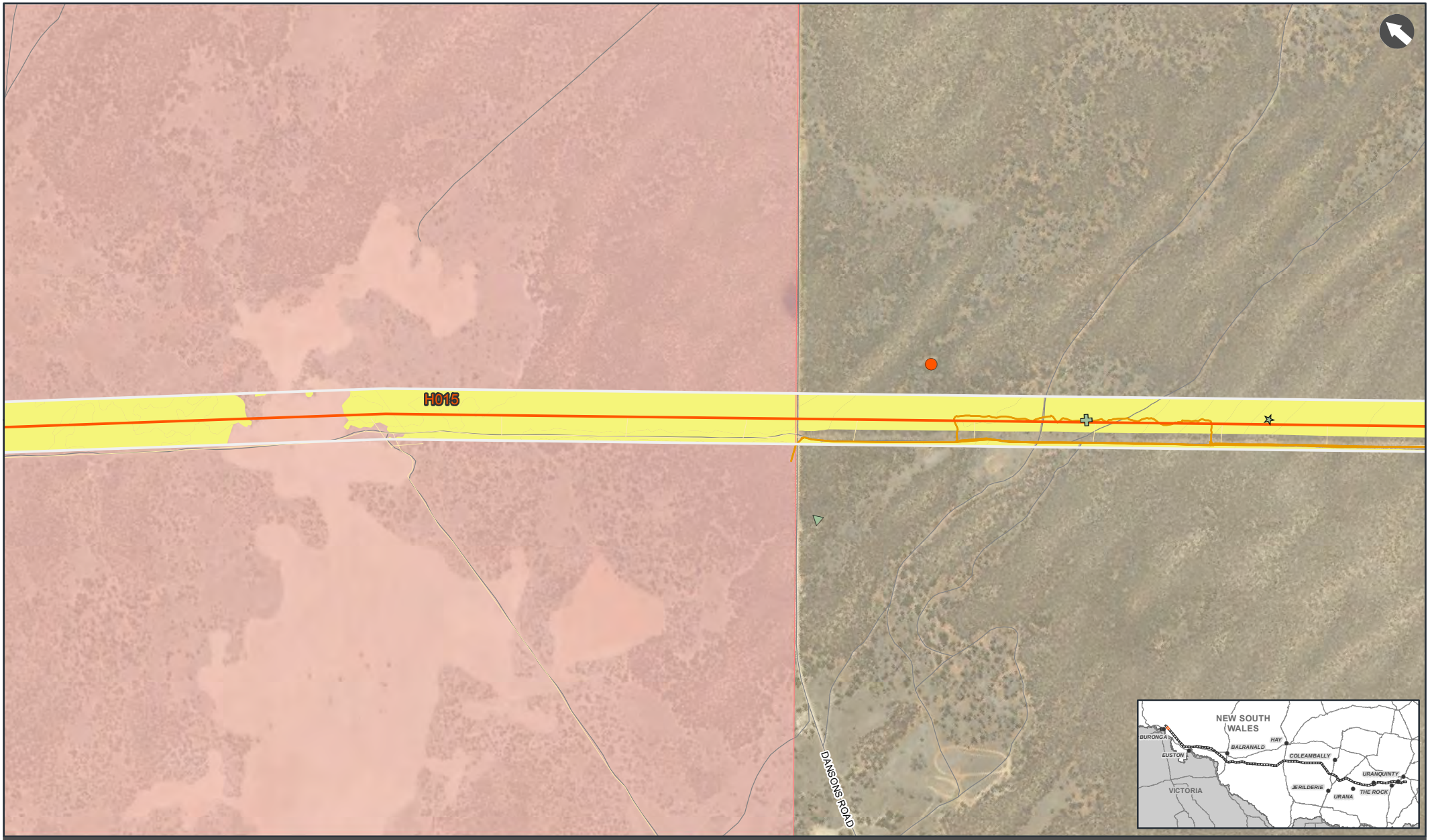
- Bird Survey

BDAR - Figure C-6

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Holdings - No Access
- Fauna Survey Transect

Fauna Stratification
- Arid woodland/shrublands

Fauna Survey Effort
- Bird Survey
- Camera
- Harp Trap
- Pitfall Line

BDAR - Figure C-6

Threatened Fauna
Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



0 0.25 0.5 KM

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect

Fauna Stratification
- Arid woodland/shrublands

Fauna Survey Effort
- Anabat
- Bird Survey
- Camera
- Nest Box
- Pitfall Line

BDAR - Figure C-6

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect

Fauna Stratification
- Arid woodland/shrublands

BDAR - Figure C-6

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-6

Threatened Fauna Field Survey Effort

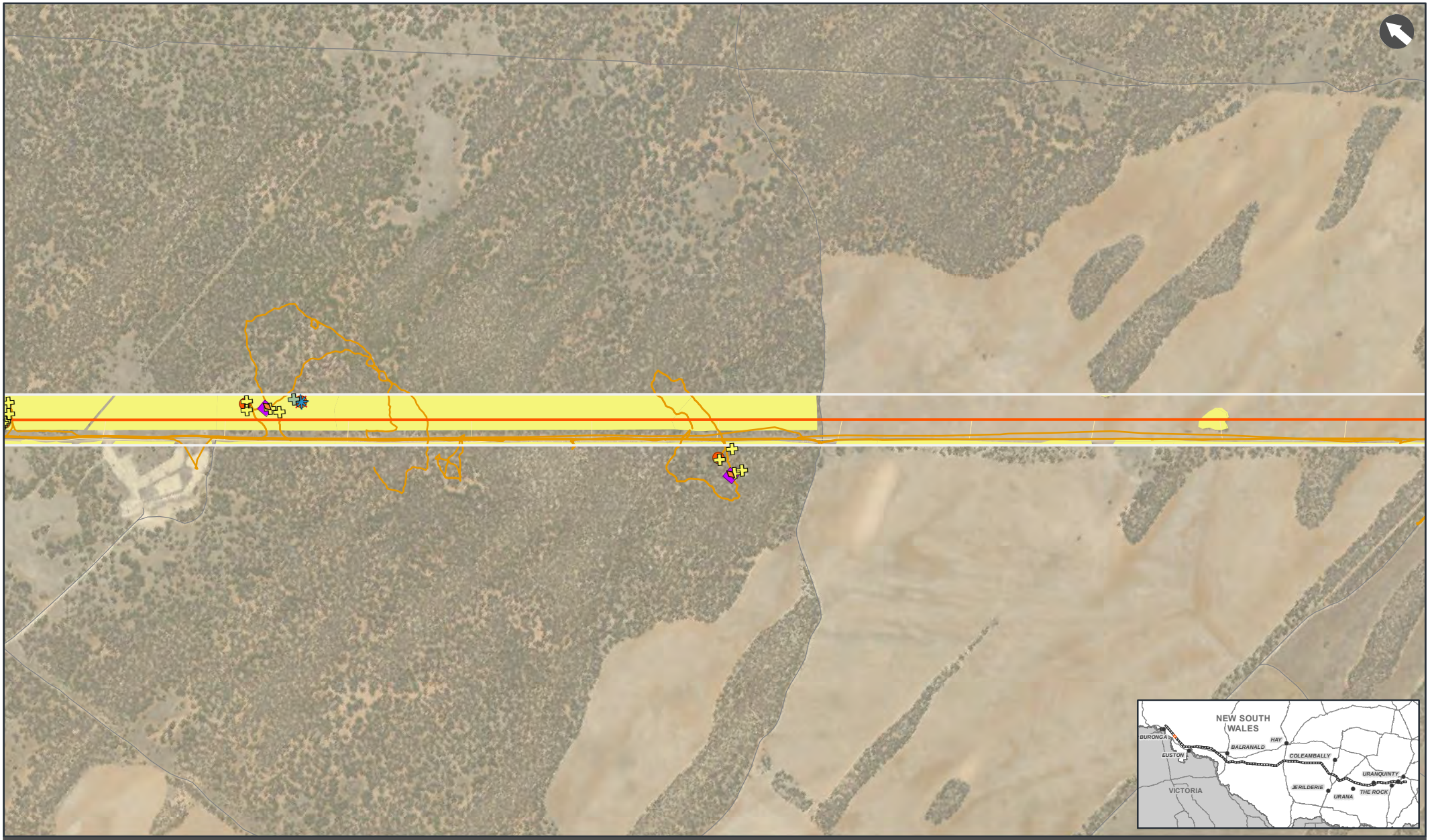
Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect

Fauna Stratification
- Arid woodland/shrublands

Fauna Survey Effort
- Anabat
- Bird Survey
- Harp Trap
- Nest Box
- Spotlighting Start Point

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-6

Threatened Fauna Field Survey Effort

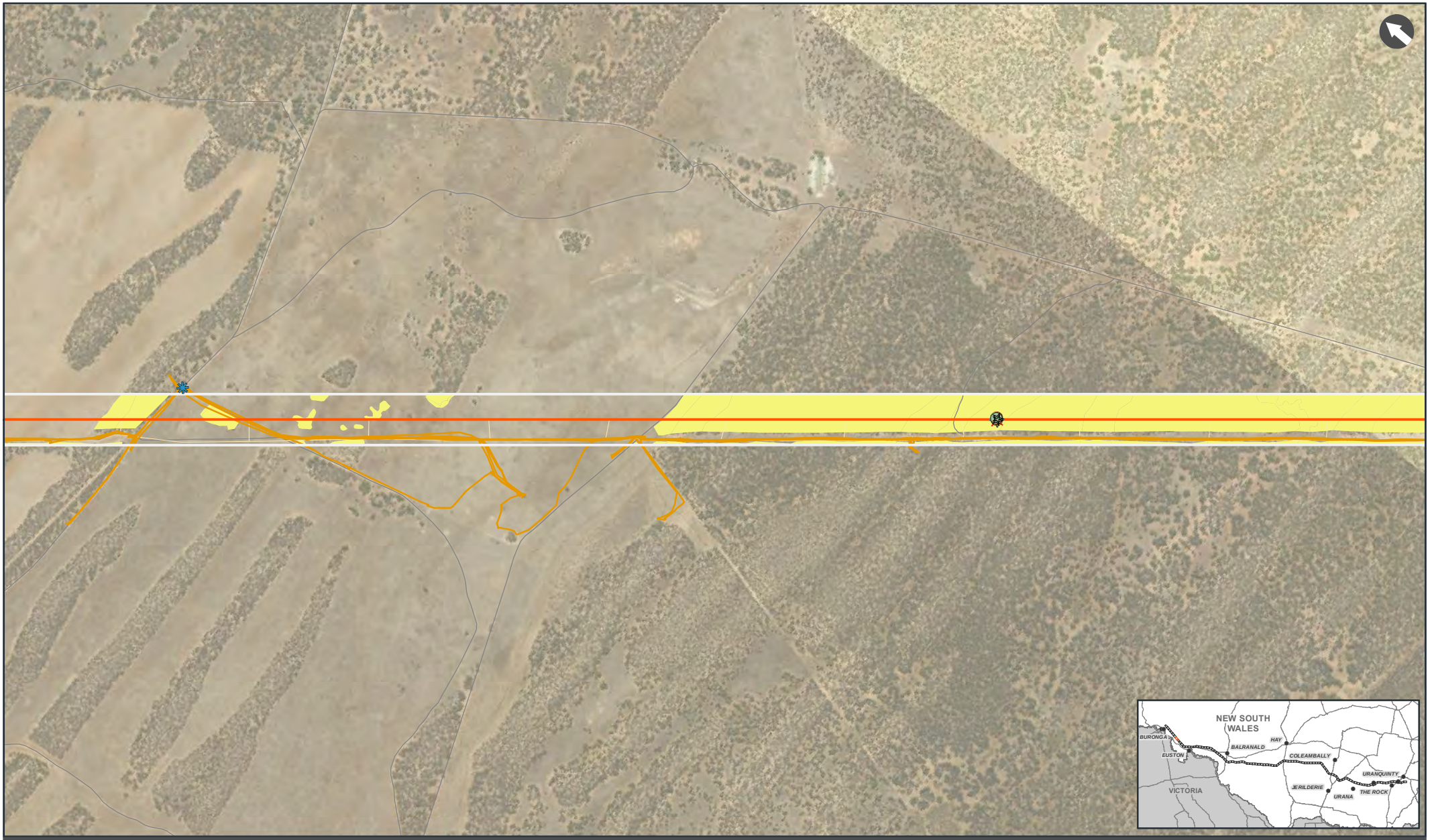
Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect

Fauna Stratification
- Arid woodland/shrublands

Fauna Survey Effort
- Bird Survey
- Camera
- Fauna Habitat Assessment
- Harp Trap
- Nest Box
- Other
- Terrestrial Trap Line (Elliot
- Terrestrial Trap Line (Elliot E)
- Spotlighting Start Point

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Source: NSWSS, ESRI, Transgrid, WSP



0 0.25 0.5 KM

BDAR - Figure C-6

Threatened Fauna Field Survey Effort

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect

Fauna Stratification
- Arid woodland/shrublands

Fauna Survey Effort
- Anabat
- Bird Survey
- Camera
- Pitfall Line
- Terrestrial Trap Line (Elliot
- Terrestrial Trap Line (Elliot E)
- Spotlighting Start Point

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect

Fauna Stratification
- Arid woodland/shrublands

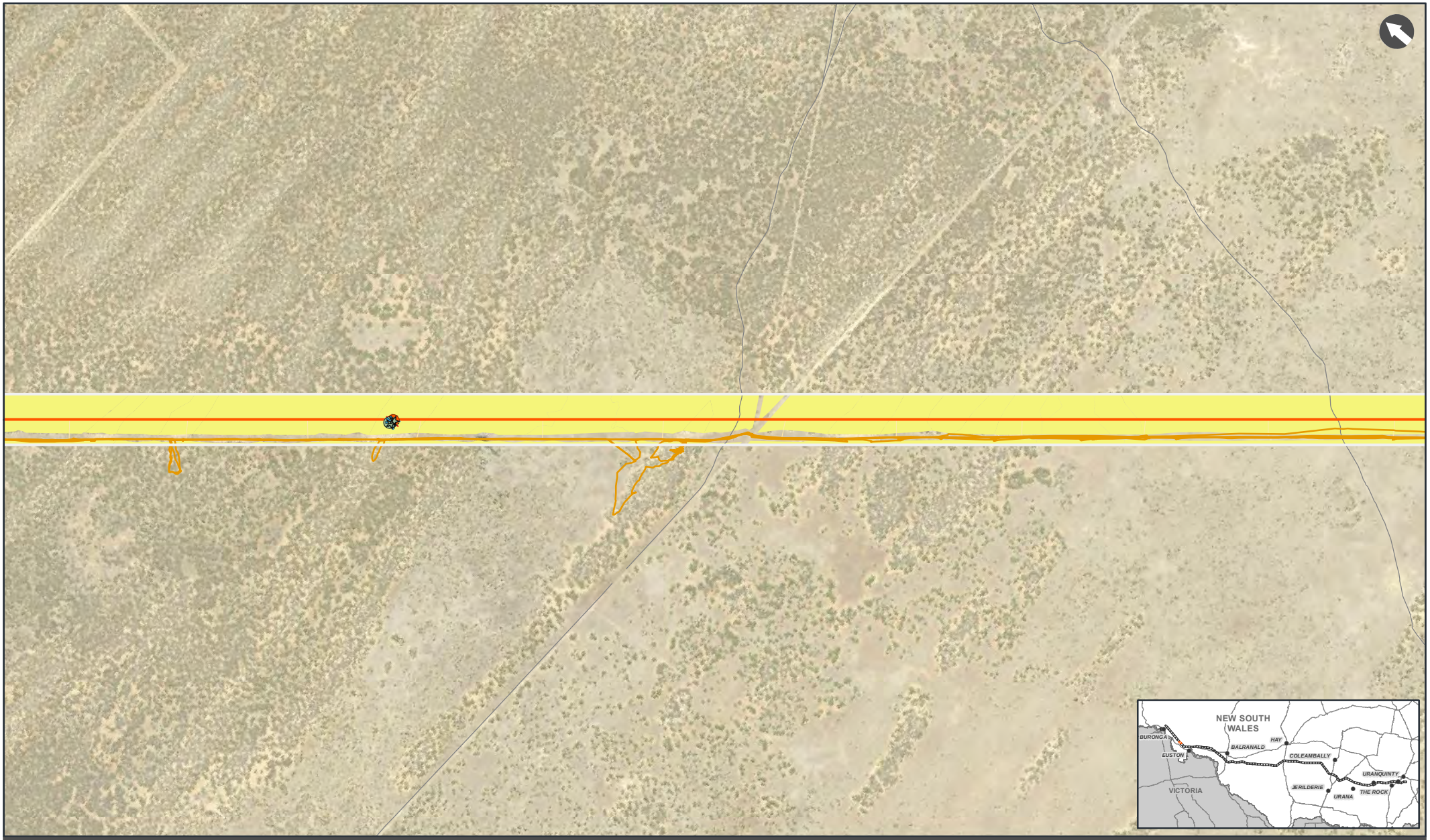
Fauna Survey Effort
- Bird Survey
- Call Playback
- Camera
- Funnel Traps
- Pitfall Trap
- Terrestrial Trap Line (Elliot
- Terrestrial Trap Line (Elliot E)
- Spotlighting Start Point

BDAR - Figure C-6a

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-6b

Threatened Fauna Field Survey Effort

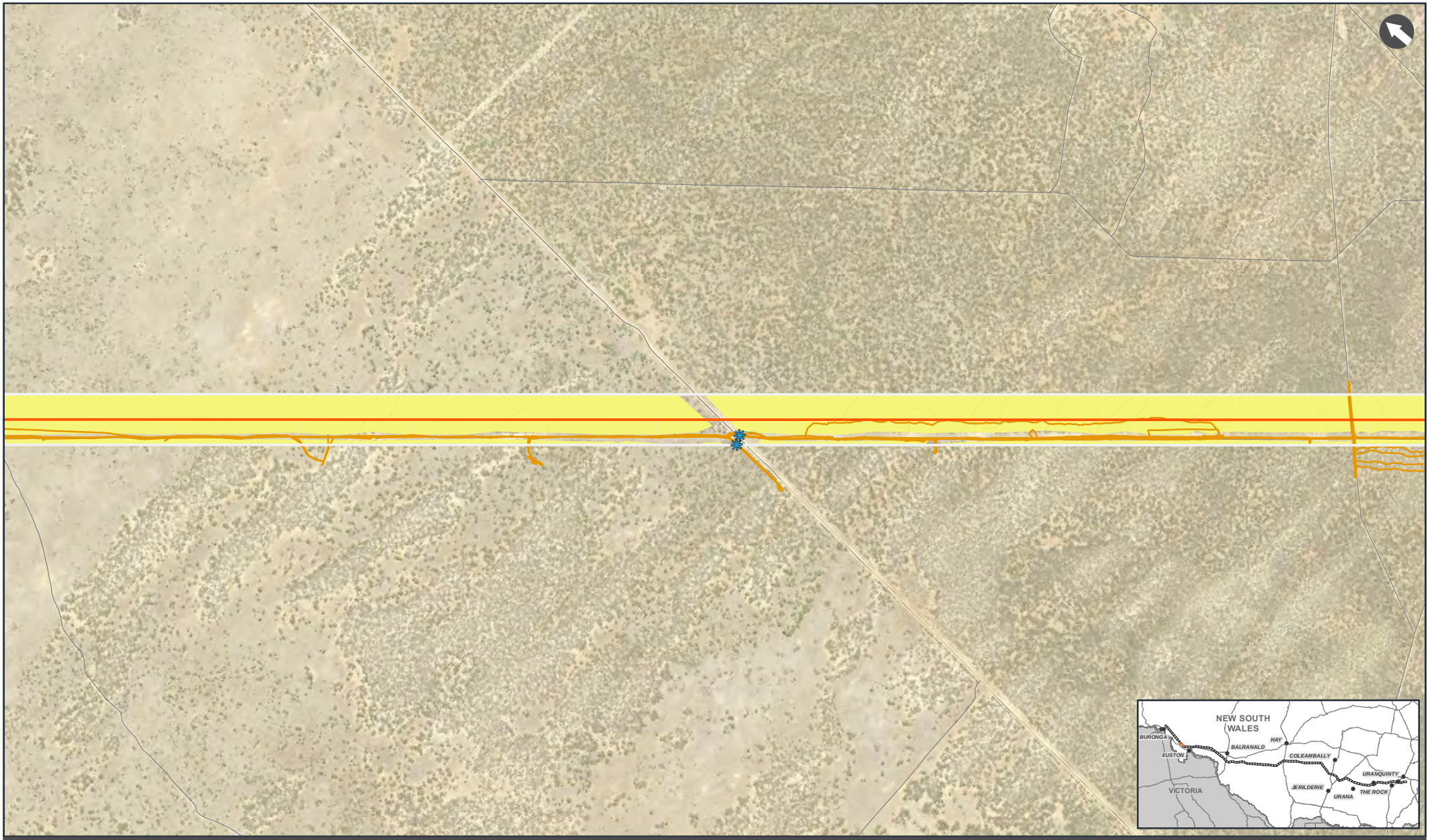
Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect

Fauna Stratification
- Arid woodland/shrublands

Fauna Survey Effort
- Anabat
- Bird Survey
- Camera
- Funnel Traps
- Pitfall Line
- Terrestrial Trap Line (Elliot
- Terrestrial Trap Line (Elliot E)
- Spotlighting Start Point

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect

Fauna Stratification

- Arid woodland/shrublands

Fauna Survey Effort

- Spotlighting Start Point

BDAR - Figure C-6

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect

Fauna Stratification
- Arid woodland/shrublands

Fauna Survey Effort
- Anabat
- Bird Survey
- Camera
- Harp Trap
- Pitfall Line

BDAR - Figure C-6

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect

Fauna Stratification
- Arid woodland/shrublands

BDAR - Figure C-6

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-6c

Threatened Fauna Field Survey Effort

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect

Fauna Stratification
- Arid woodland/shrublands

Fauna Survey Effort
- Anabat
- Bird Survey
- Call Playback
- Harp Trap
- Pitfall Line
- Spotlighting Start Point

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect

Fauna Stratification

- Arid woodland/shrublands

Fauna Survey Effort

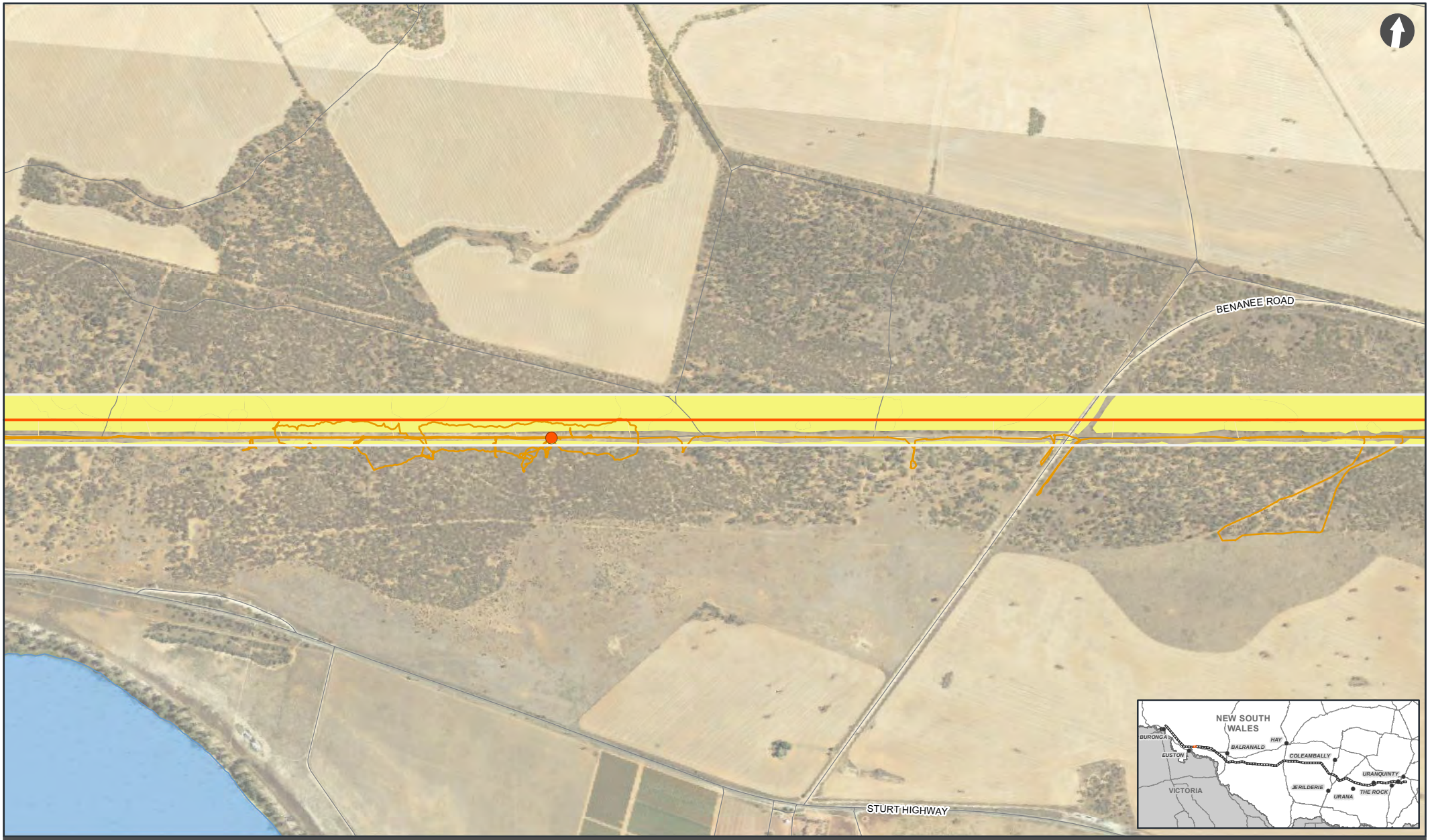
- Harp Trap

BDAR - Figure C-6

Threatened Fauna
Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect

Fauna Stratification
- Arid woodland/shrublands

Fauna Survey Effort
- Bird Survey

BDAR - Figure C-6d

Threatened Fauna
Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect

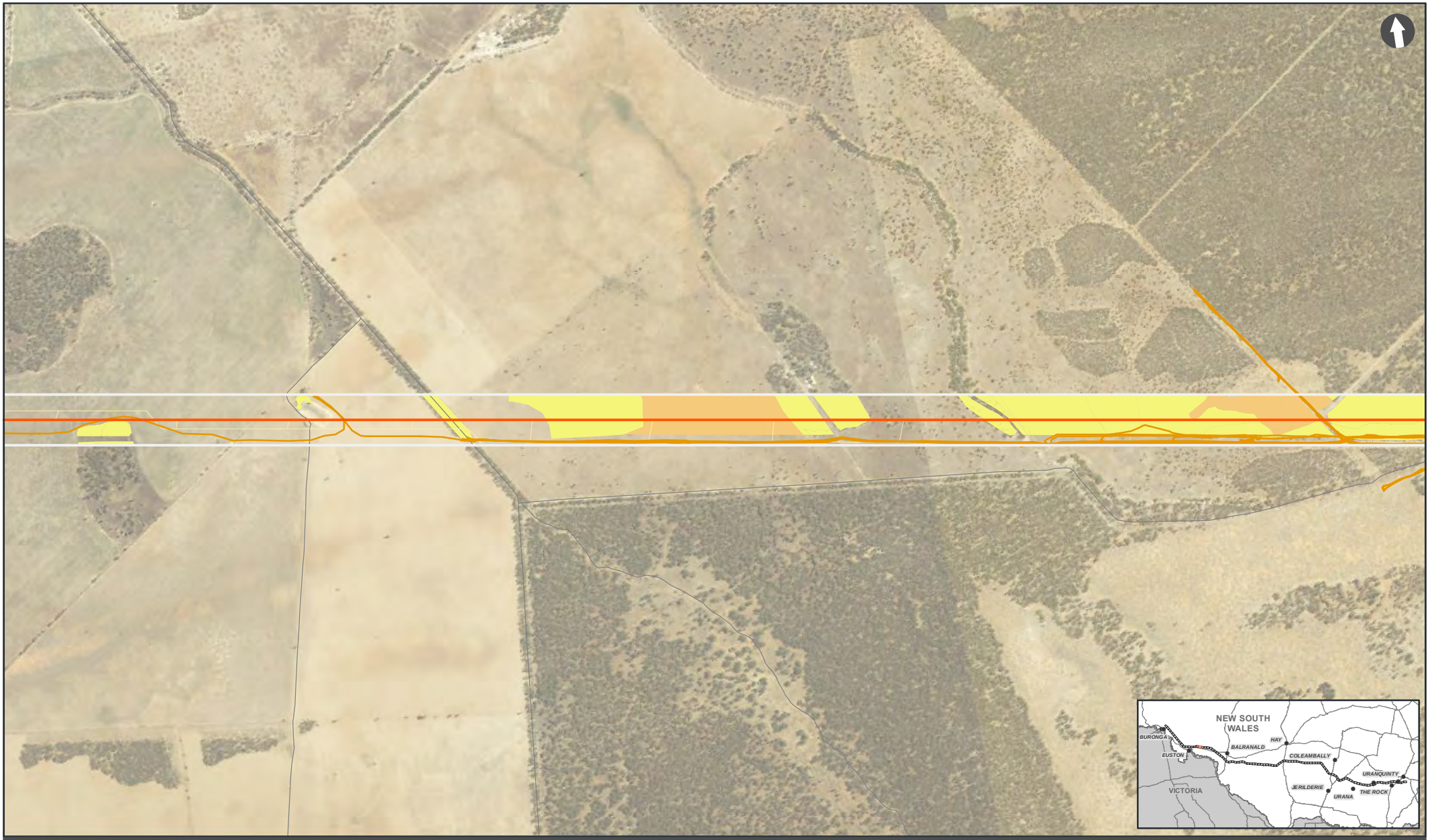
Fauna Stratification
- Arid woodland/shrublands

BDAR - Figure C-6

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect

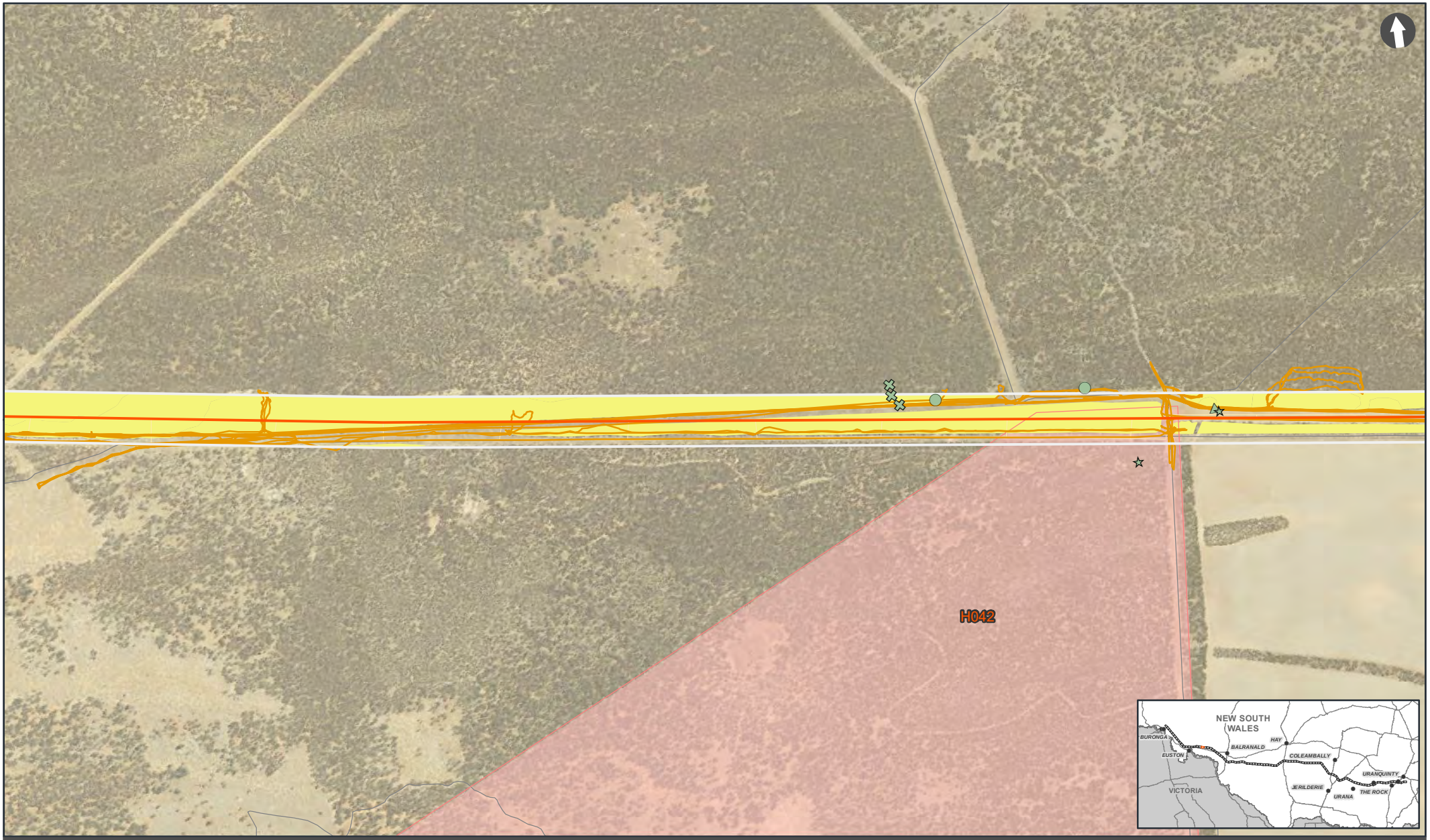
Fauna Stratification
- Arid woodland/shrublands
- Chenopod shrublands

BDAR - Figure C-6

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Holdings - No Access
- Fauna Survey Transect

Fauna Stratification
- Arid woodland/shrublands

Fauna Survey Effort
- Anabat
- Camera
- Harp Trap
- Pitfall Line

BDAR - Figure C-6

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect

Fauna Stratification
- Arid woodland/shrublands
- Wetlands

Fauna Survey Effort
- Bird Survey
- Camera
- Harp Trap
- Pitfall Line

BDAR - Figure C-6

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect

Fauna Stratification
- Arid woodland/shrublands

Fauna Survey Effort
- Anabat
- Bird Survey
- Camera
- Pitfall Line

BDAR - Figure C-6

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect

Fauna Stratification
- Arid woodland/shrublands
- Chenopod shrublands

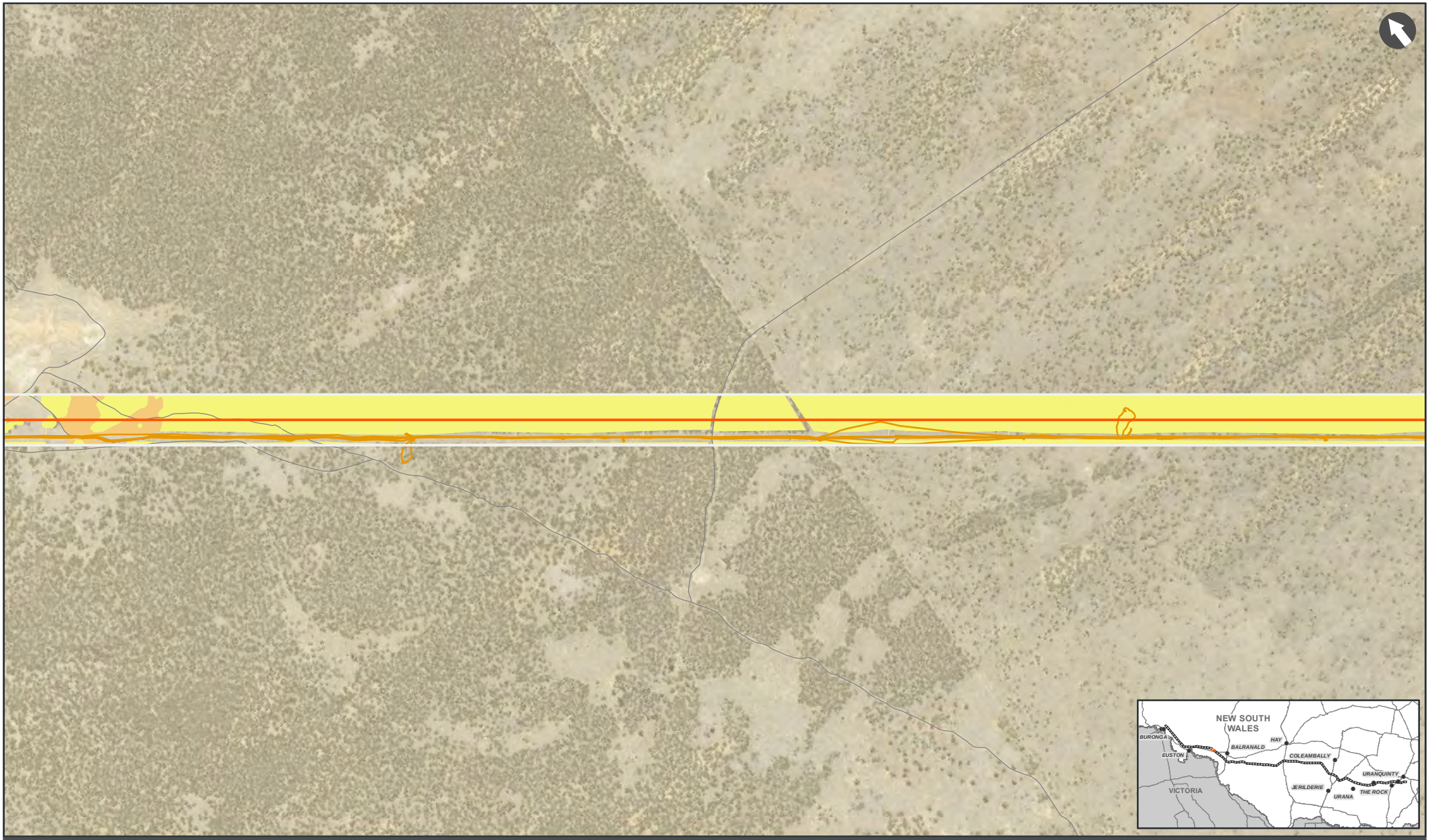
Fauna Survey Effort
- Anabat
- Bird Survey
- Camera
- Harp Trap
- Nest Box
- Pitfall Line

BDAR - Figure C-6

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect

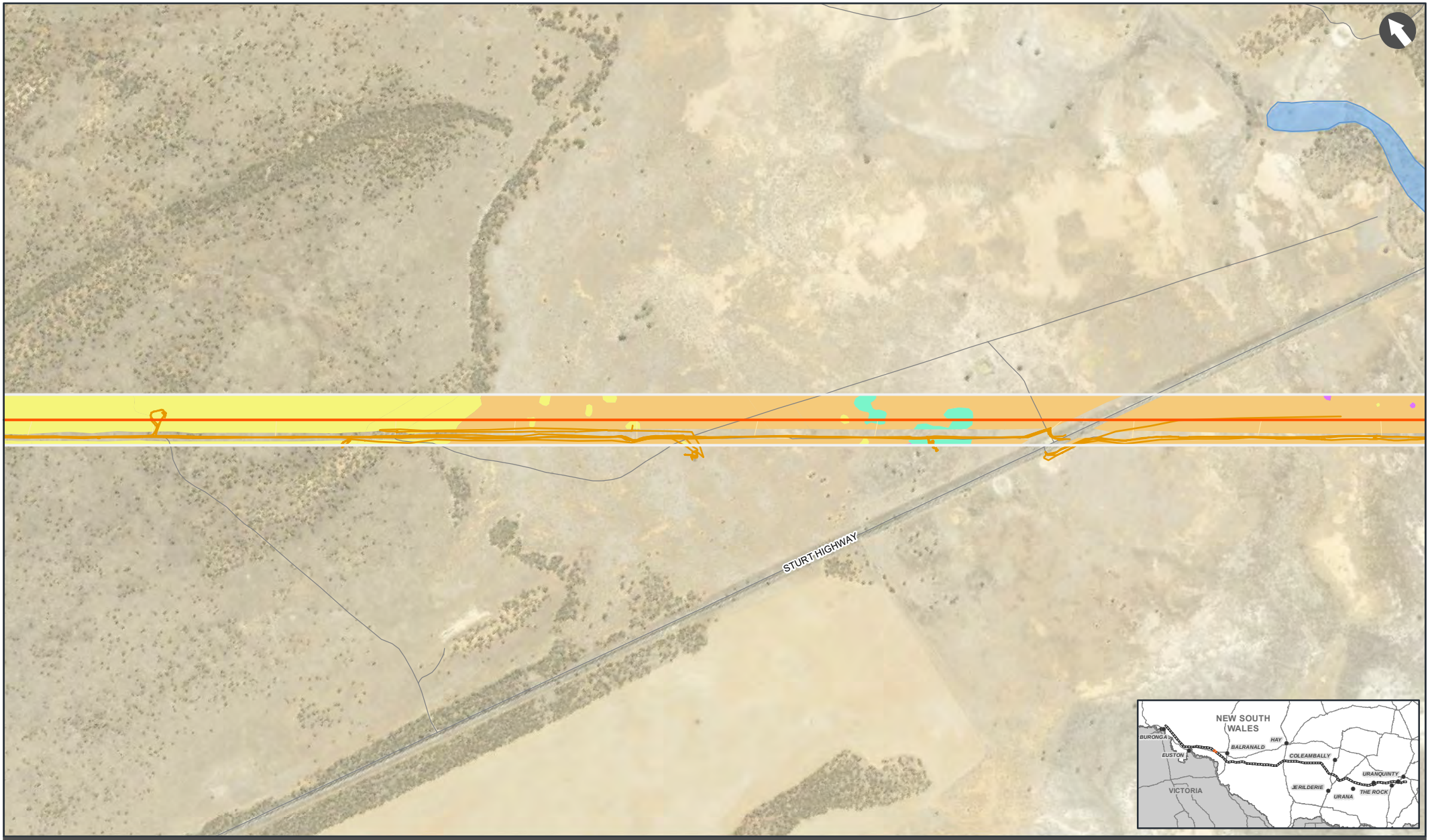
Fauna Stratification
- Arid woodland/shrublands
- Chenopod shrublands

BDAR - Figure C-6

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect

Fauna Stratification

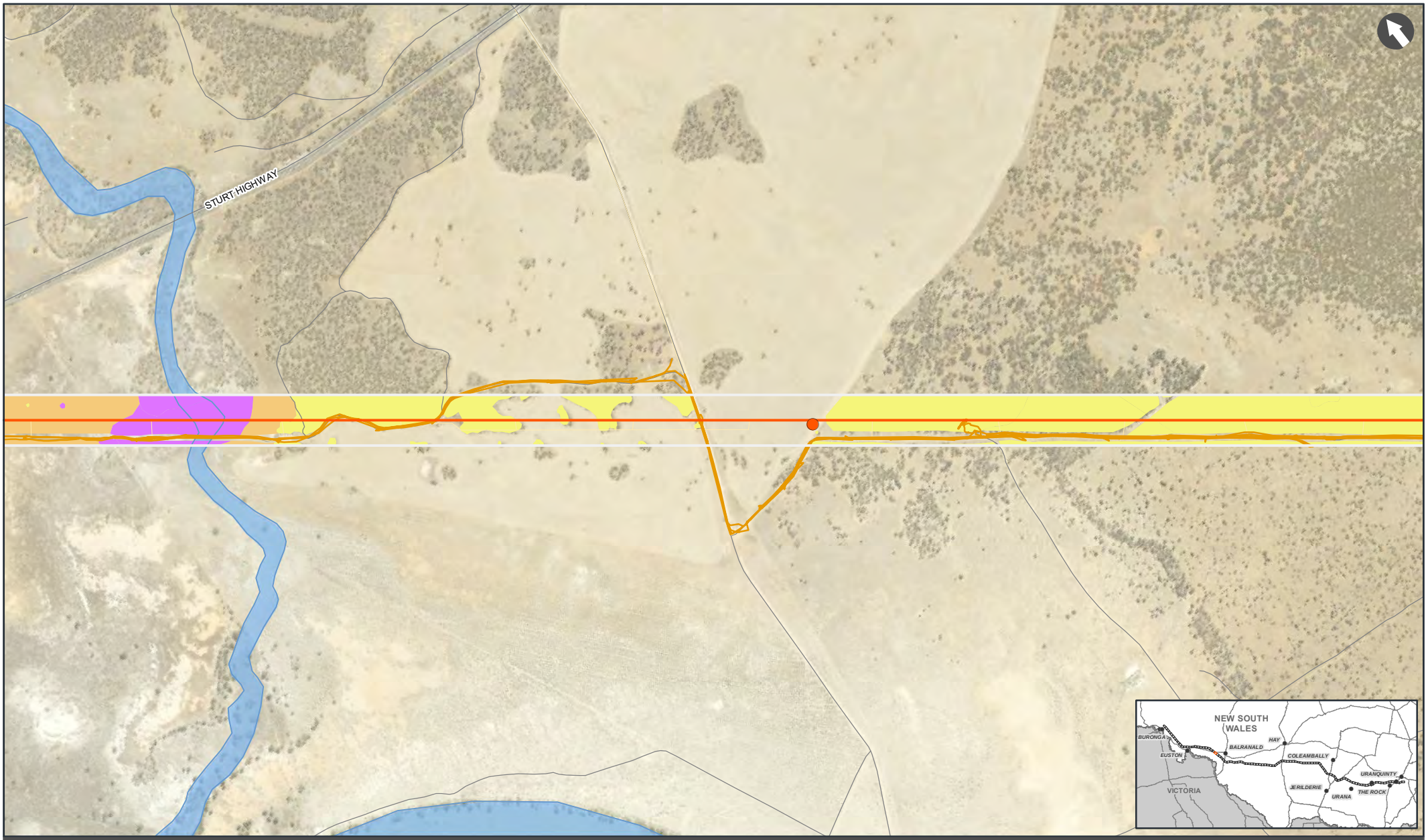
- Arid woodland/shrublands
- Chenopod shrublands
- Riverine
- Wetlands

BDAR - Figure C-6

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect

Fauna Stratification
- Arid woodland/shrublands
- Chenopod shrublands
- Riverine

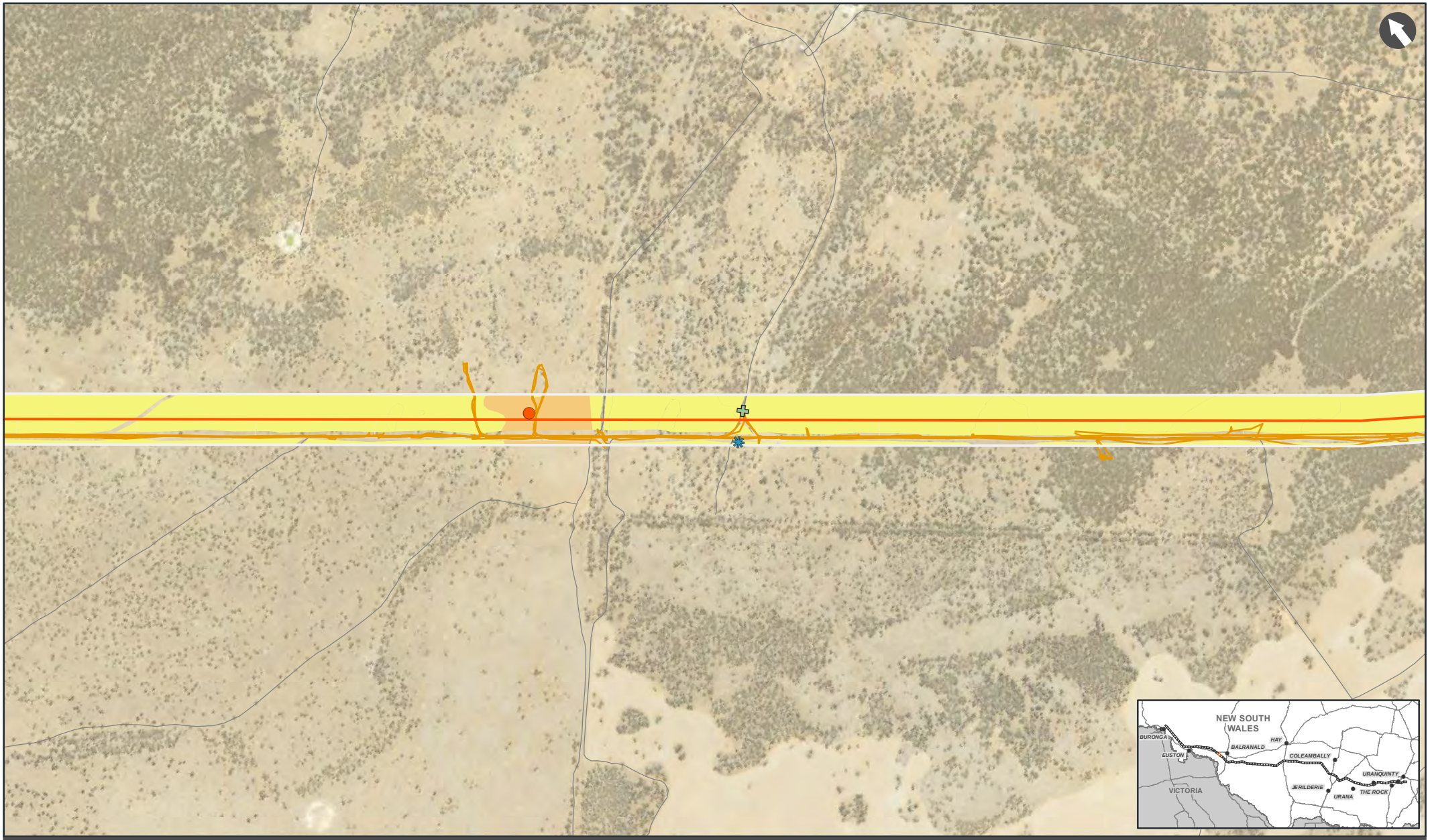
Fauna Survey Effort
- Bird Survey

BDAR - Figure C-6

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect

Fauna Stratification
- Arid woodland/shrublands
- Chenopod shrublands

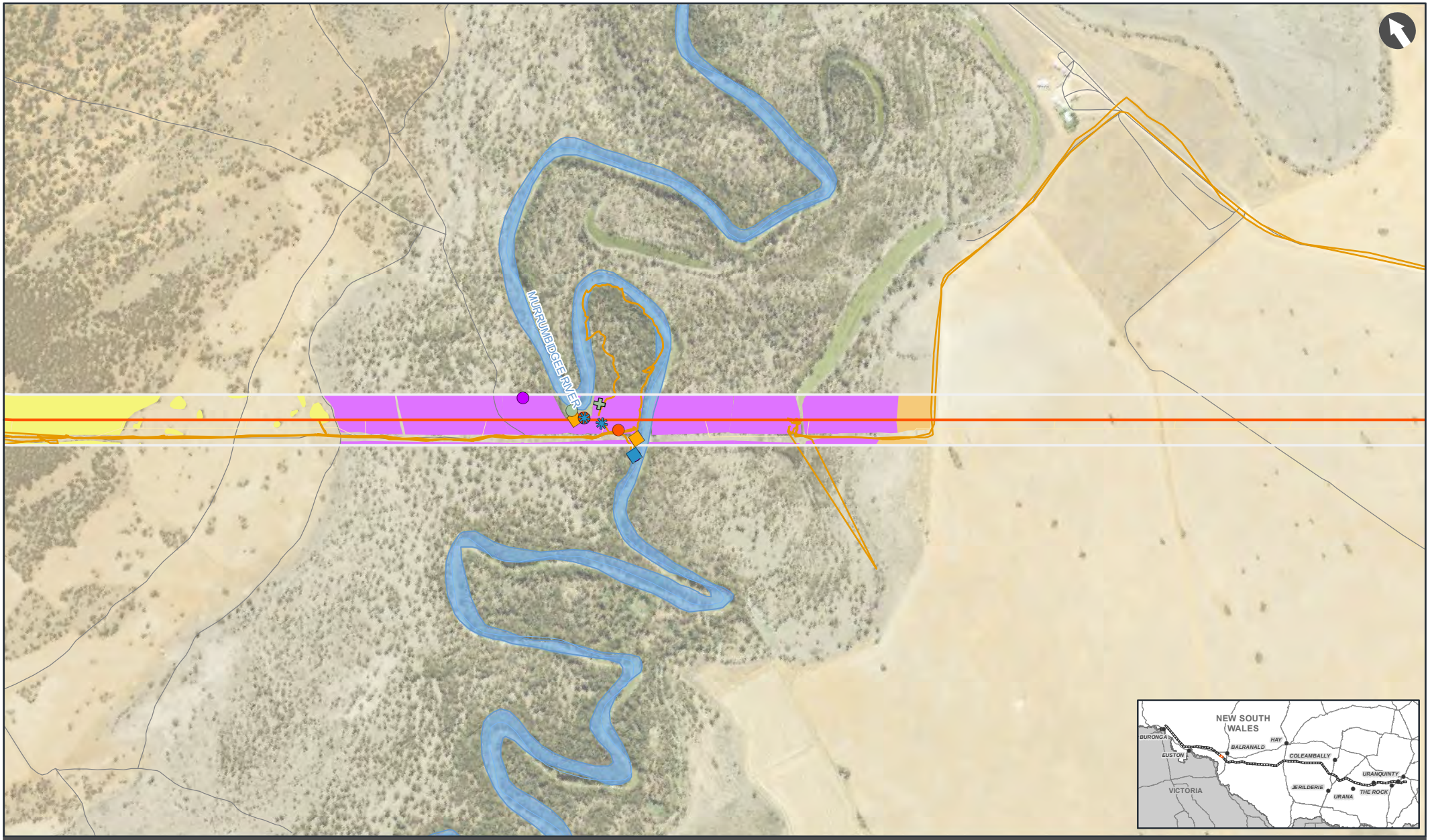
Fauna Survey Effort
- Bird Survey
- Harp Trap
- Spotlighting Start Point

BDAR - Figure C-6

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect

Fauna Stratification
- Arid woodland/shrublands
- Chenopod shrublands
- Riverine

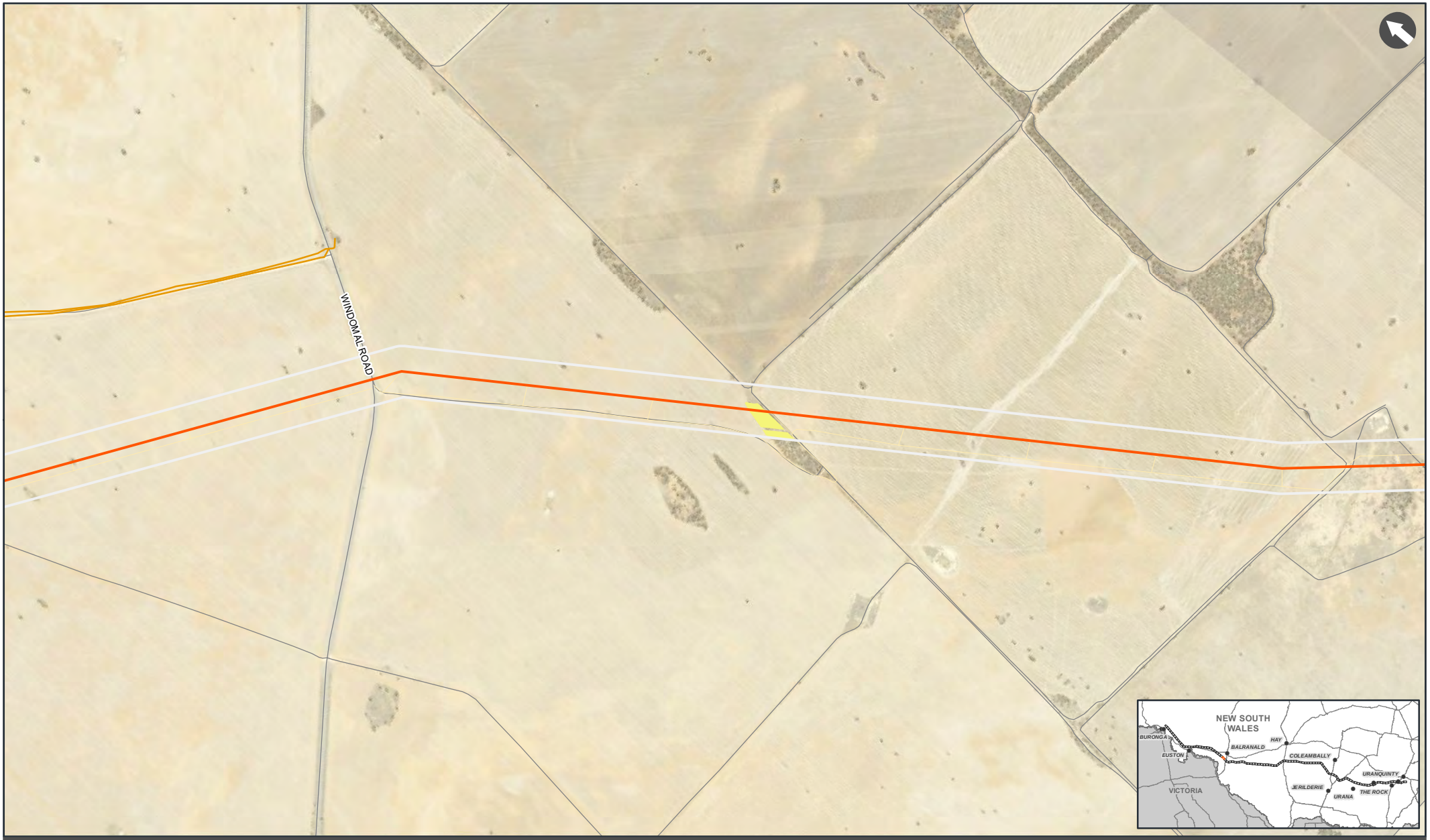
Fauna Survey Effort
- Anabat
- Bird Survey
- Call Playback
- Frog Call Playback
- Frog Habitat Assessment
- Harp Trap
- Spotlighting Start Point

BDAR - Figure C-6

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect

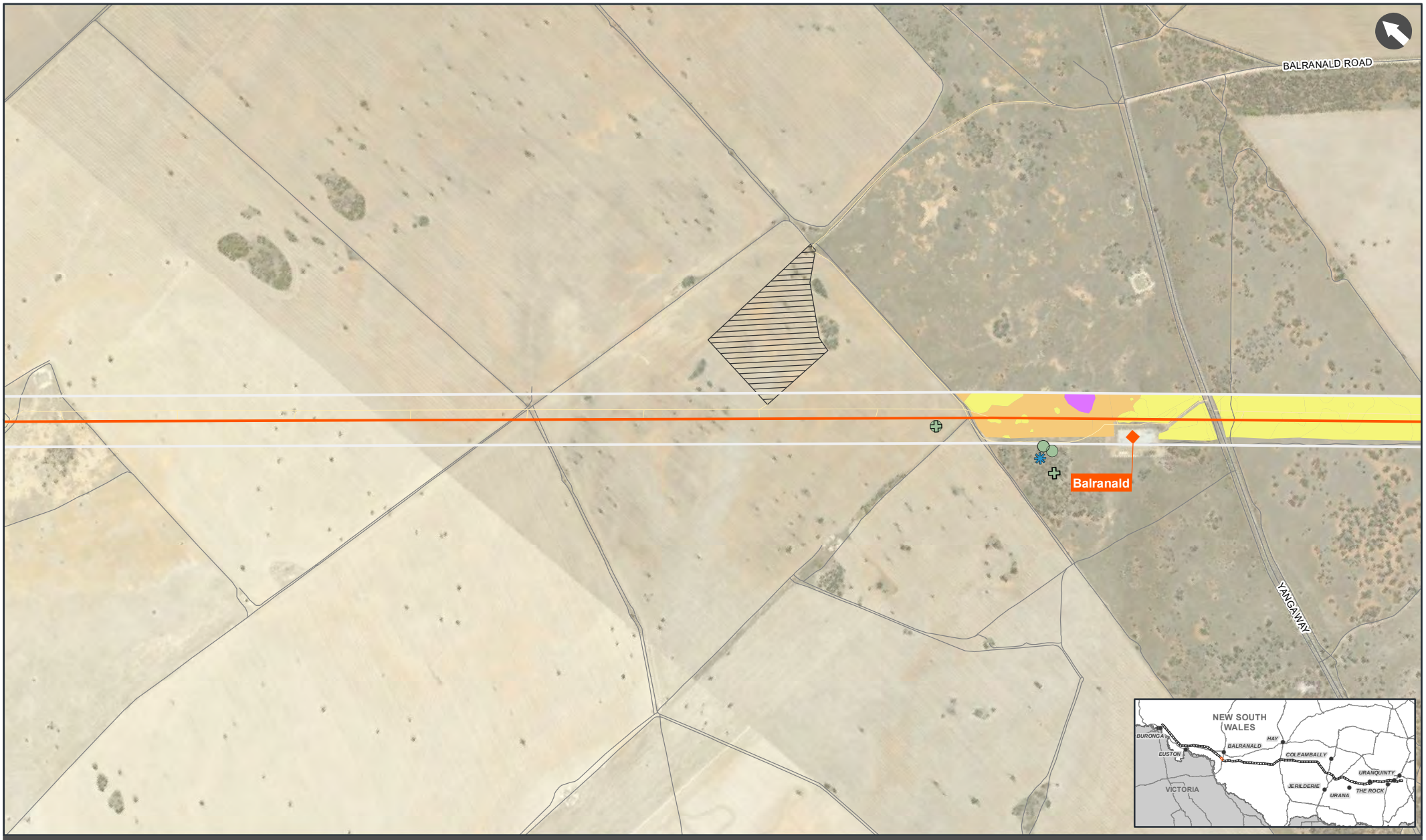
Fauna Stratification
- Arid woodland/shrublands

BDAR - Figure C-6

Threatened Fauna
Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area

Fauna Stratification
- Arid woodland/shrublands
- Chenopod shrublands
- Riverine

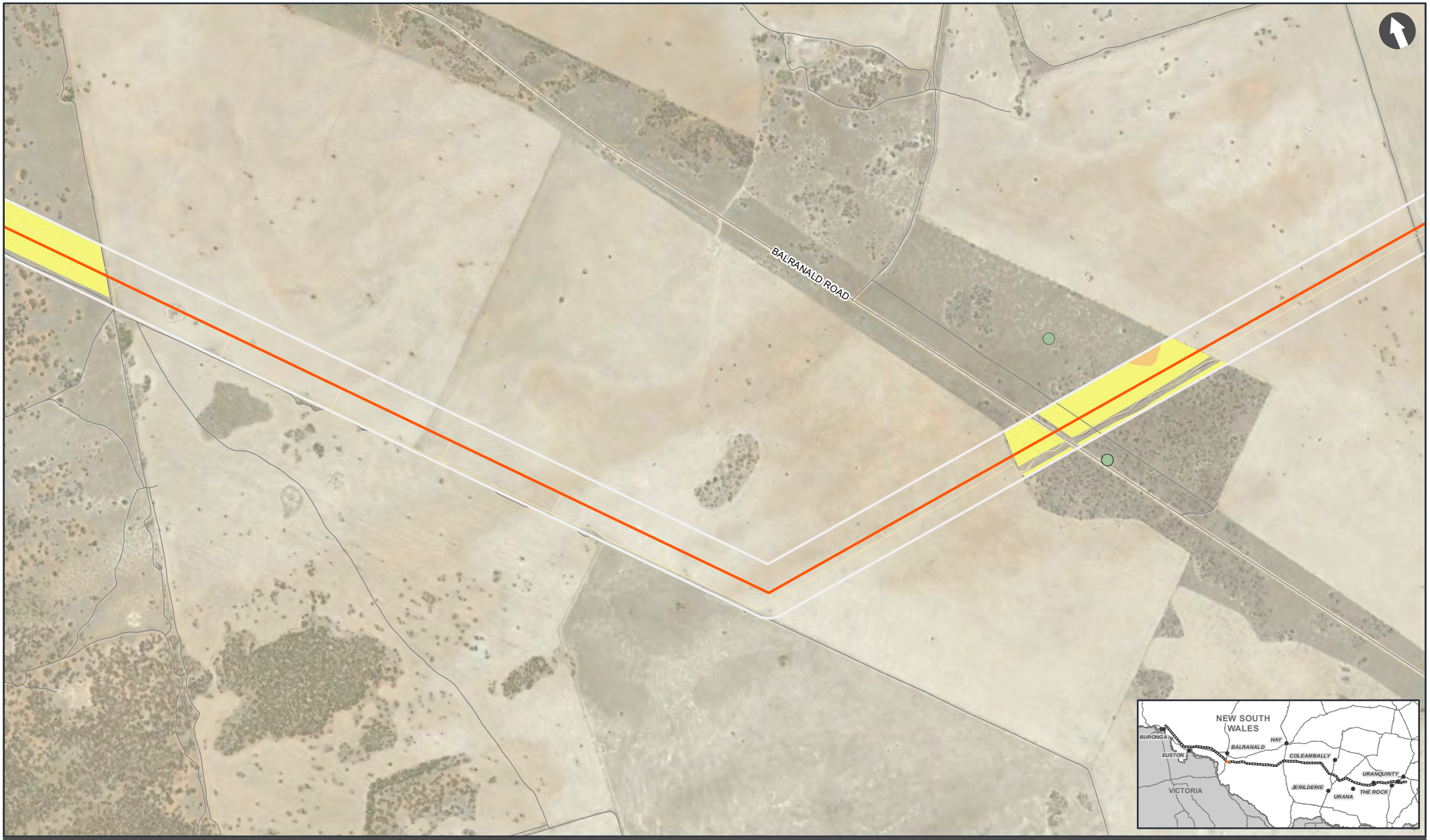
Fauna Survey Effort
- Anabat
- Harp Trap
- Spotlighting Start Point

BDAR - Figure C-6

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area

Fauna Stratification
- Arid woodland/shrublands
- Chenopod shrublands

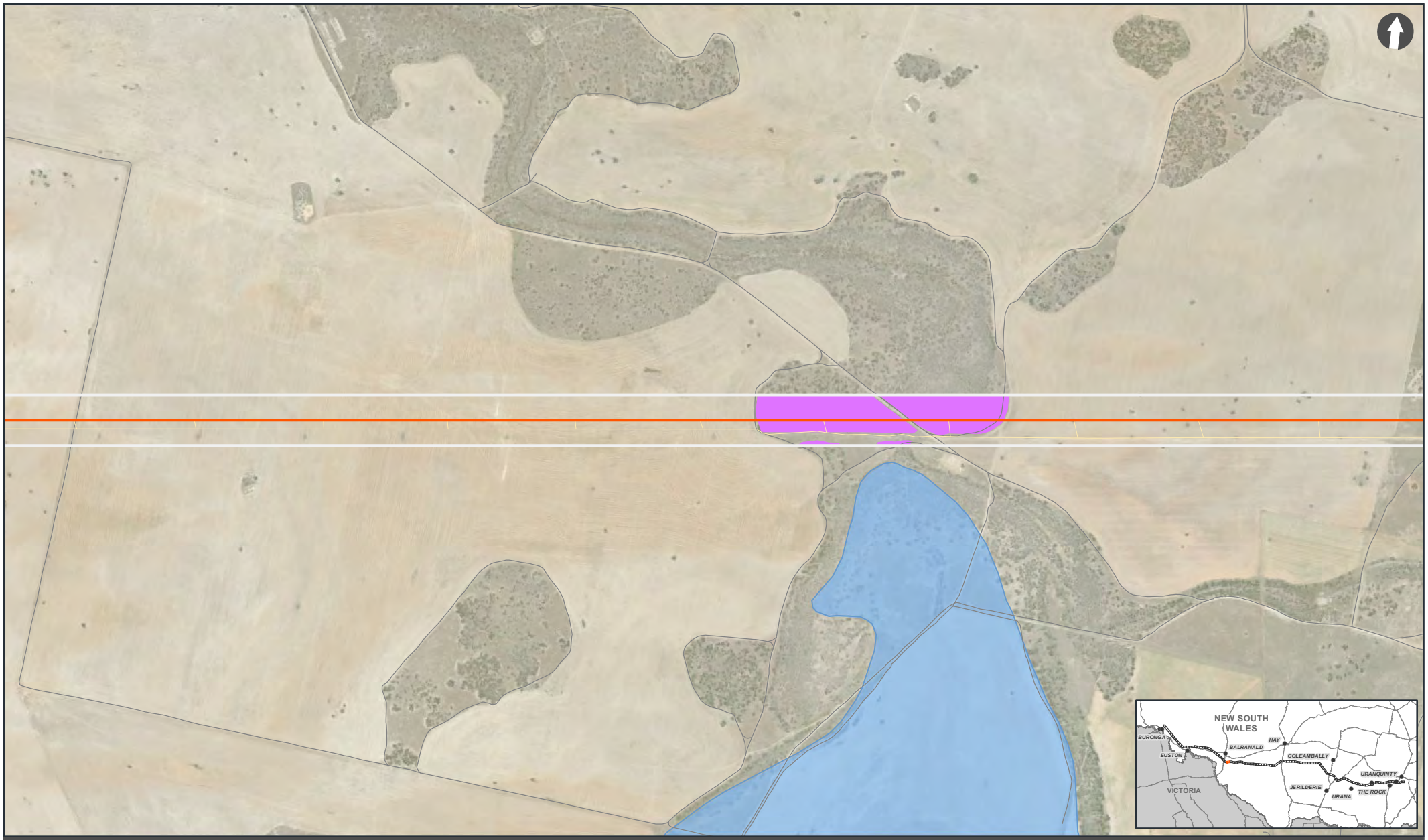
Fauna Survey Effort
- Anabat

BDAR - Figure C-6

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area

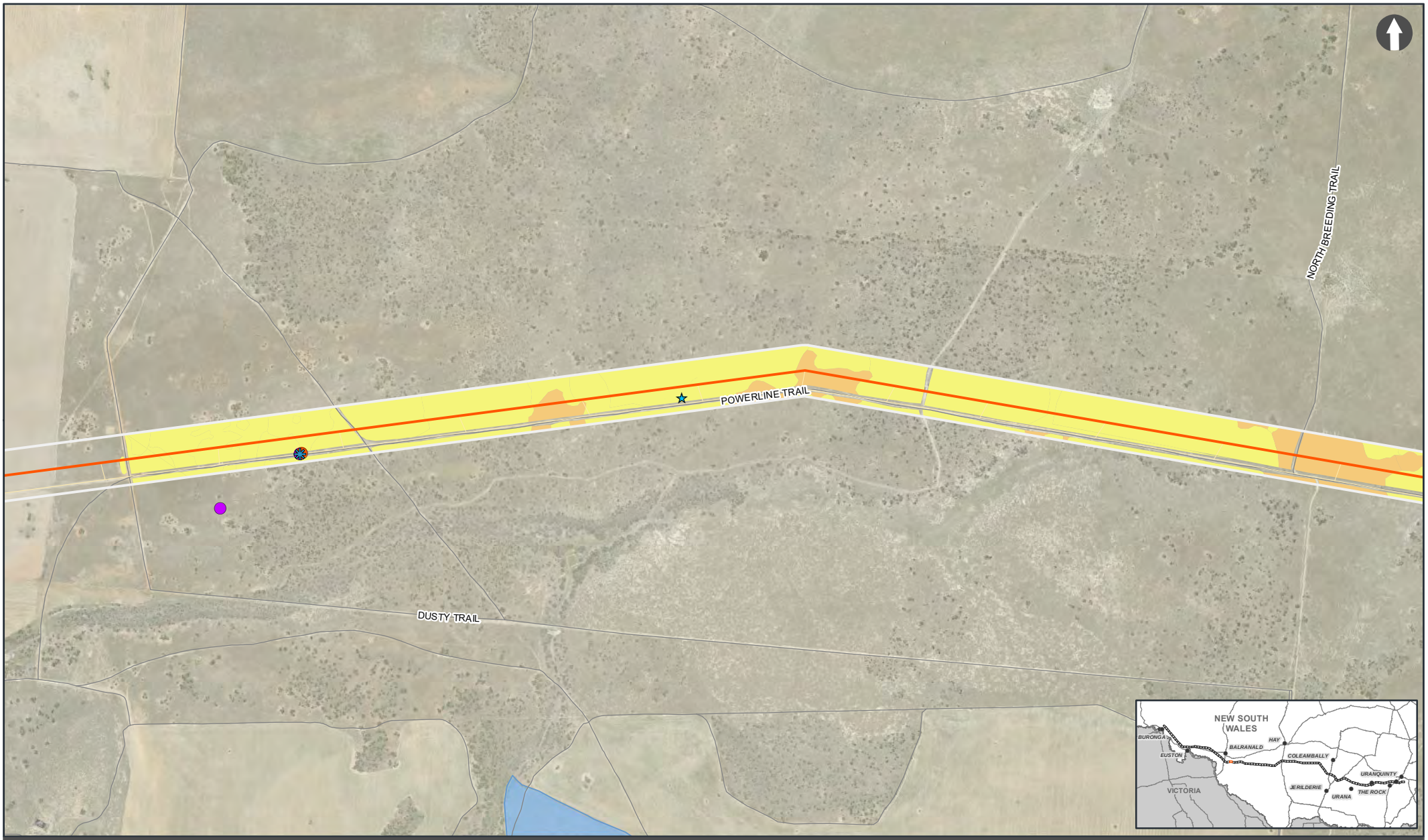
Fauna Stratification
- Riverine

BDAR - Figure C-6

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area

Fauna Stratification
- Arid woodland/shrublands
- Chenopod shrublands
- Grasslands

Fauna Survey Effort
- Bird Survey
- Call Playback
- Plains Wanderer Survey
- Spotlighting Start Point

BDAR - Figure C-6

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect

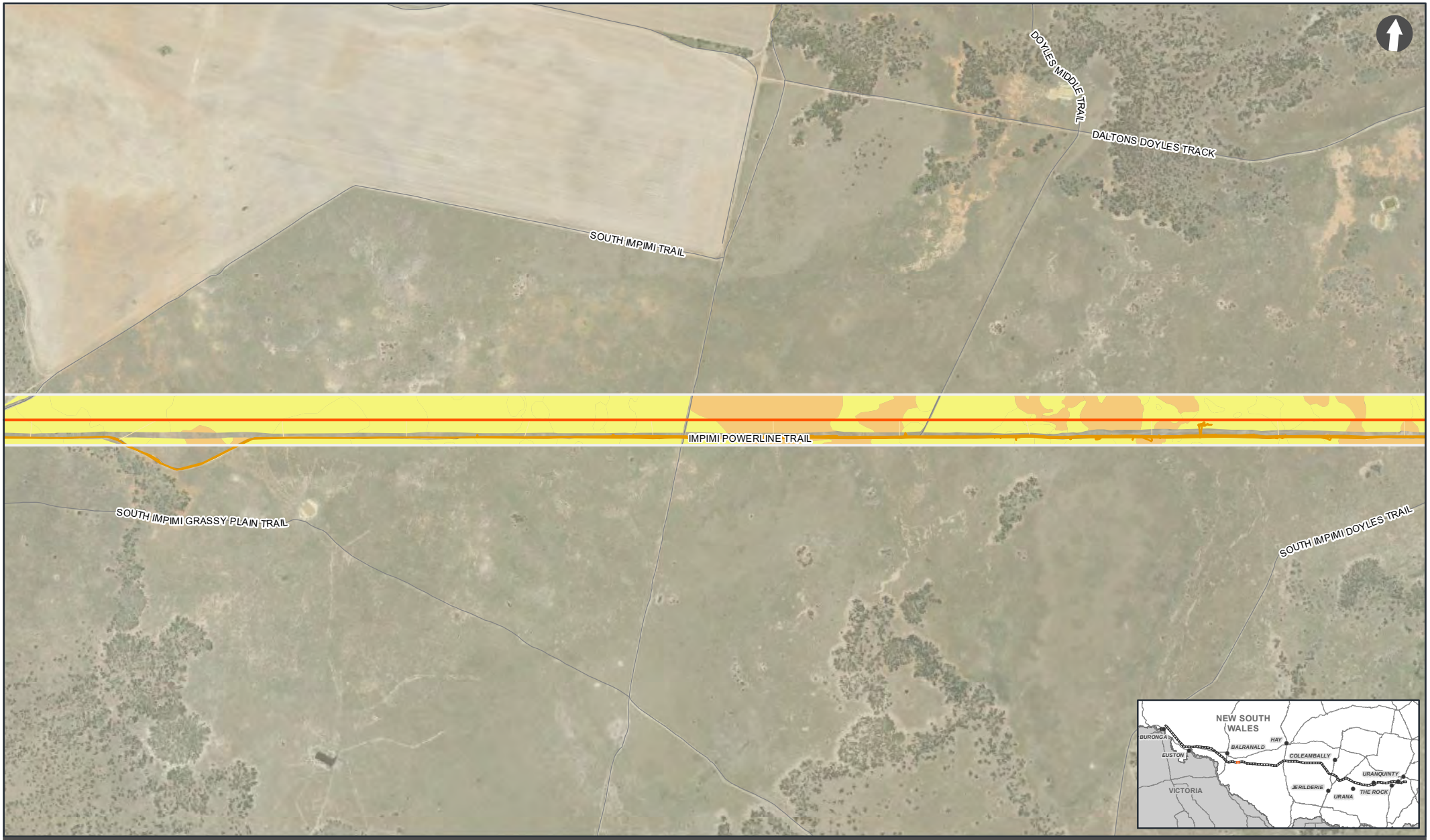
Fauna Stratification
- Arid woodland/shrublands
- Chenopod shrublands
- Riverine
- Wetlands

BDAR - Figure C-6

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure C-6

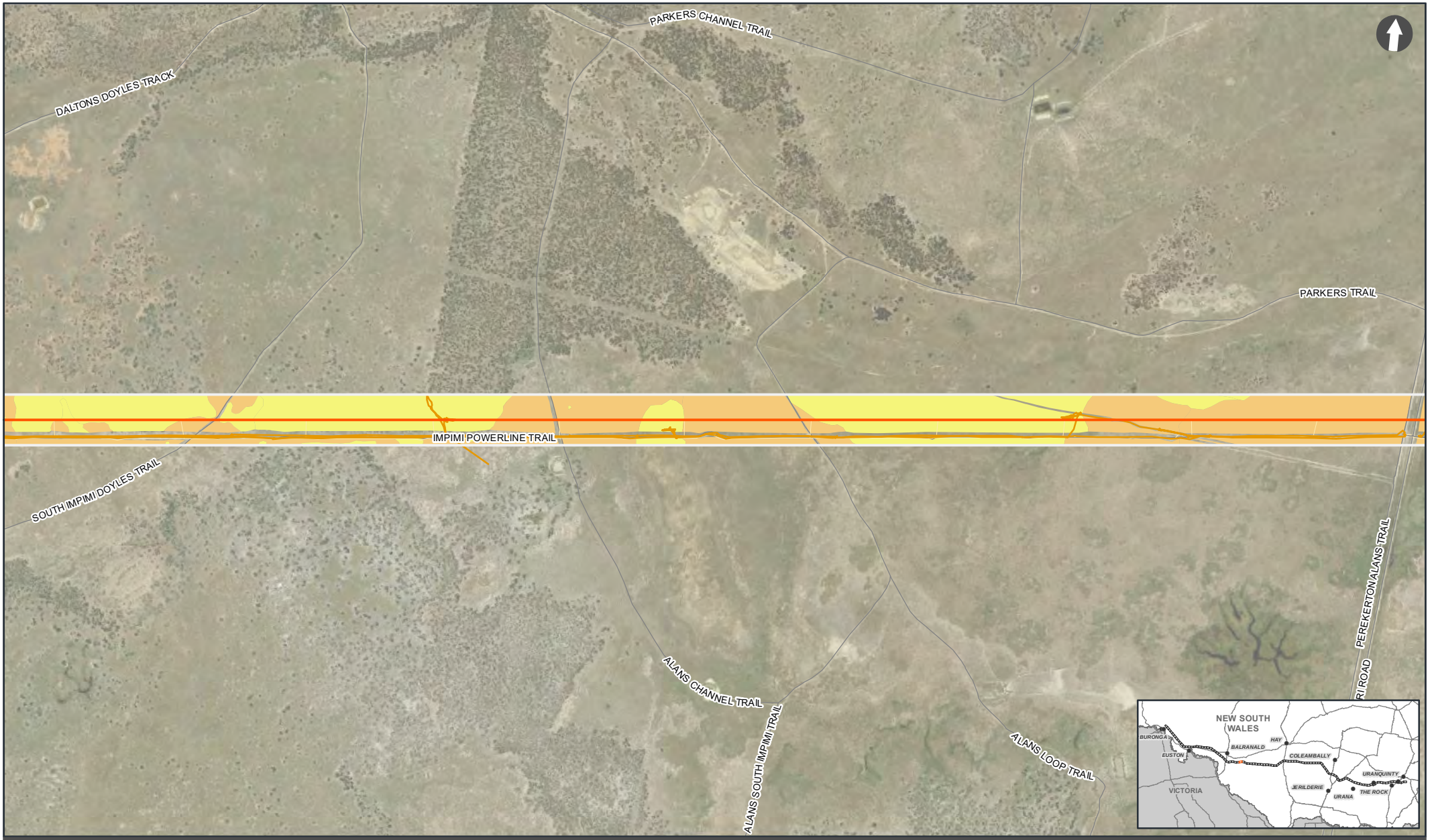
Threatened Fauna
Field Survey Effort

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect

Fauna Stratification
- Arid woodland/shrublands
- Chenopod shrublands

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect

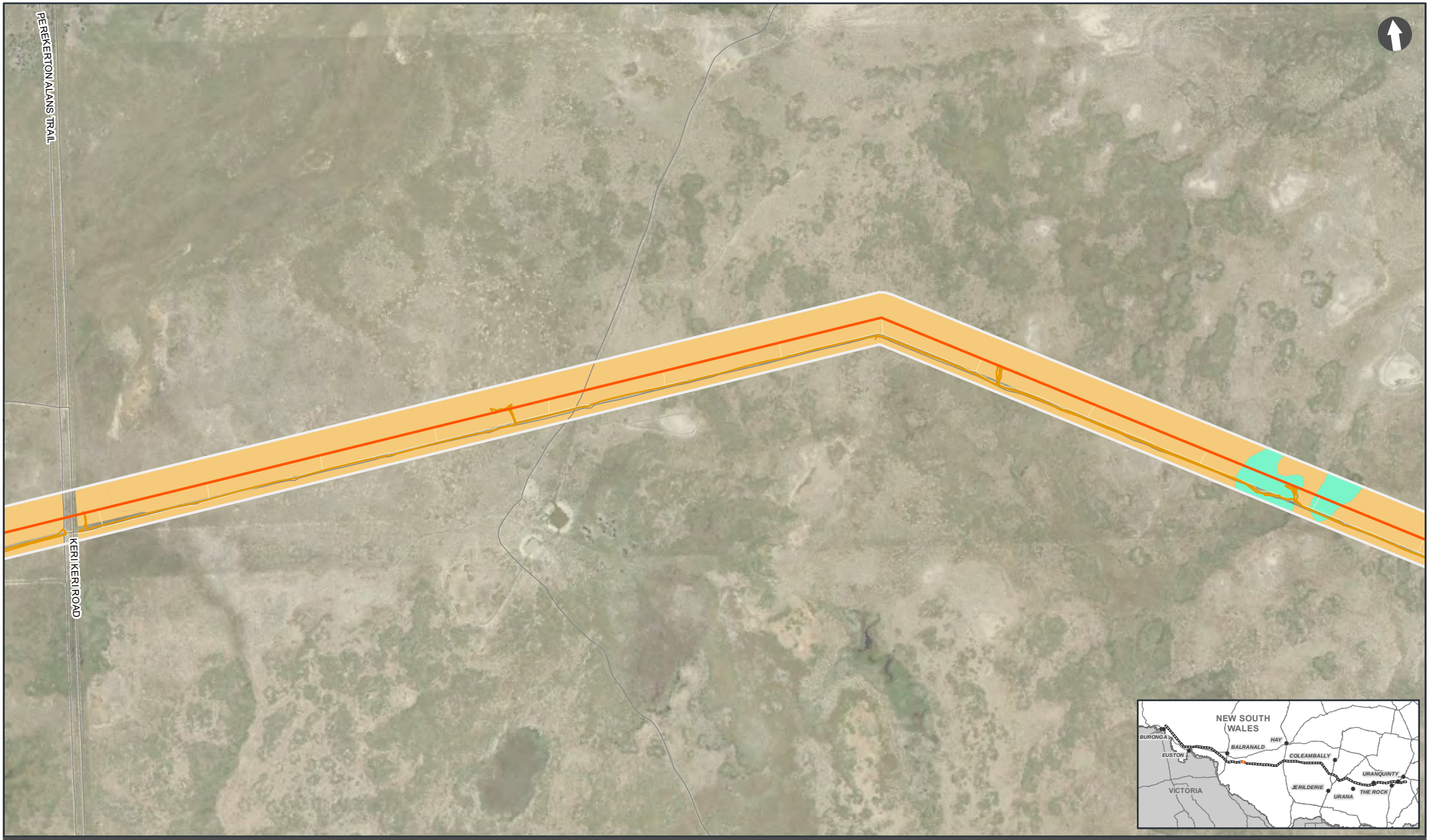
Fauna Stratification
- Arid woodland/shrublands
- Chenopod shrublands

BDAR - Figure C-6e

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-6f

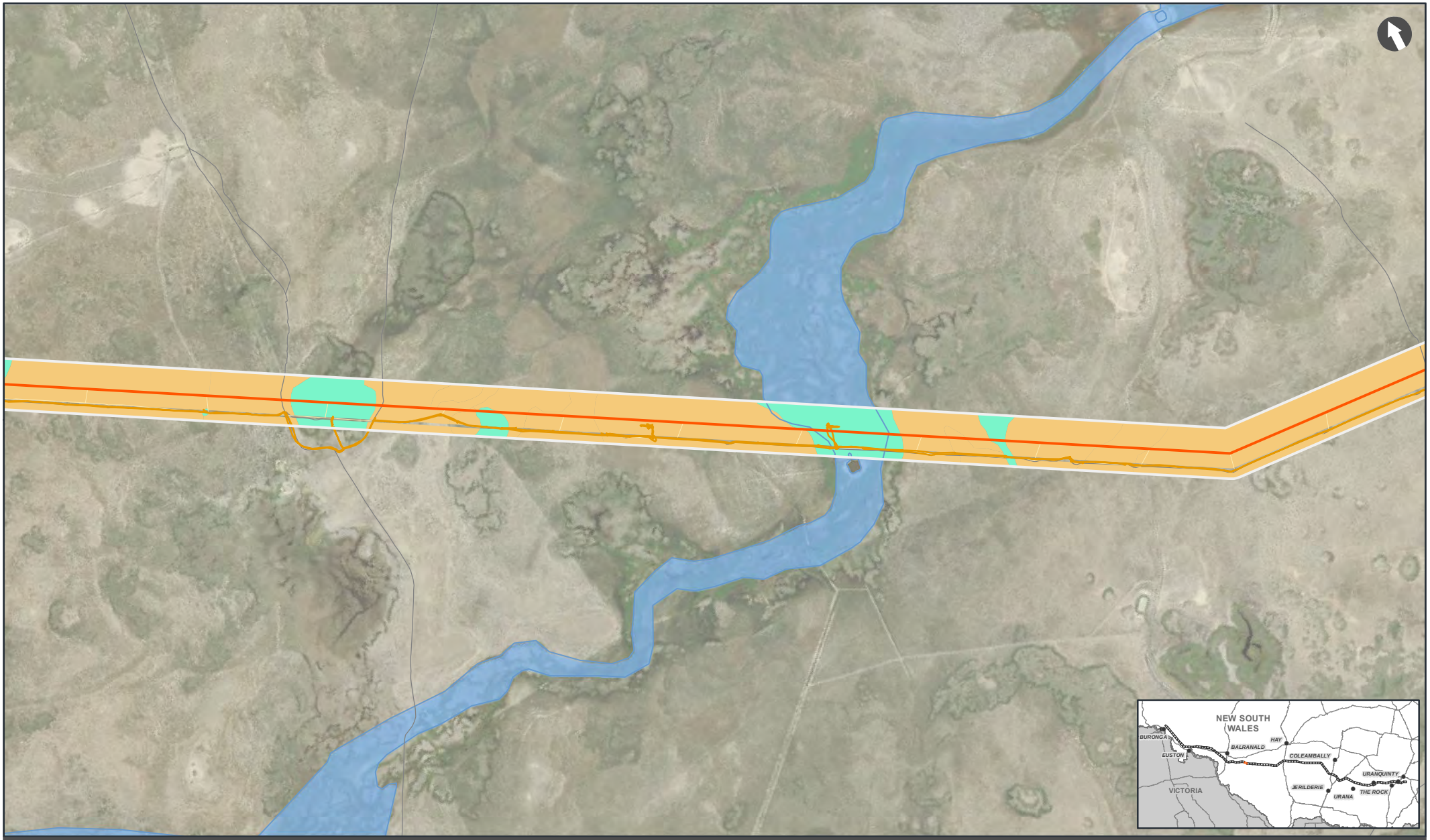
Threatened Fauna
Field Survey Effort

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect

Fauna Stratification
- Chenopod shrublands
- Wetlands

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect

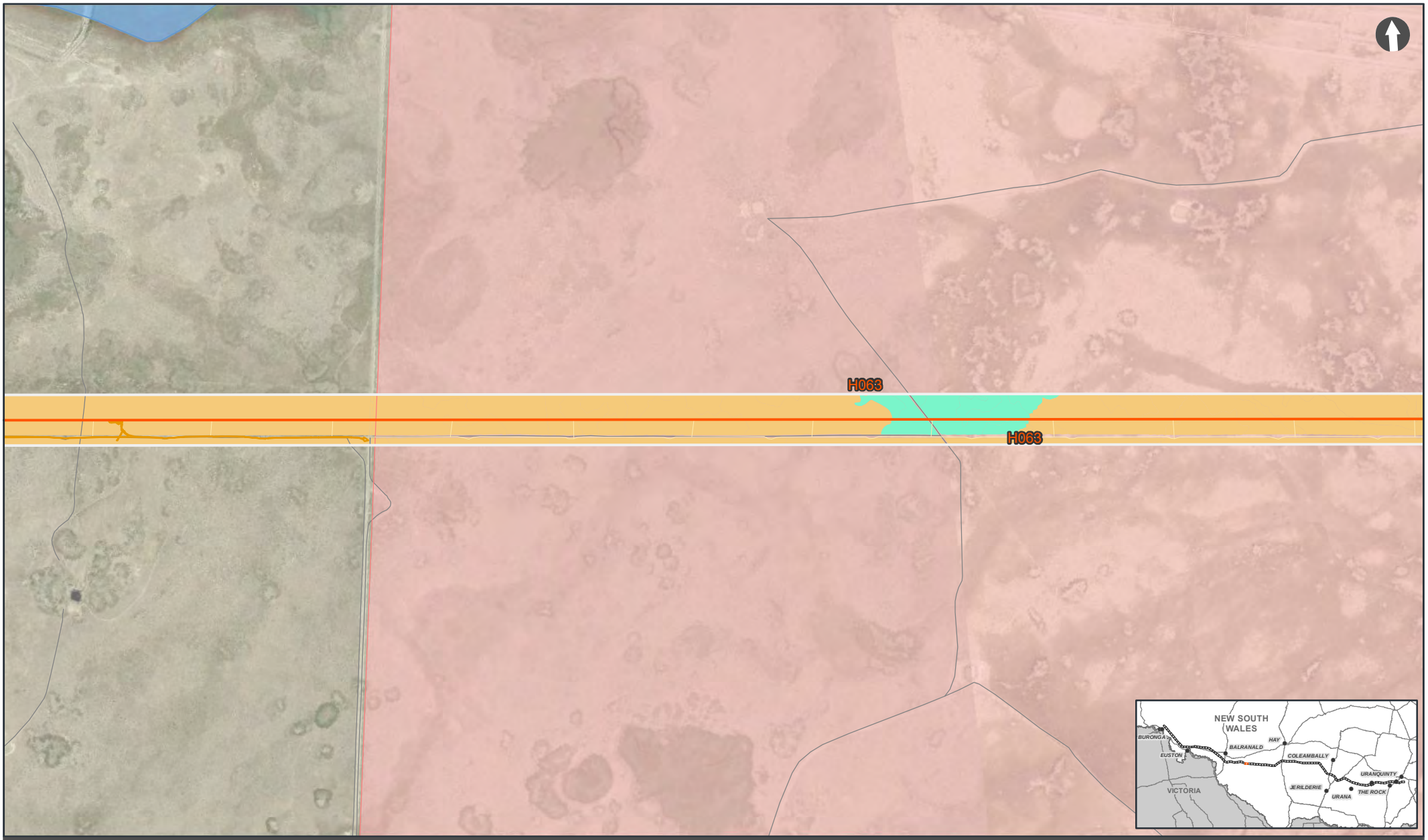
Fauna Stratification
- Chenopod shrublands
- Wetlands

BDAR - Figure C-6g

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Holdings - No Access
- Fauna Survey Transect

Fauna Stratification

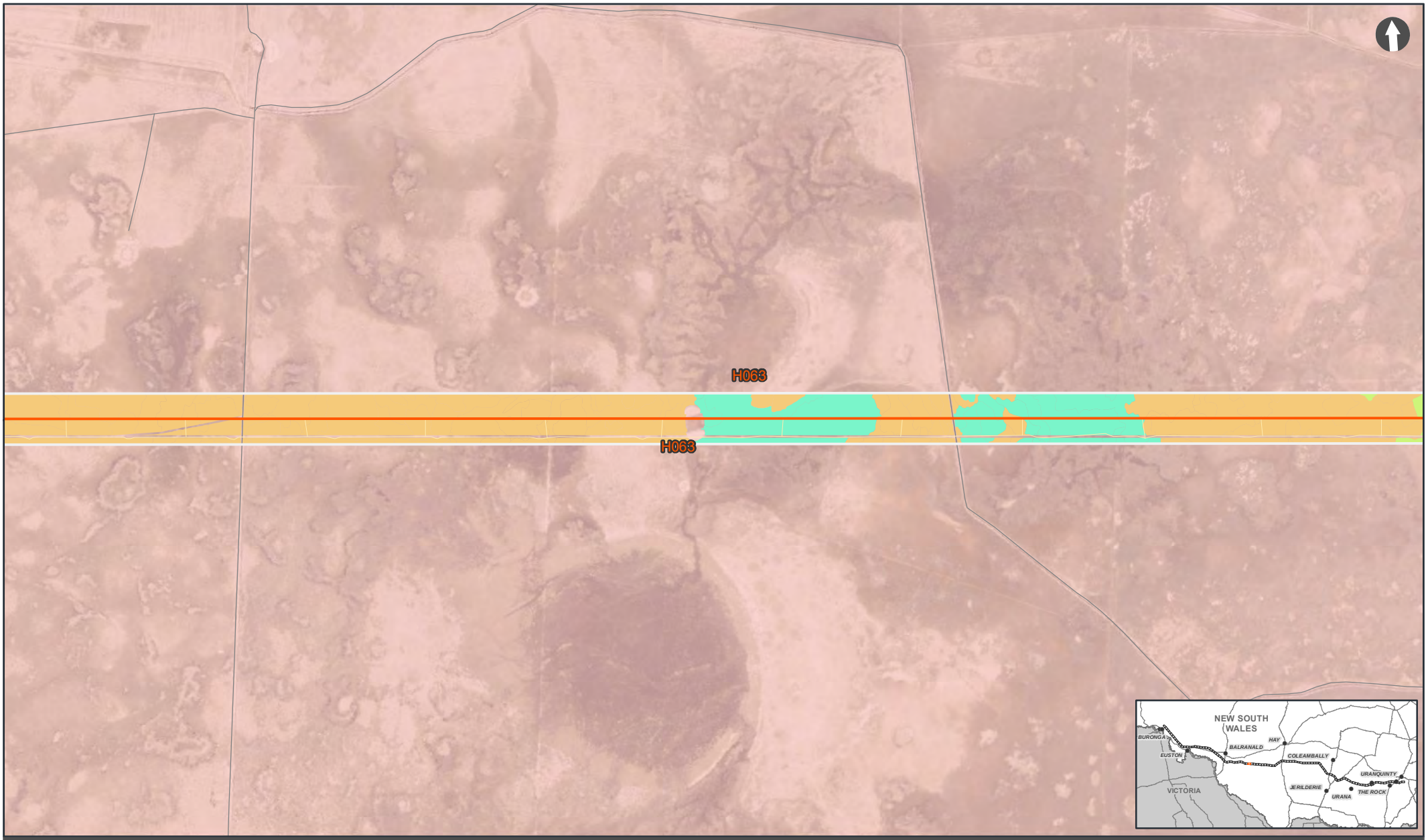
- Chenopod shrublands
- Wetlands

BDAR - Figure C-6h

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Holdings - No Access

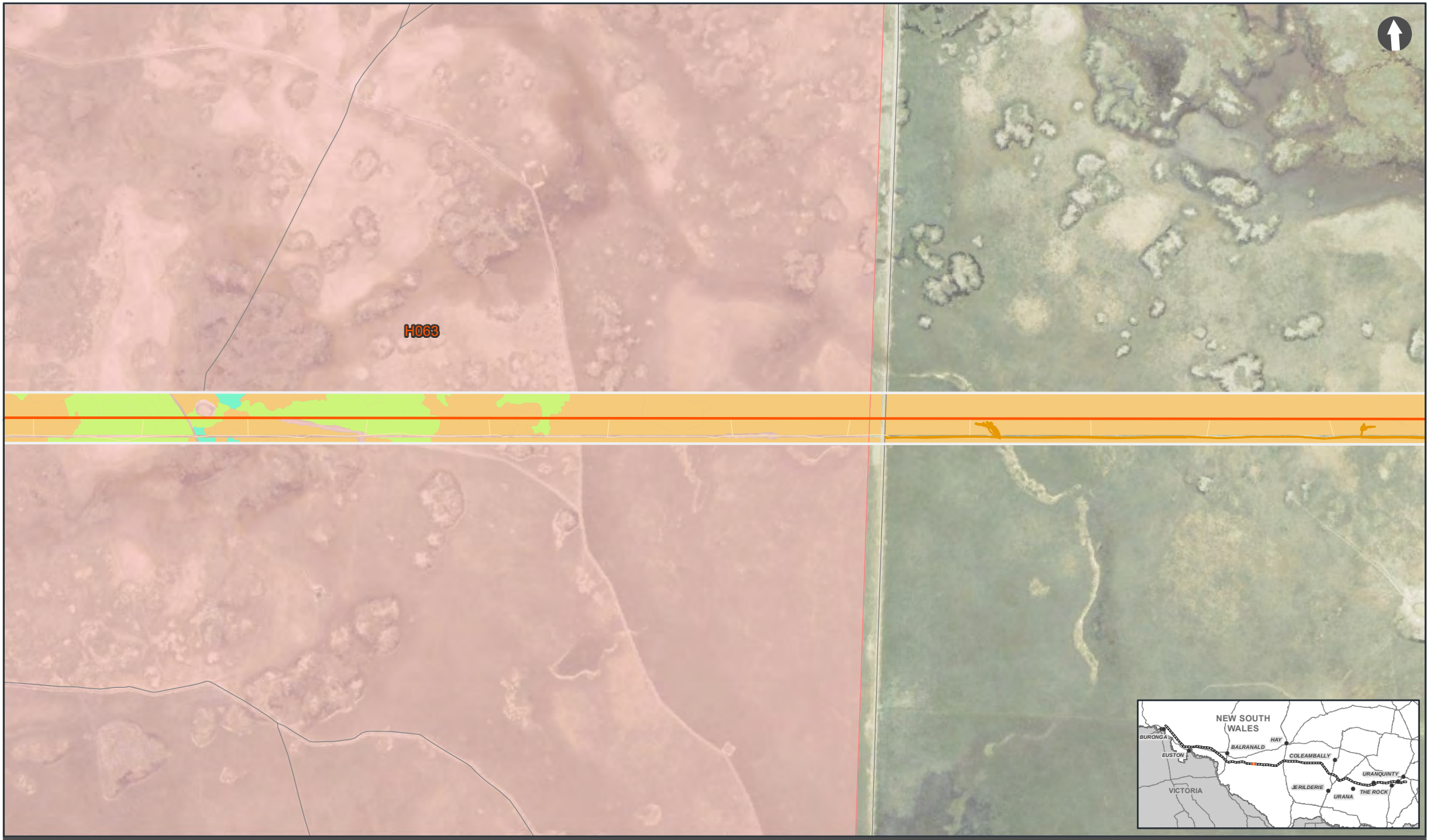
Fauna Stratification
- Chenopod shrublands
- Grasslands
- Wetlands

BDAR - Figure C-6

Threatened Fauna
Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Holdings - No Access
- Fauna Survey Transect

Fauna Stratification
- Chenopod shrublands
- Grasslands
- Wetlands

BDAR - Figure C-6

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect

Fauna Stratification
- Chenopod shrublands

BDAR - Figure C-6i

Threatened Fauna
Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect

Fauna Stratification
- Chenopod shrublands
- Wetlands

BDAR - Figure C-6

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect

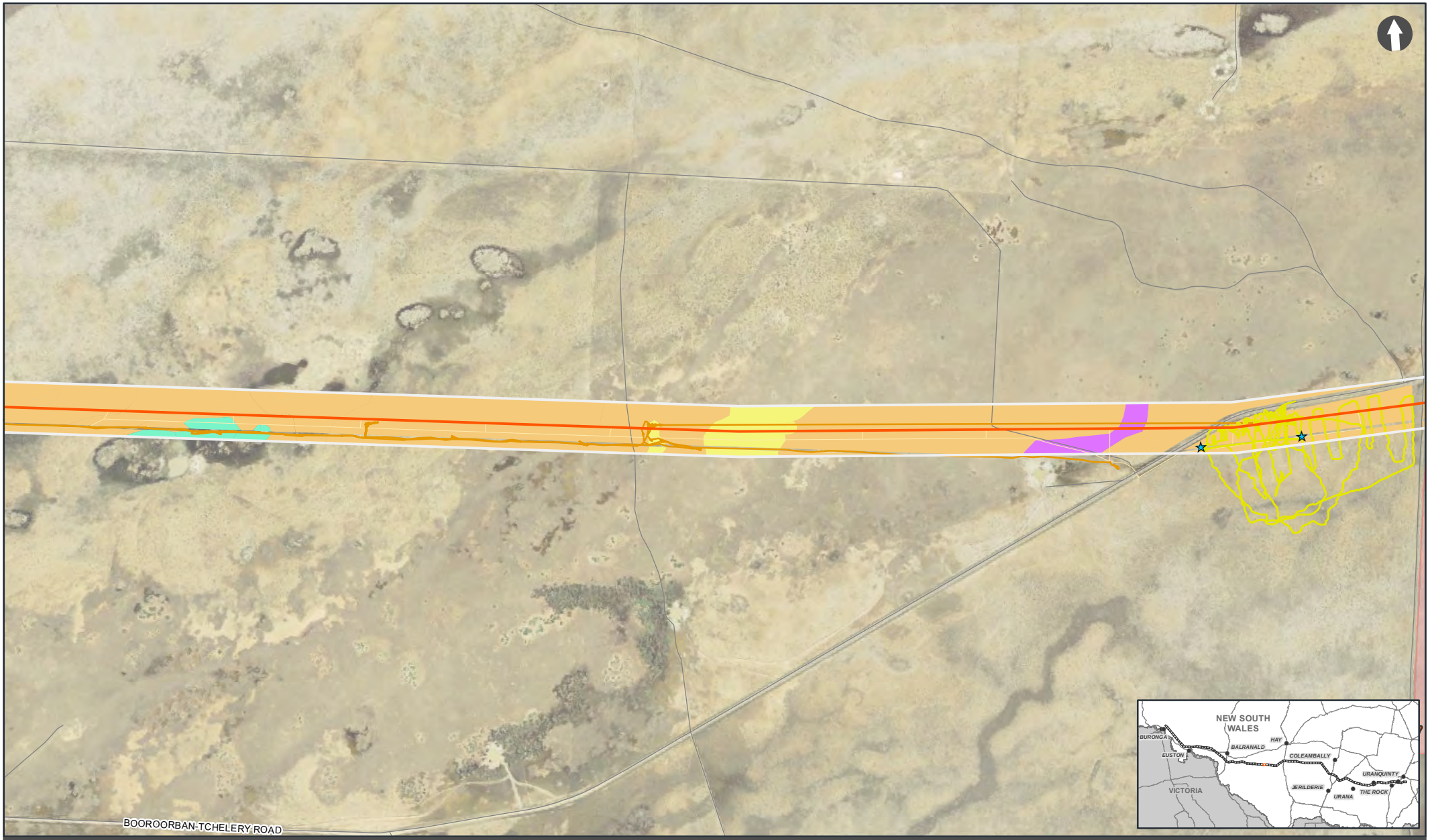
Fauna Stratification
- Chenopod shrublands

BDAR - Figure C-6j

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-6k

Threatened Fauna Field Survey Effort

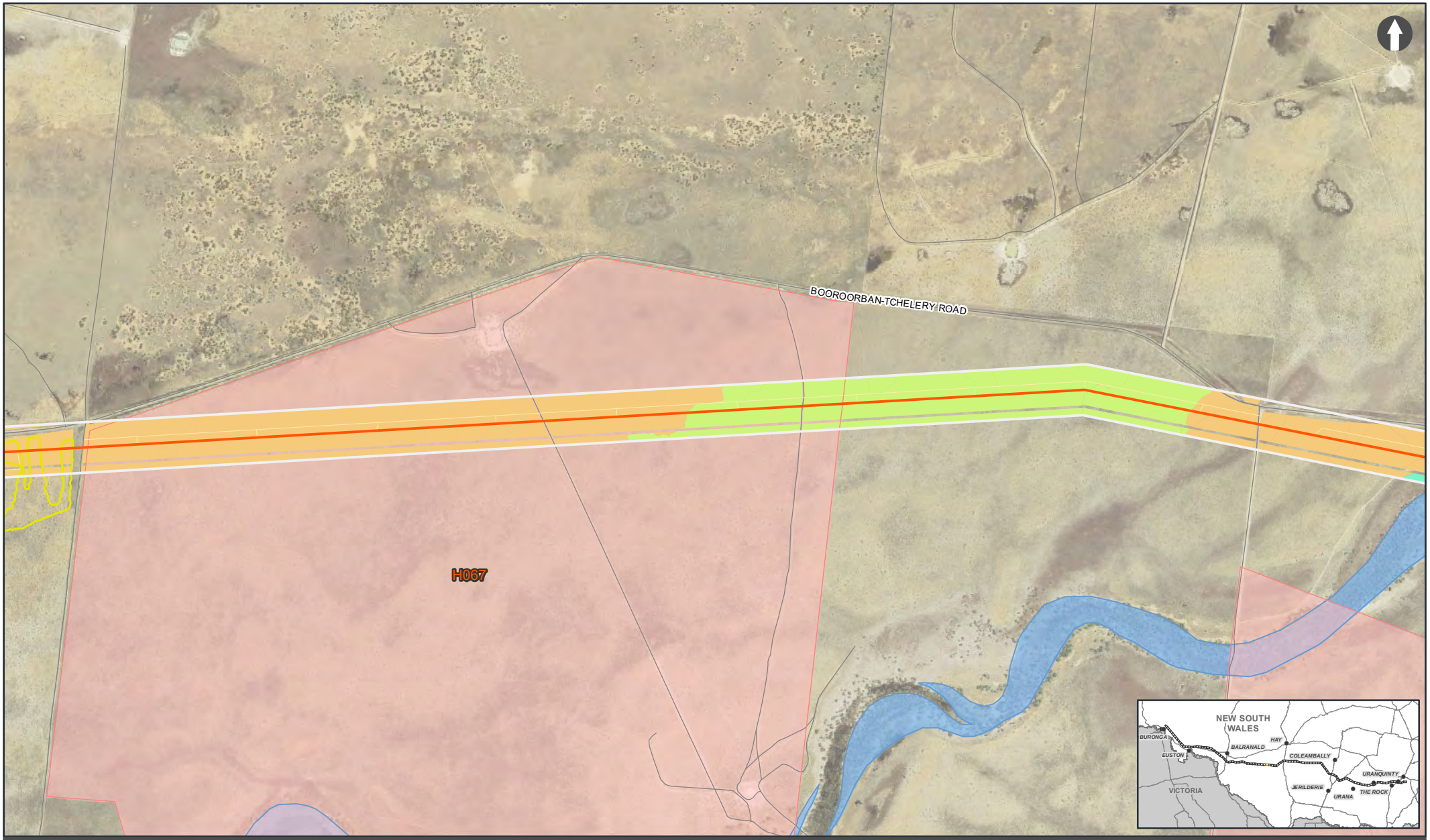
Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Holdings - No Access
- Fauna Survey Transect
- Plains Wanderer Survey

Fauna Stratification
- Arid woodland/shrublands
- Chenopod shrublands
- Riverine
- Wetlands

Fauna Survey Effort
- Plains Wanderer Survey

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Holdings - No Access
- Plains Wanderer Survey

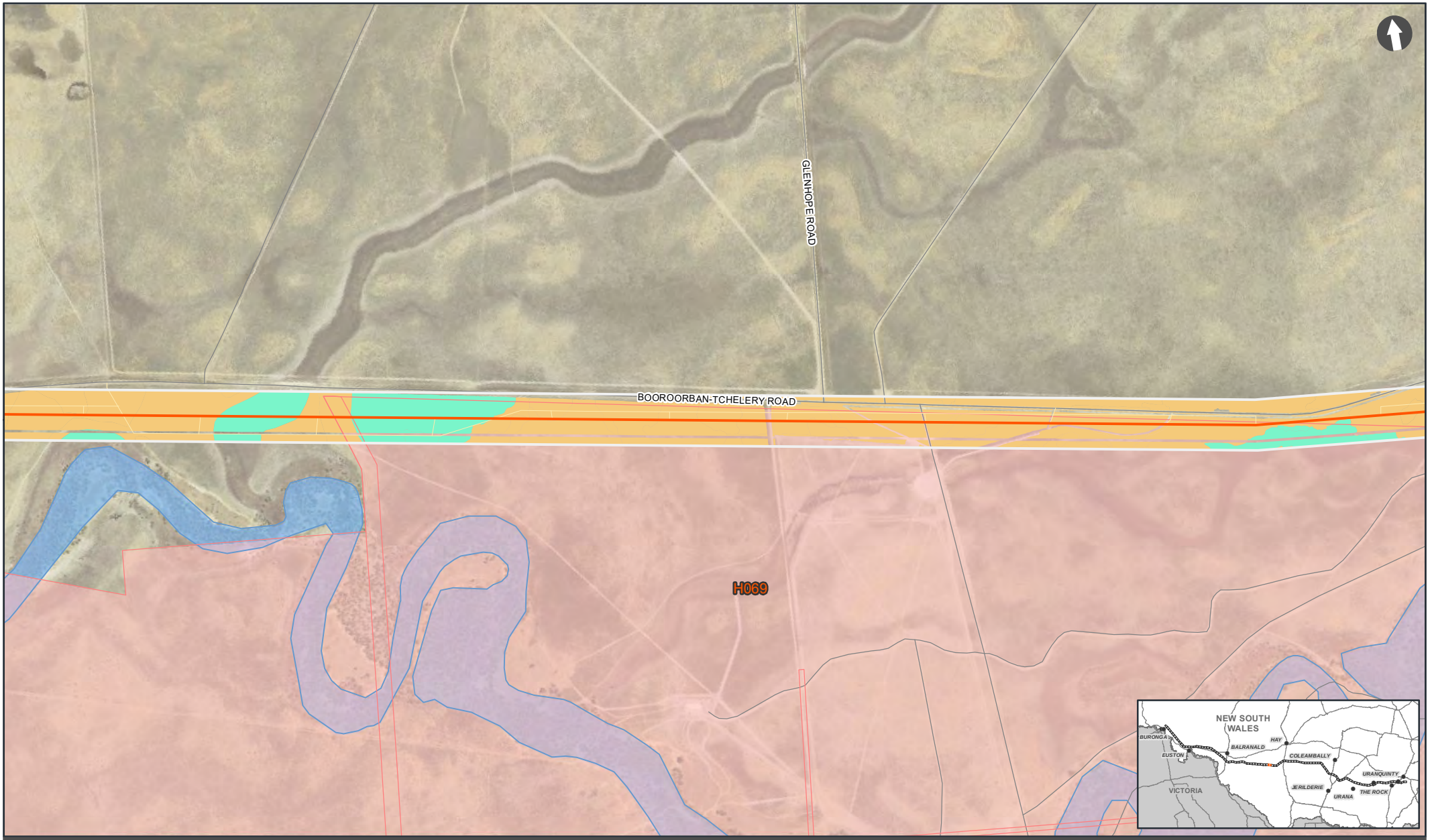
Fauna Stratification
- Chenopod shrublands
- Grasslands
- Wetlands

BDAR - Figure C-6l

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-6

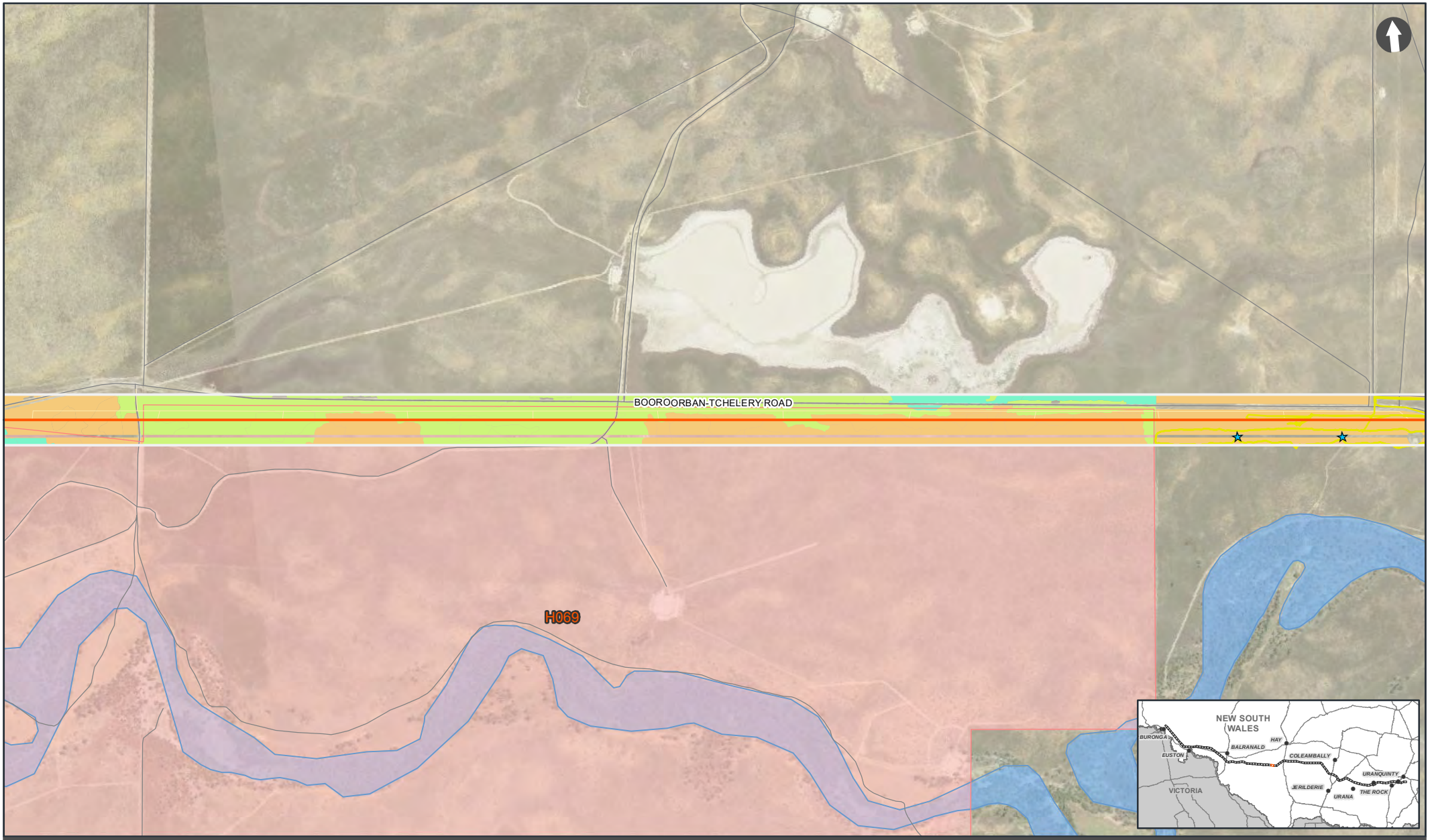
Threatened Fauna
Field Survey Effort

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Holdings - No Access

Fauna Stratification
- Chenopod shrublands
- Wetlands

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Holdings - No Access
- Plains Wanderer Survey

Fauna Stratification
- Chenopod shrublands
- Grasslands
- Wetlands

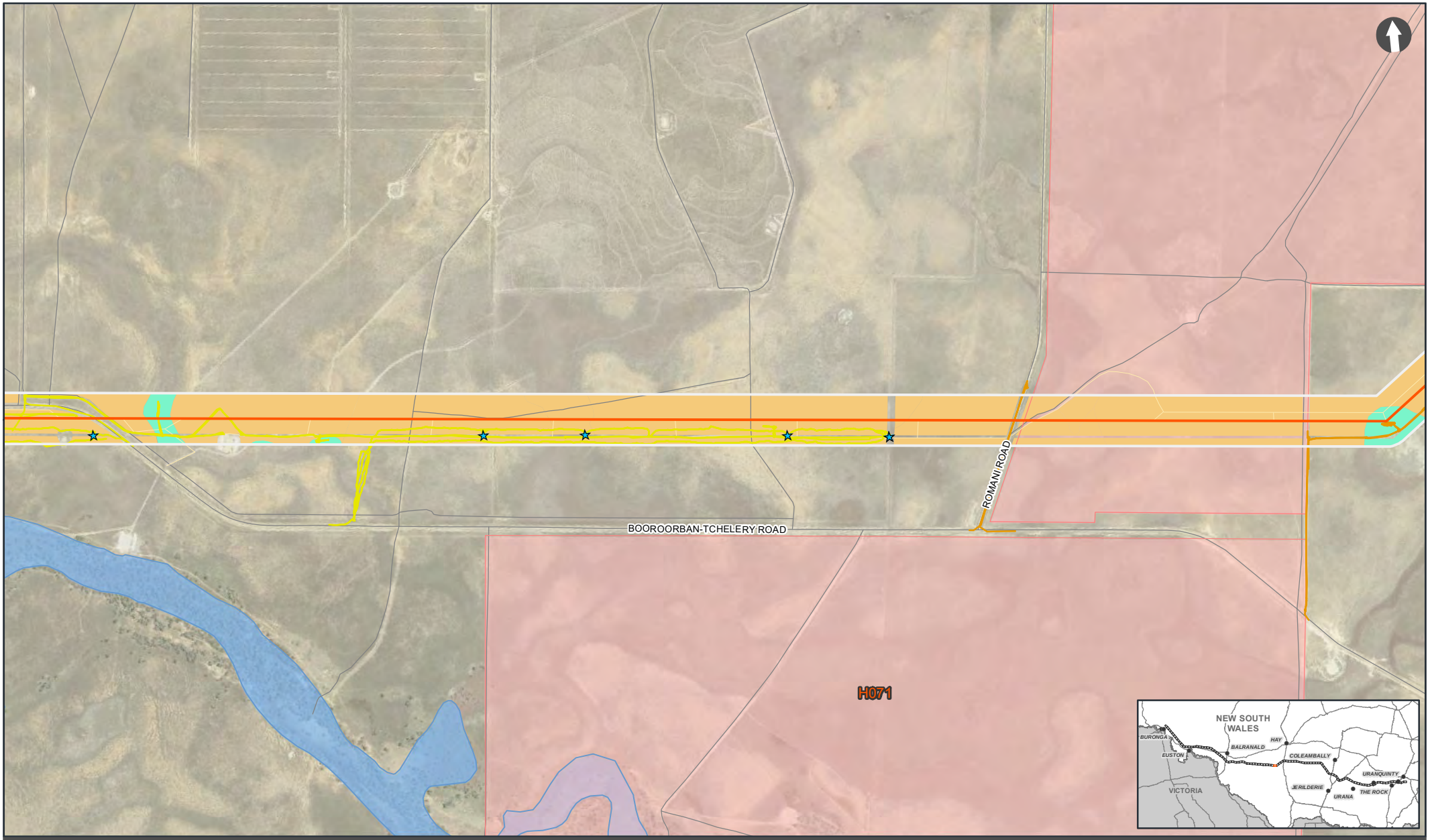
Fauna Survey Effort
- Plains Wanderer Survey

BDAR - Figure C-6

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-6m

Threatened Fauna Field Survey Effort

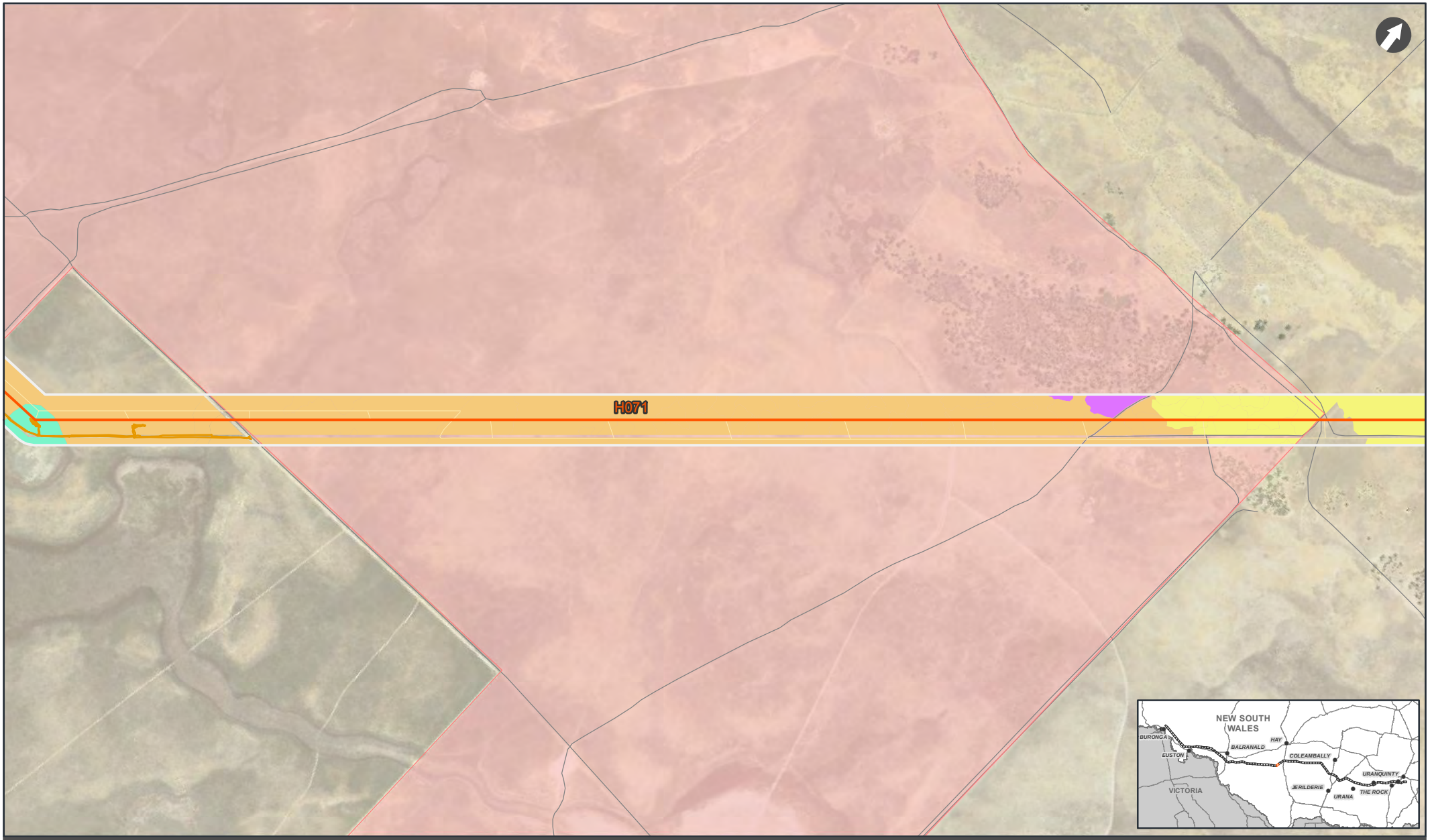
Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Holdings - No Access
- Fauna Survey Transect
- Plains Wanderer Survey

Fauna Stratification
- Chenopod shrublands
- Wetlands

Fauna Survey Effort
- Plains Wanderer Survey

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Holdings - No Access
- Fauna Survey Transect

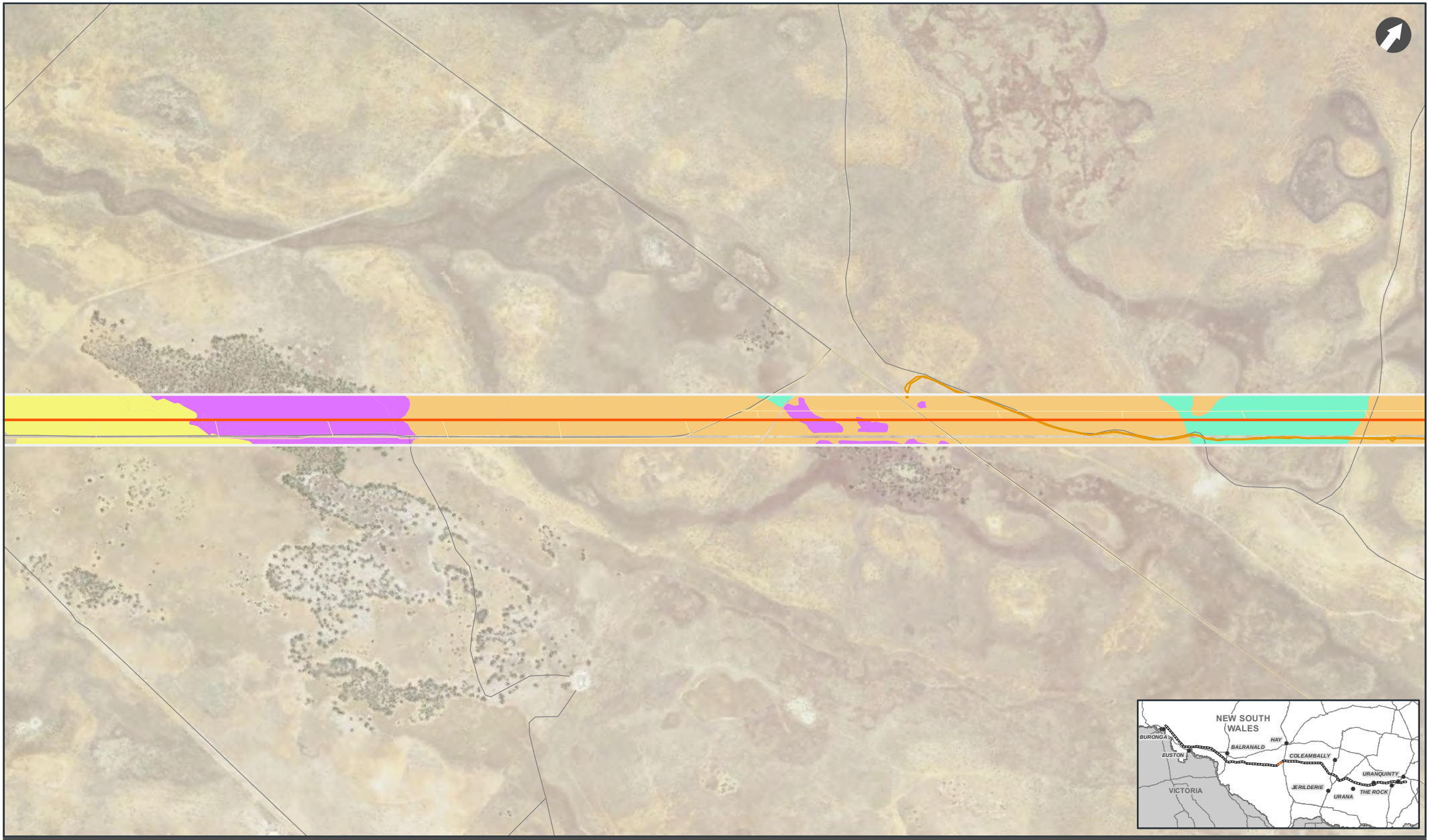
Fauna Stratification
- Arid woodland/shrublands
- Chenopod shrublands
- Riverine
- Wetlands

BDAR - Figure C-6

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect

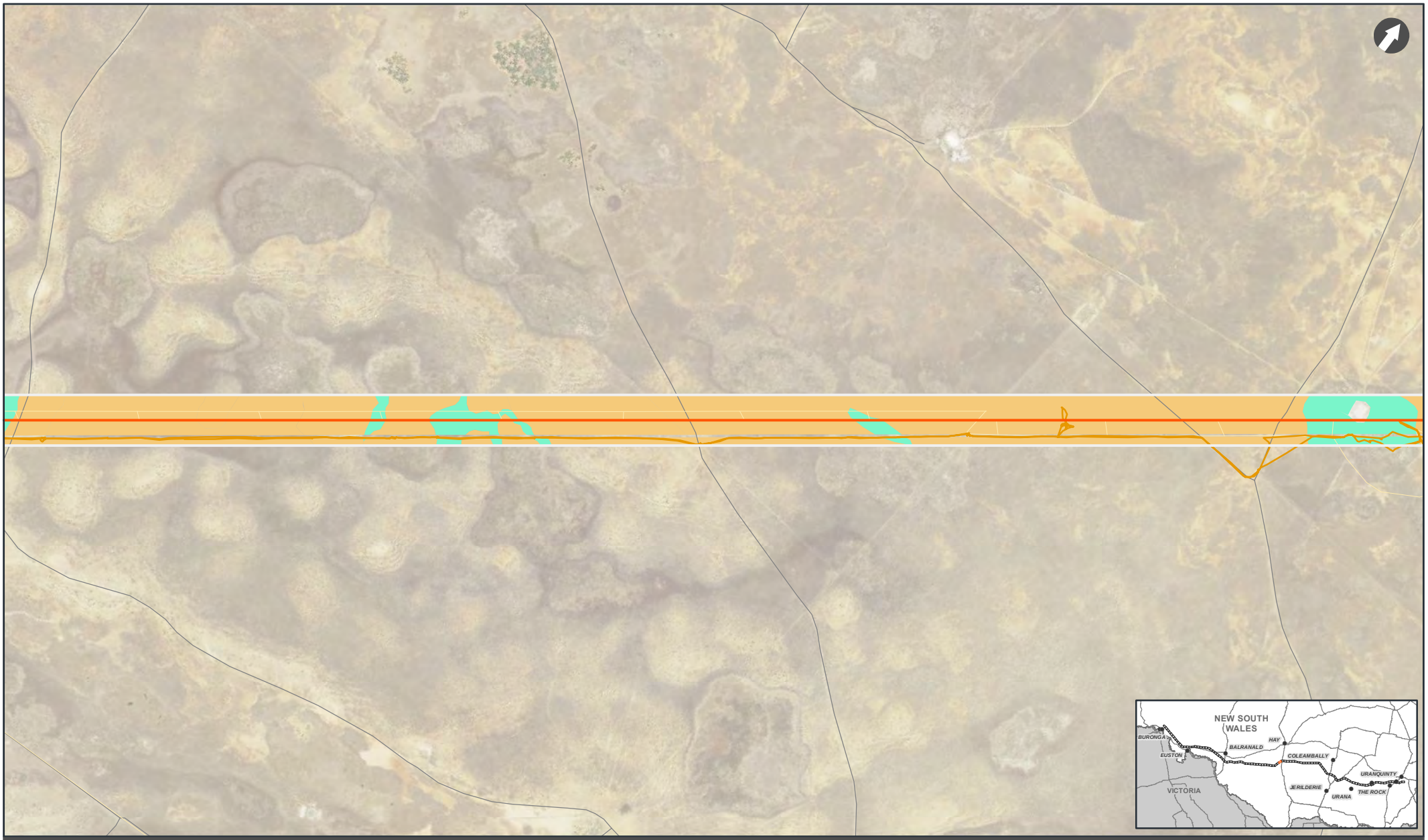
Fauna Stratification
- Arid woodland/shrublands
- Chenopod shrublands
- Riverine
- Wetlands

BDAR - Figure C-6

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect

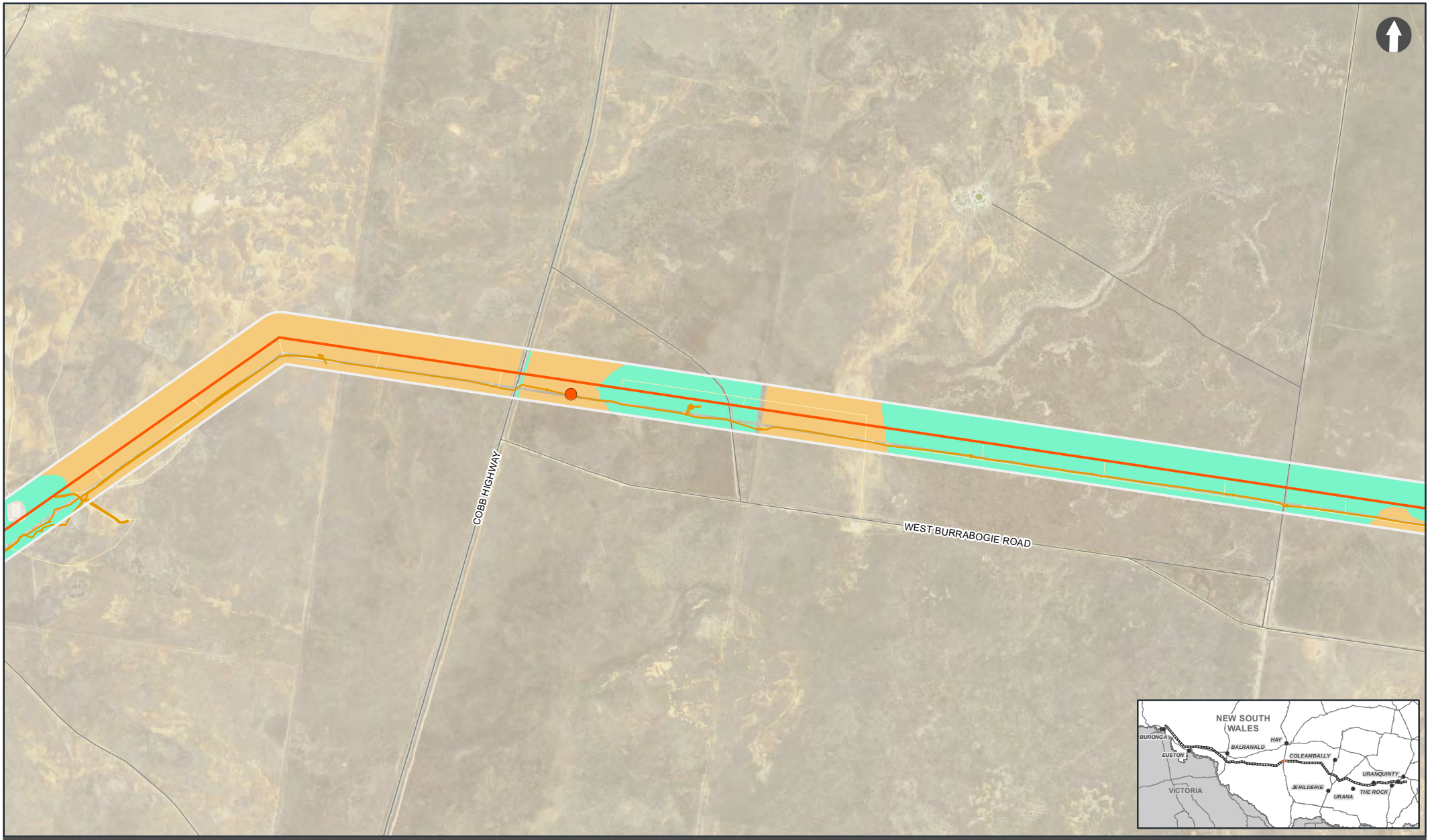
Fauna Stratification
- Chenopod shrublands
- Wetlands

BDAR - Figure C-6n

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect

Fauna Stratification
- Chenopod shrublands
- Wetlands

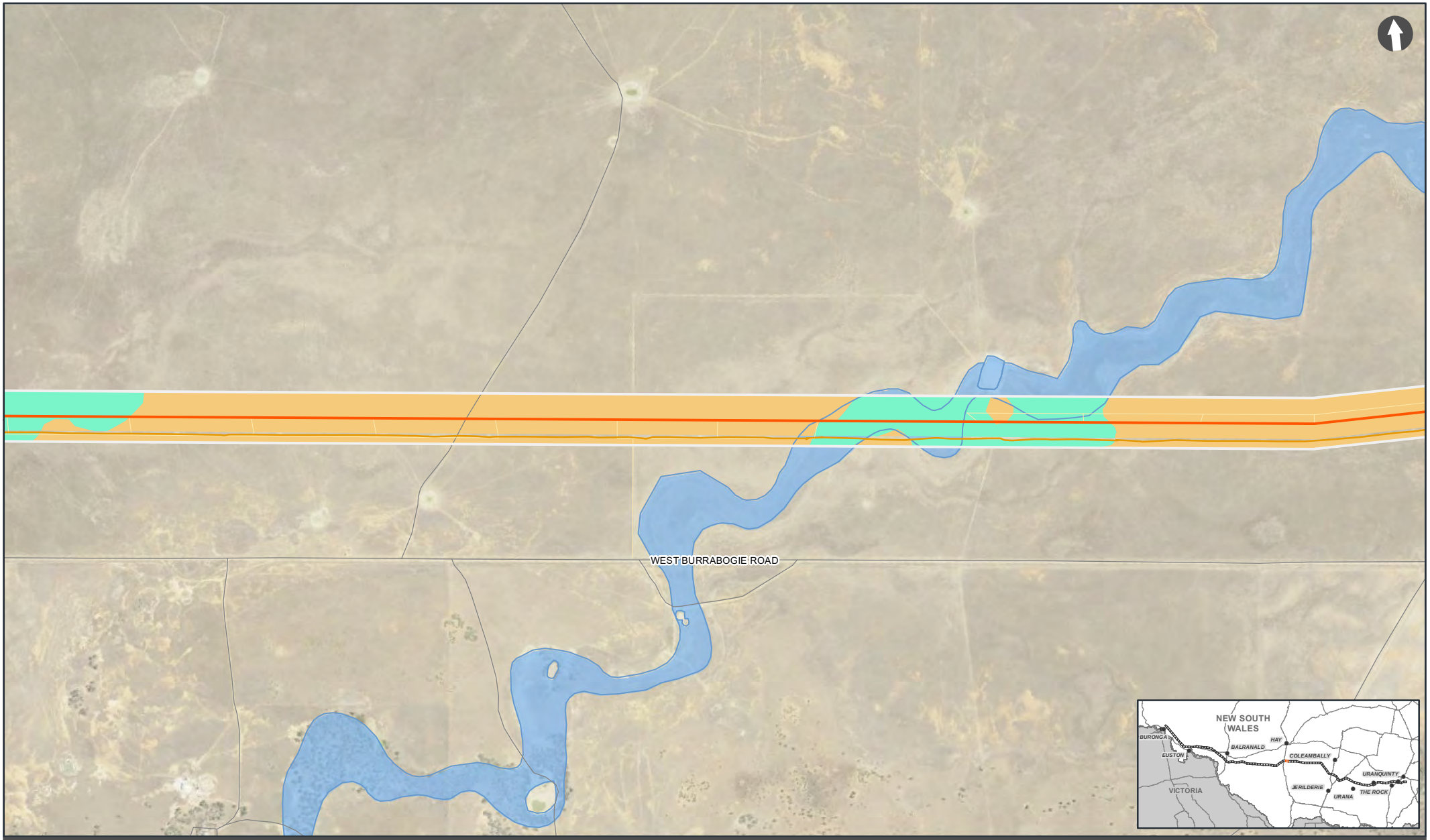
Fauna Survey Effort
- Bird Survey

BDAR - Figure C-6o

Threatened Fauna
Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect

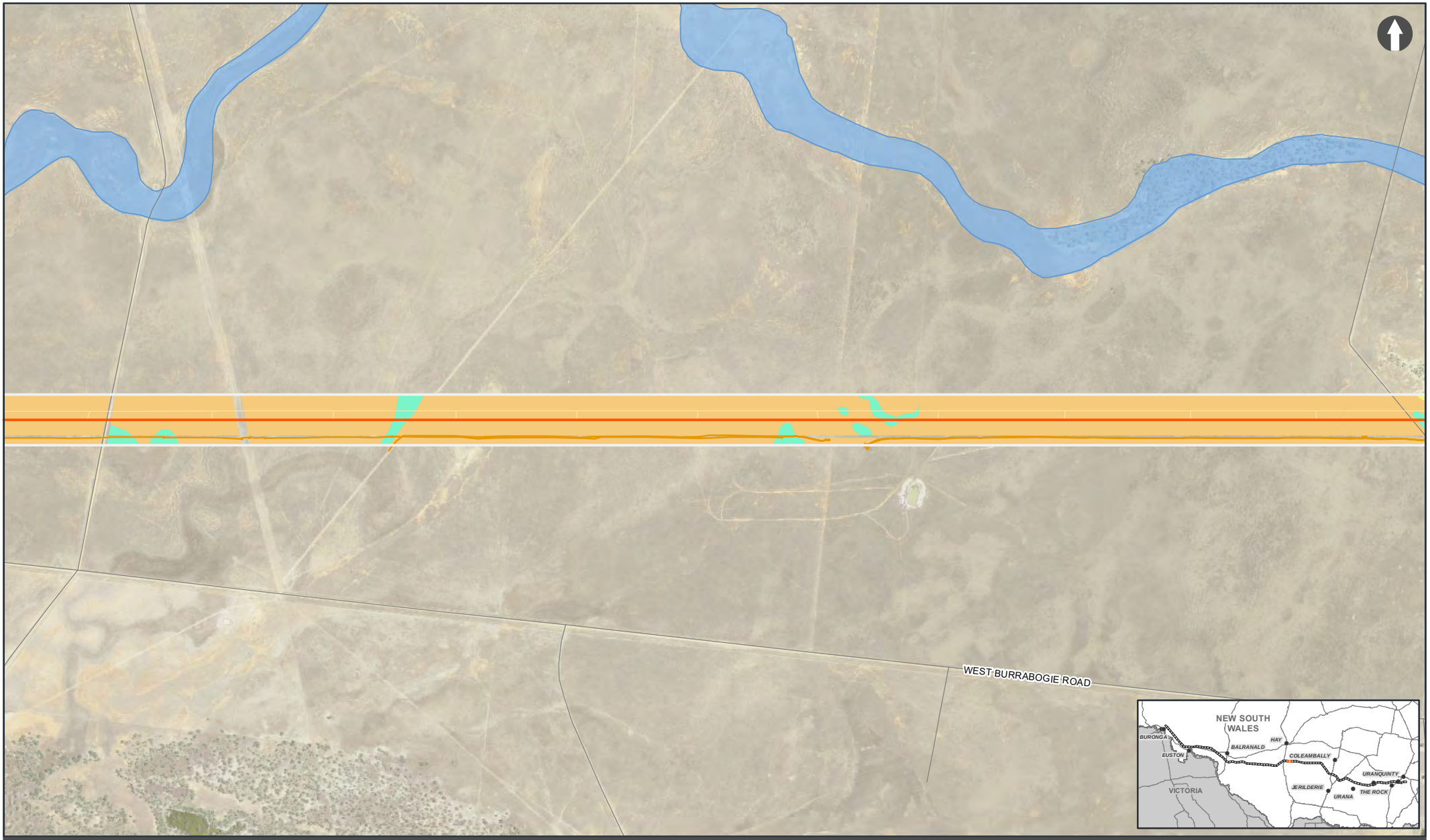
Fauna Stratification
- Chenopod shrublands
- Wetlands

BDAR - Figure C-6p

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect

Fauna Stratification

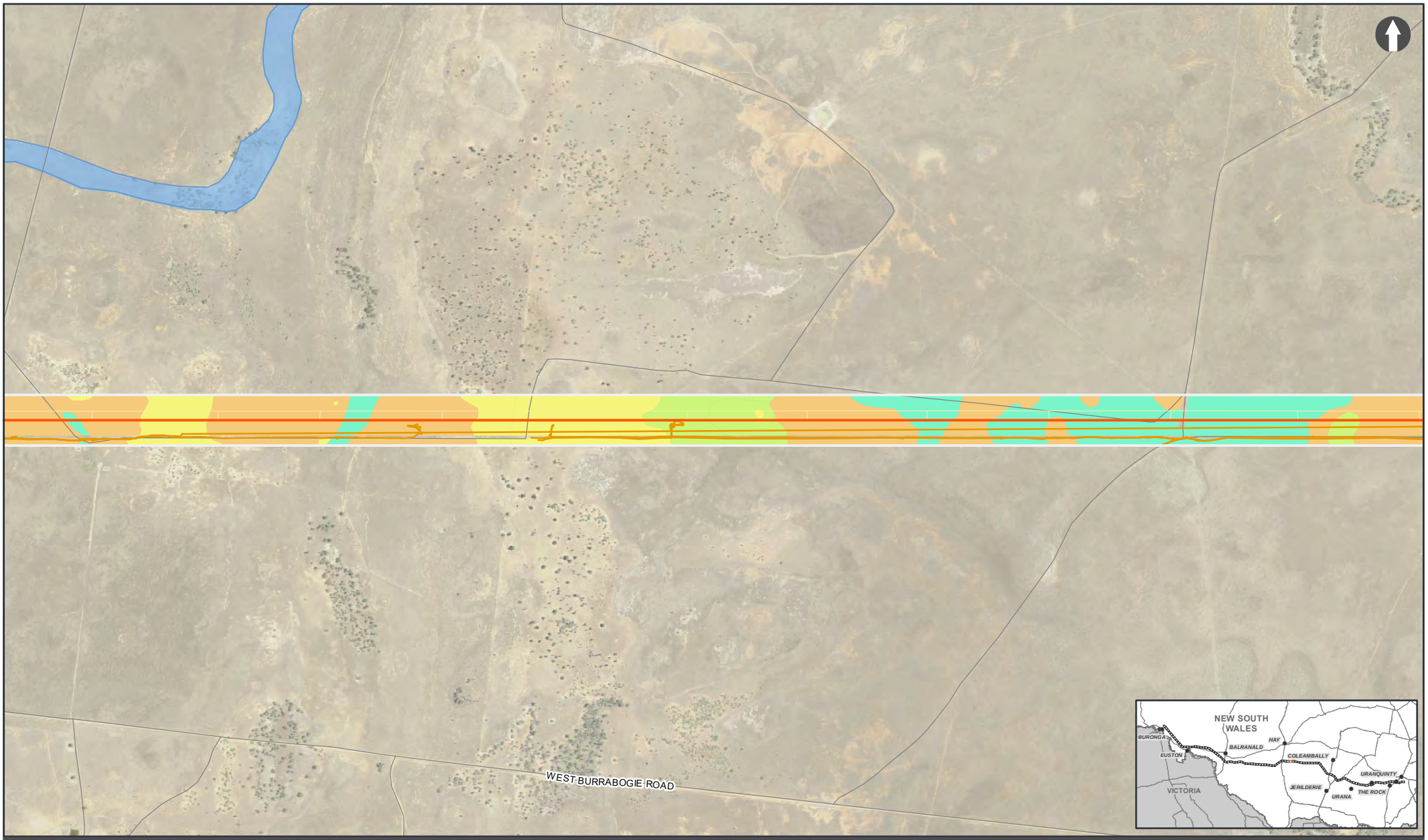
- Arid woodland/shrublands
- Chenopod shrublands
- Wetlands

BDAR - Figure C-6q

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect

Fauna Stratification

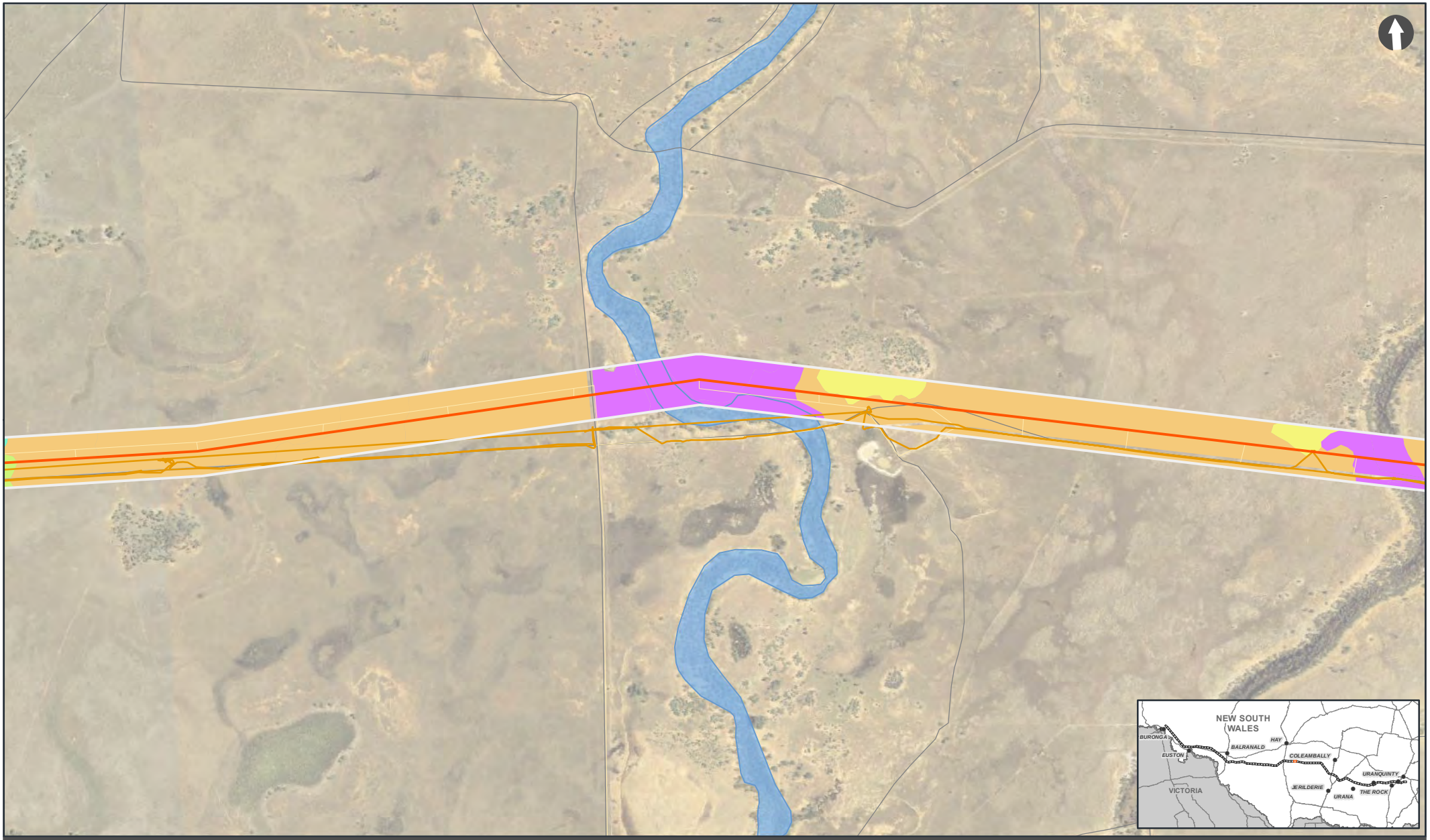
- Arid woodland/shrublands
- Chenopod shrublands
- Grasslands
- Wetlands

BDAR - Figure C-6r

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect

Fauna Stratification

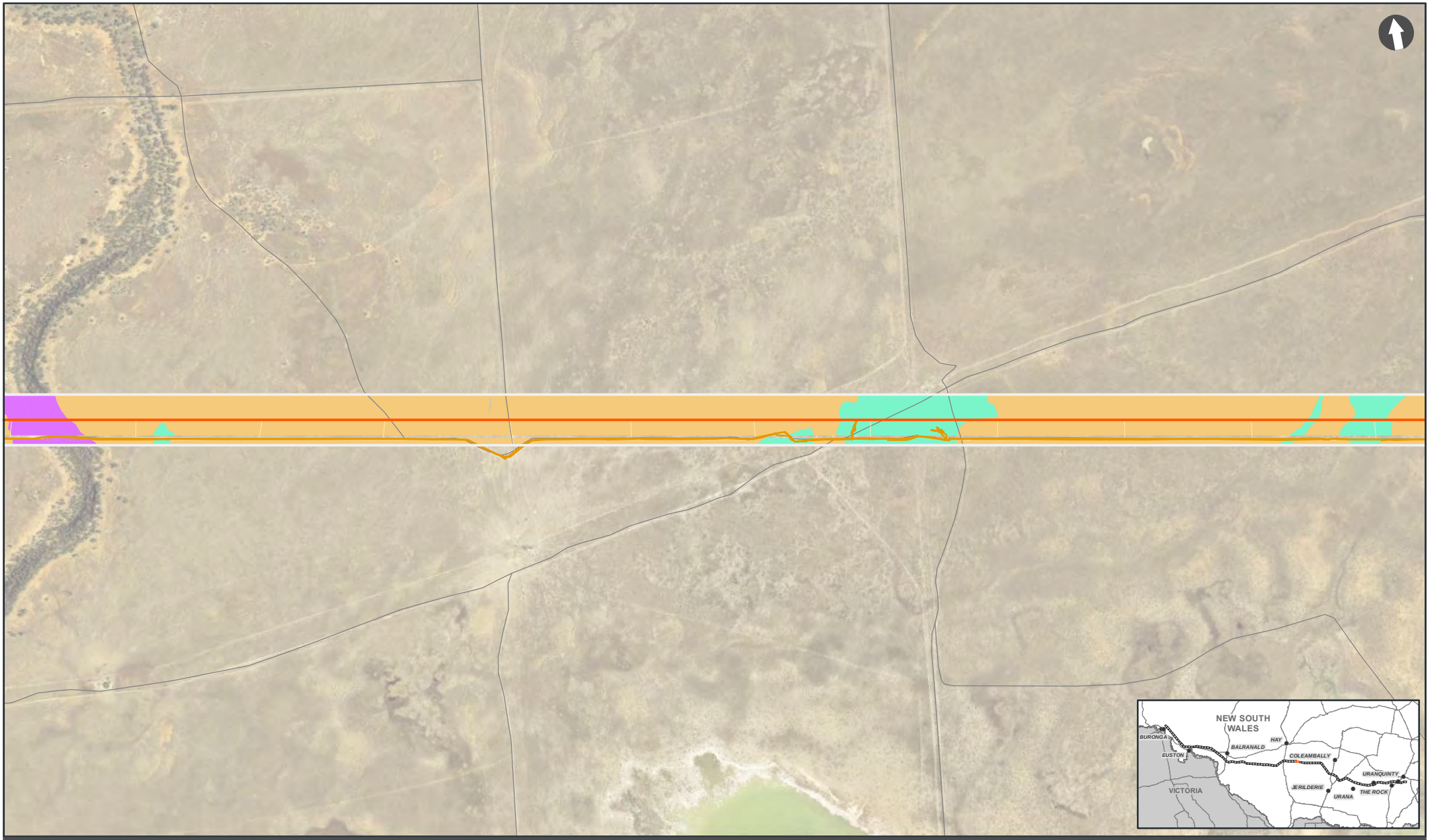
- Arid woodland/shrublands
- Chenopod shrublands
- Grasslands
- Riverine
- Wetlands

BDAR - Figure C-6s

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect

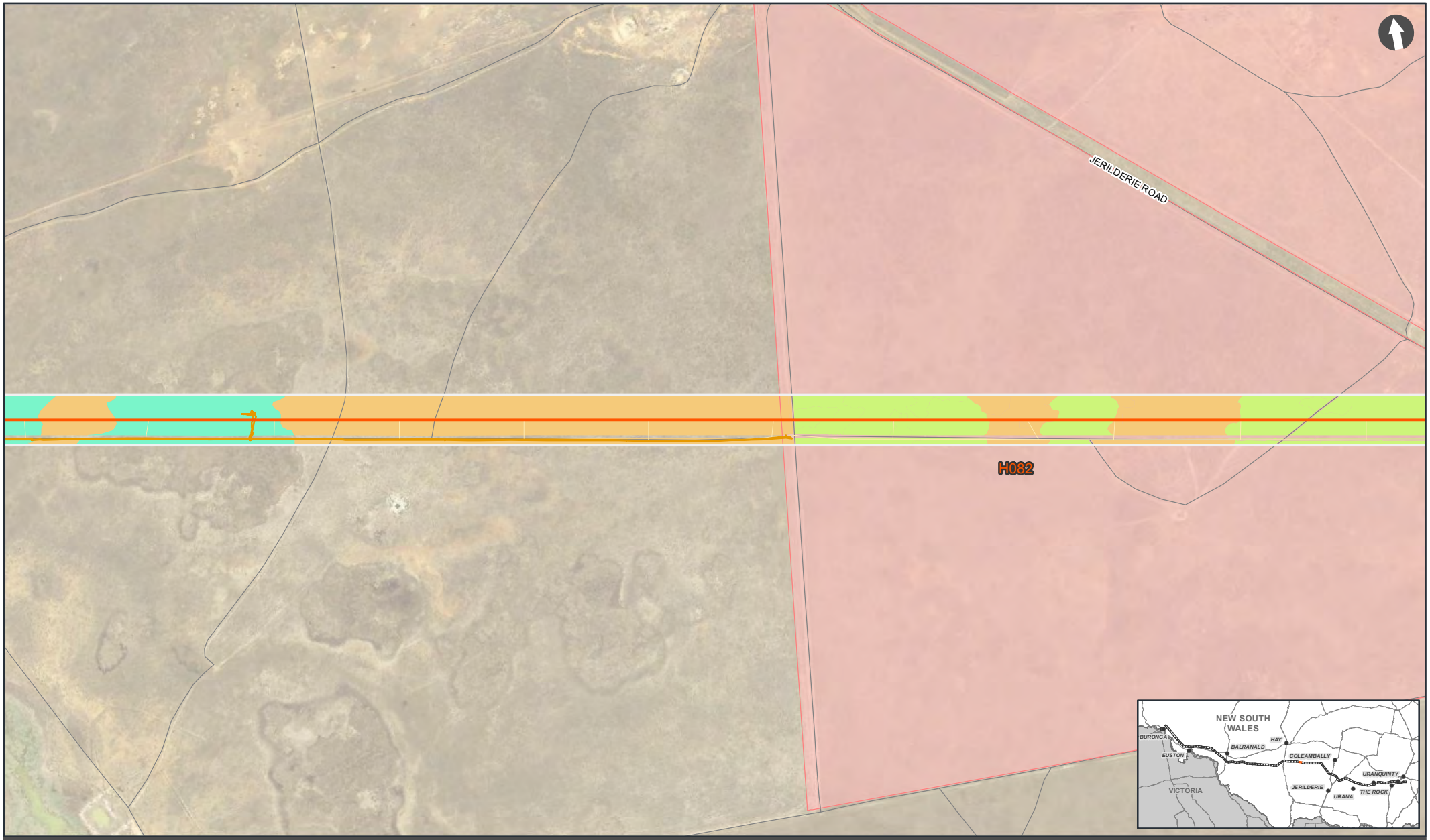
Fauna Stratification
- Chenopod shrublands
- Riverine
- Wetlands

BDAR - Figure C-6t

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Holdings - No Access
- Fauna Survey Transect

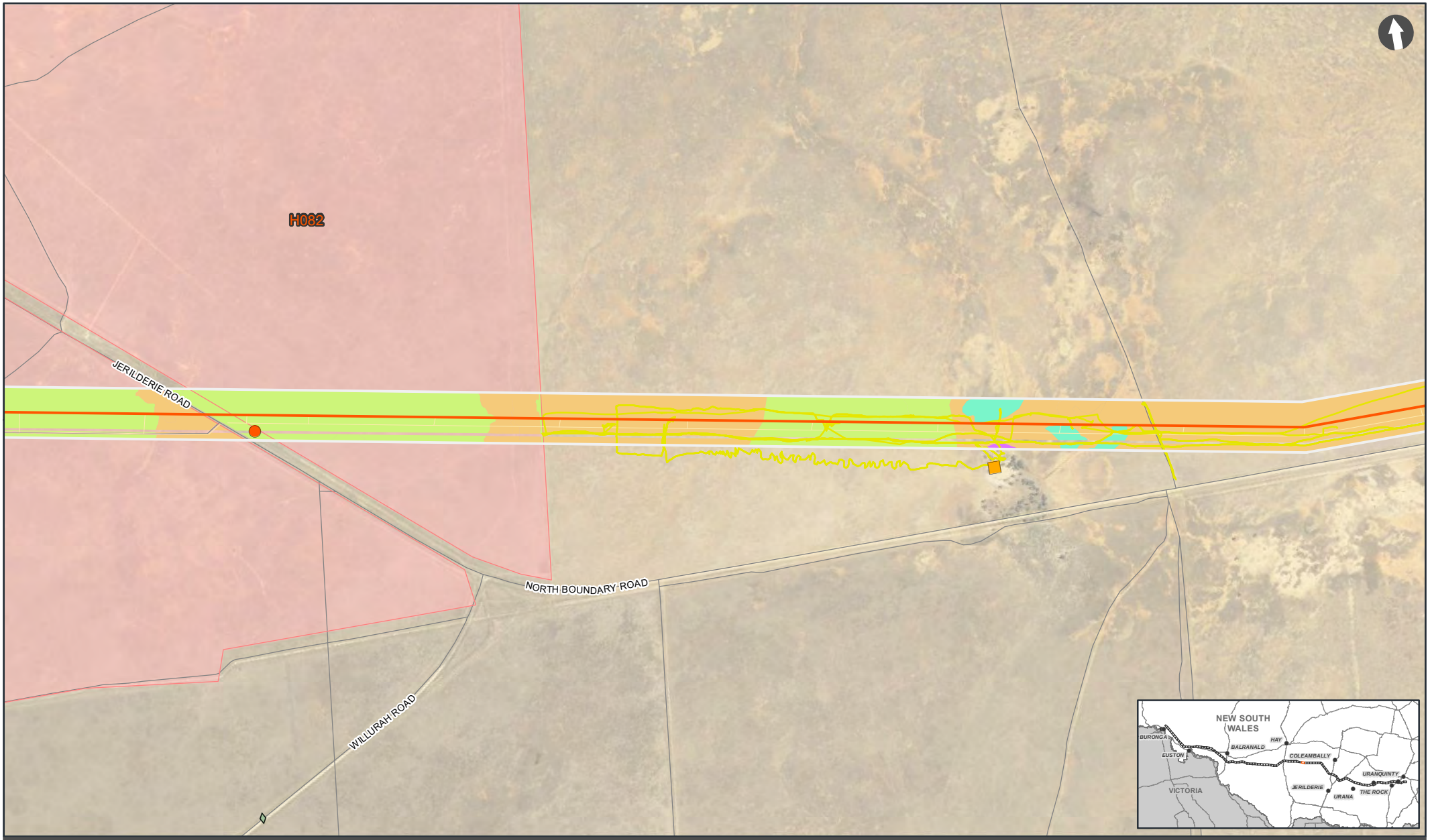
Fauna Stratification
- Chenopod shrublands
- Grasslands
- Wetlands

BDAR - Figure C-6u

Threatened Fauna
Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Holdings - No Access
- Plains Wanderer Survey

Fauna Stratification
- Chenopod shrublands
- Grasslands
- Riverine
- Wetlands

Fauna Survey Effort
- Bird Survey
- Frog Habitat Assessment
- Observation

BDAR - Figure C-6

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Plains Wanderer Survey

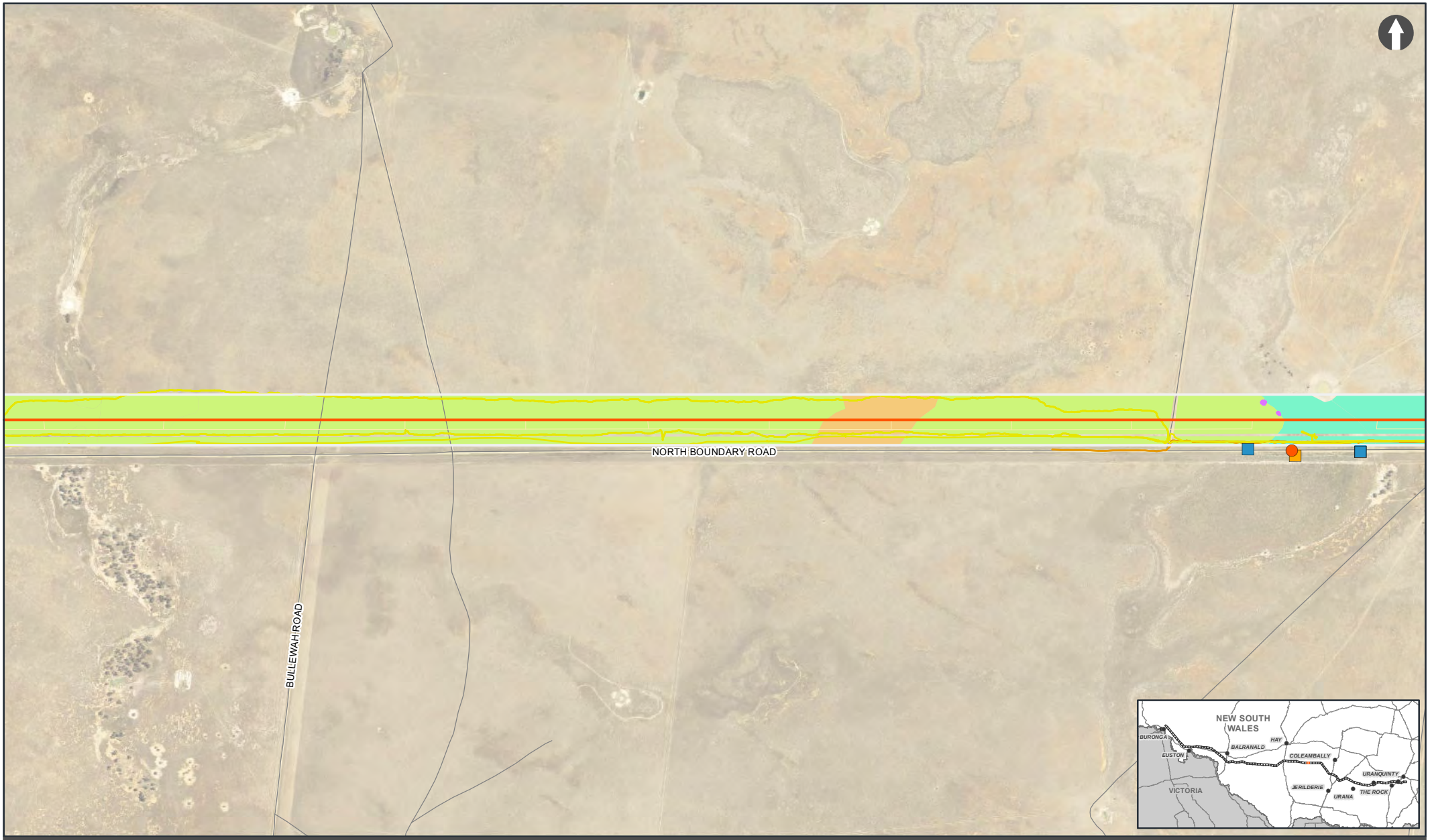
Fauna Stratification
- Chenopod shrublands
- Grasslands
- Wetlands

BDAR - Figure C-6v

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect
- Plains Wanderer Survey

Fauna Stratification
- Chenopod shrublands
- Grasslands
- Riverine
- Wetlands

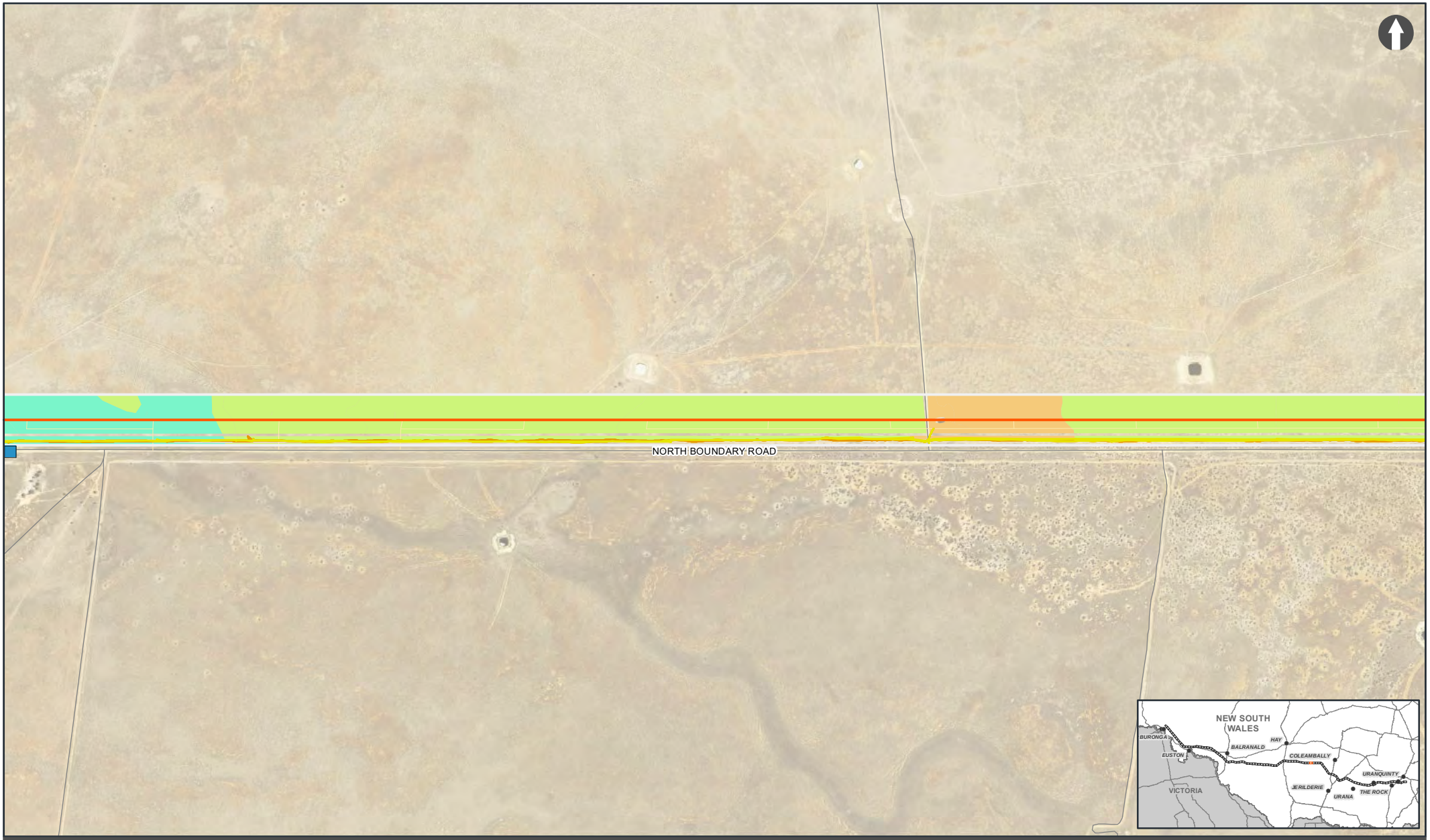
Fauna Survey Effort
- Bird Survey
- Frog Call Playback
- Frog Habitat Assessment

BDAR - Figure C-6w

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect
- Plains Wanderer Survey

Fauna Stratification
- Chenopod shrublands
- Grasslands
- Wetlands

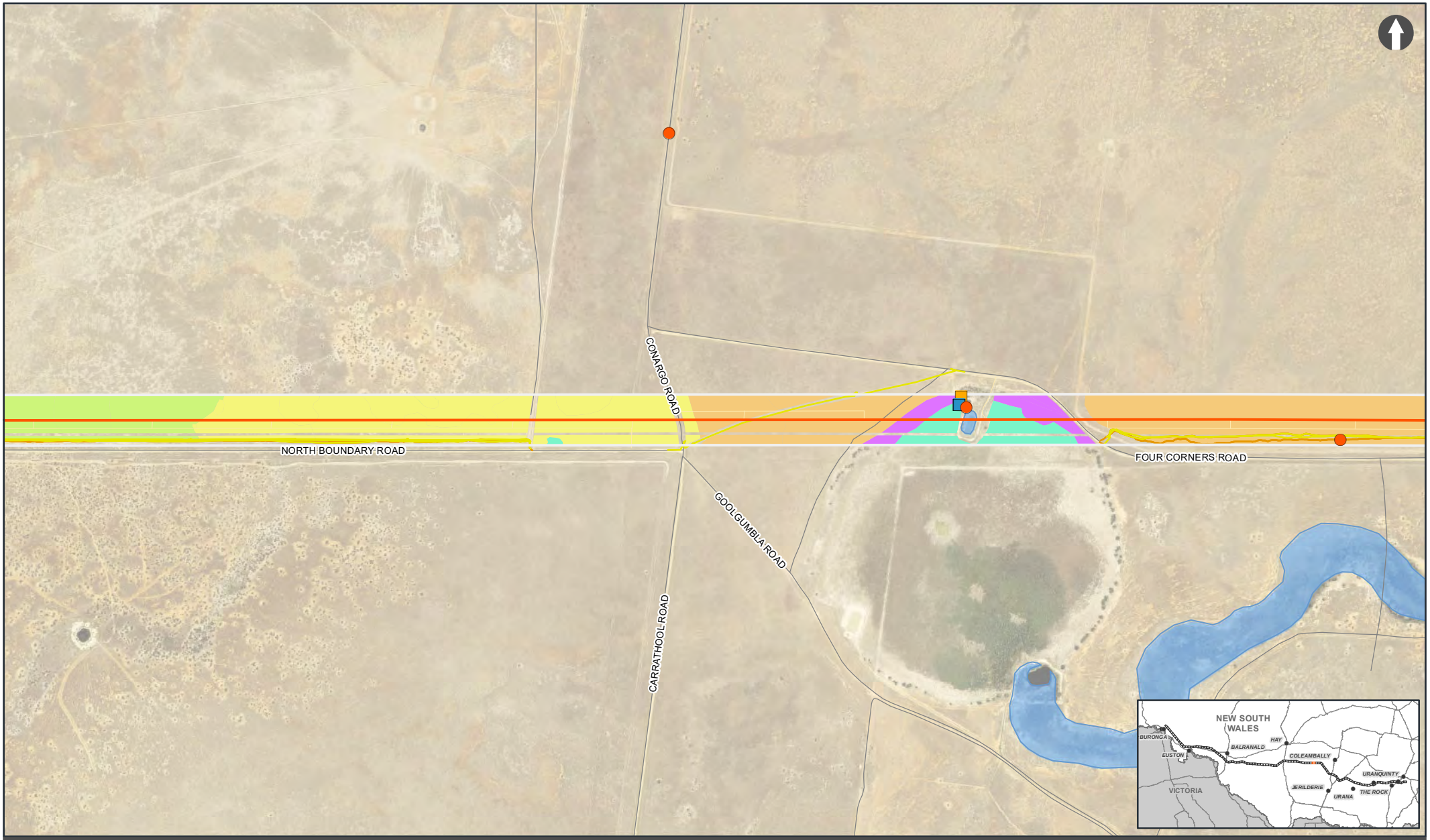
Fauna Survey Effort
- Frog Call Playback

BDAR - Figure C-6

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect
- Plains Wanderer Survey

Fauna Stratification

- Arid woodland/shrublands
- Chenopod shrublands
- Grasslands
- Riverine
- Wetlands

Fauna Survey Effort

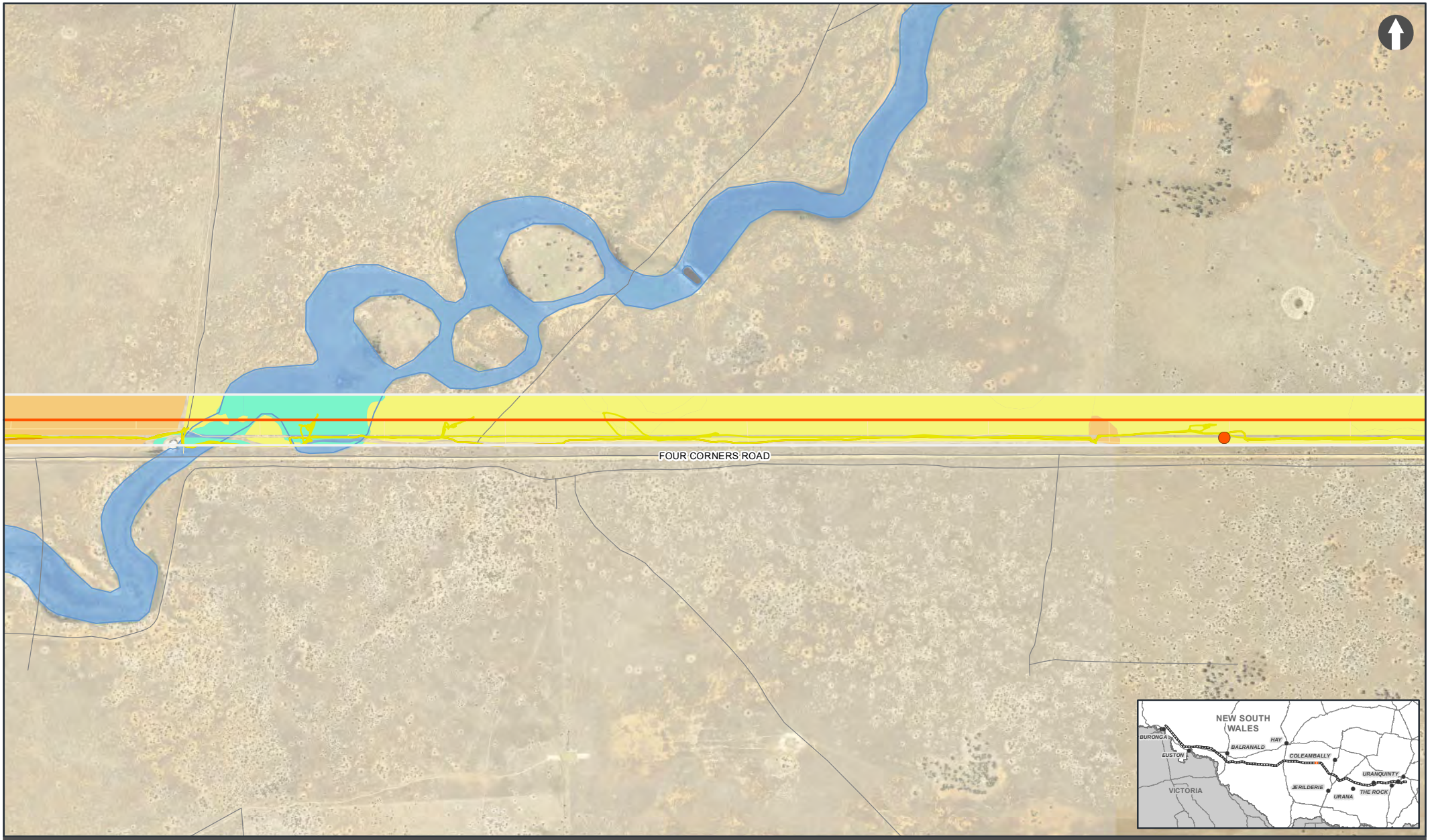
- Bird Survey
- Frog Call Playback
- Frog Habitat Assessment

BDAR - Figure C-6

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect
- Plains Wanderer Survey

Fauna Stratification
- Arid woodland/shrublands
- Chenopod shrublands
- Wetlands

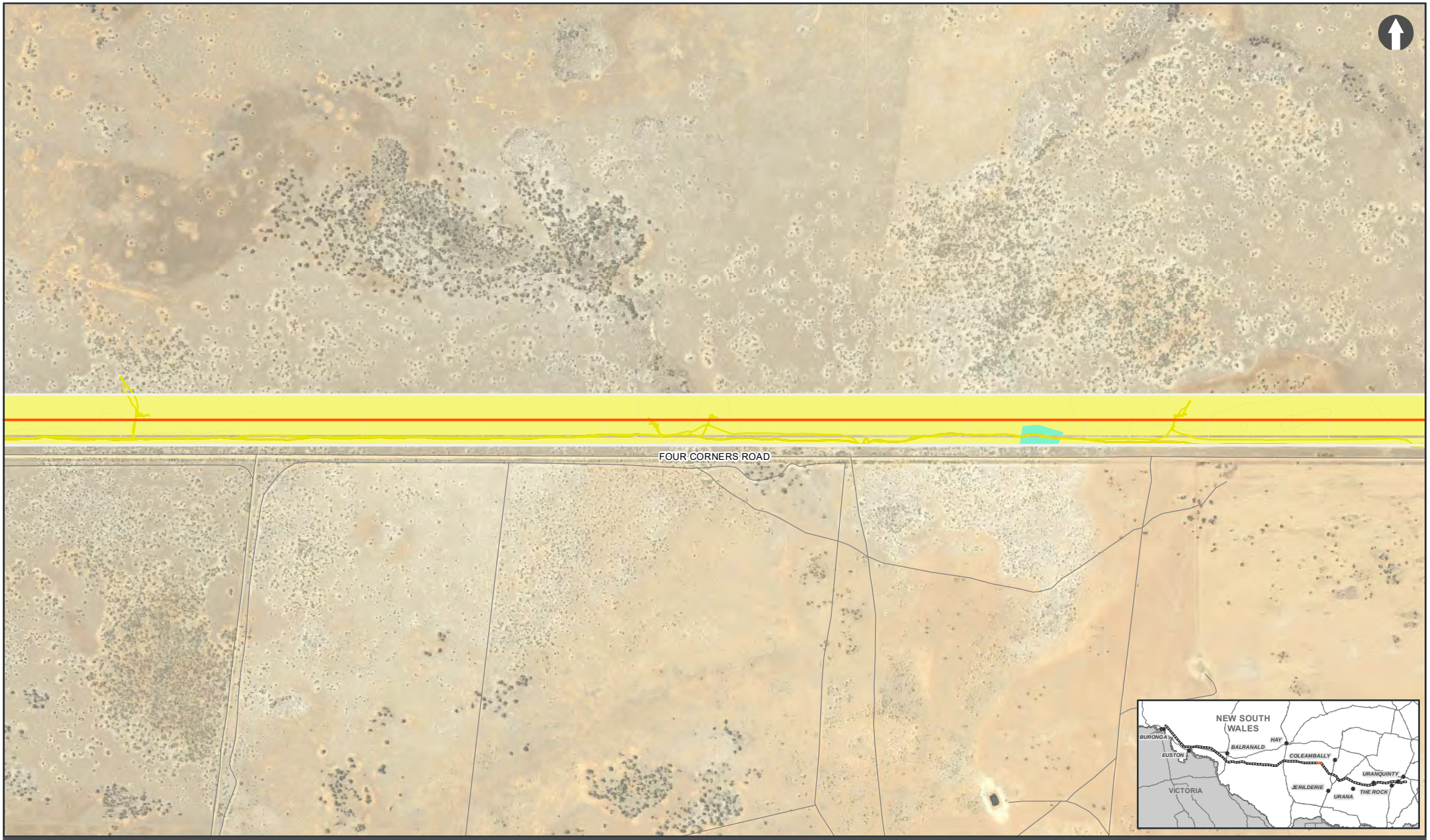
Fauna Survey Effort
- Bird Survey

BDAR - Figure C-6x

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect
- Plains Wanderer Survey

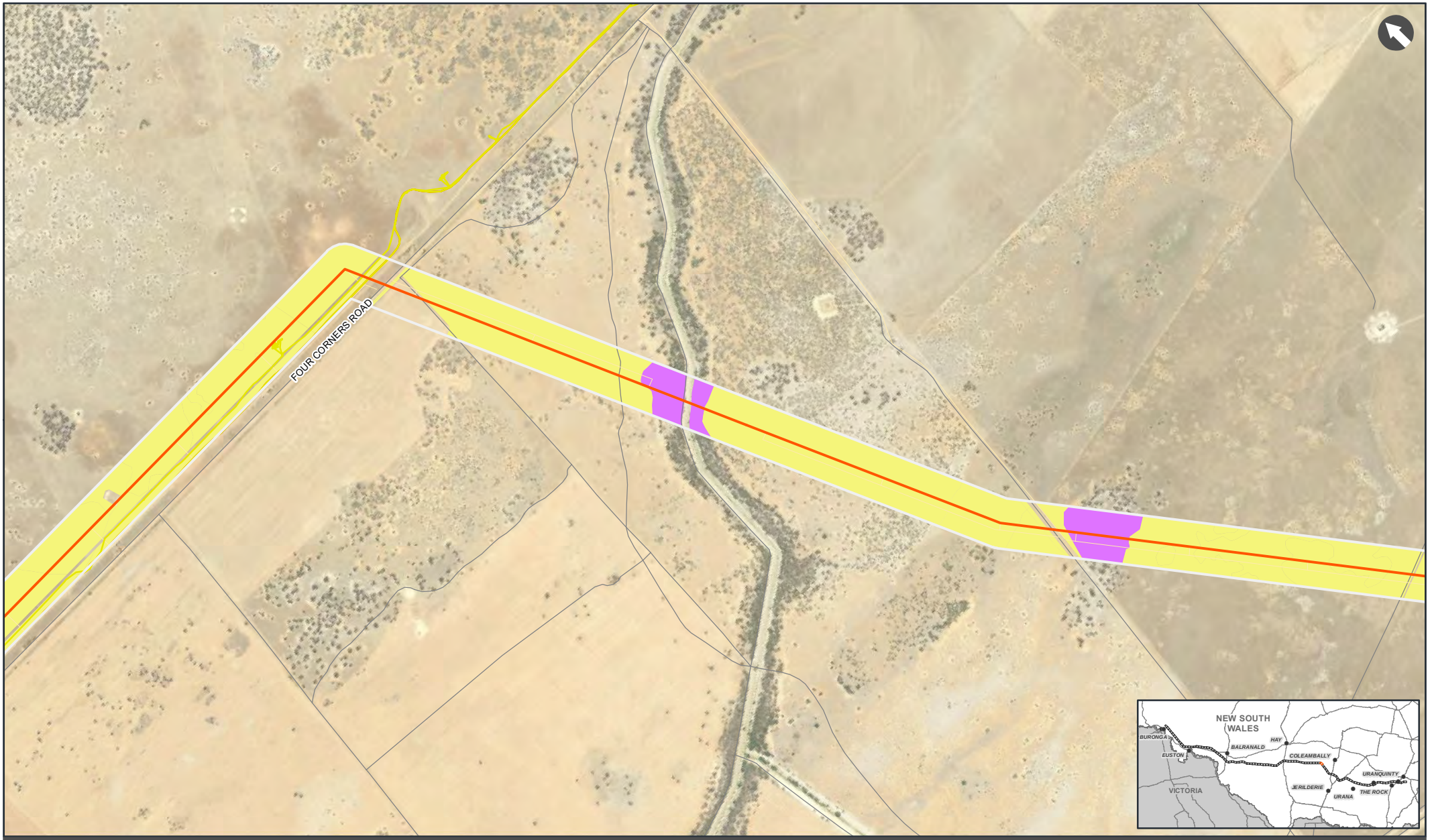
Fauna Stratification
- Arid woodland/shrublands
- Wetlands

BDAR - Figure C-6y

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect
- Plains Wanderer Survey

Fauna Stratification

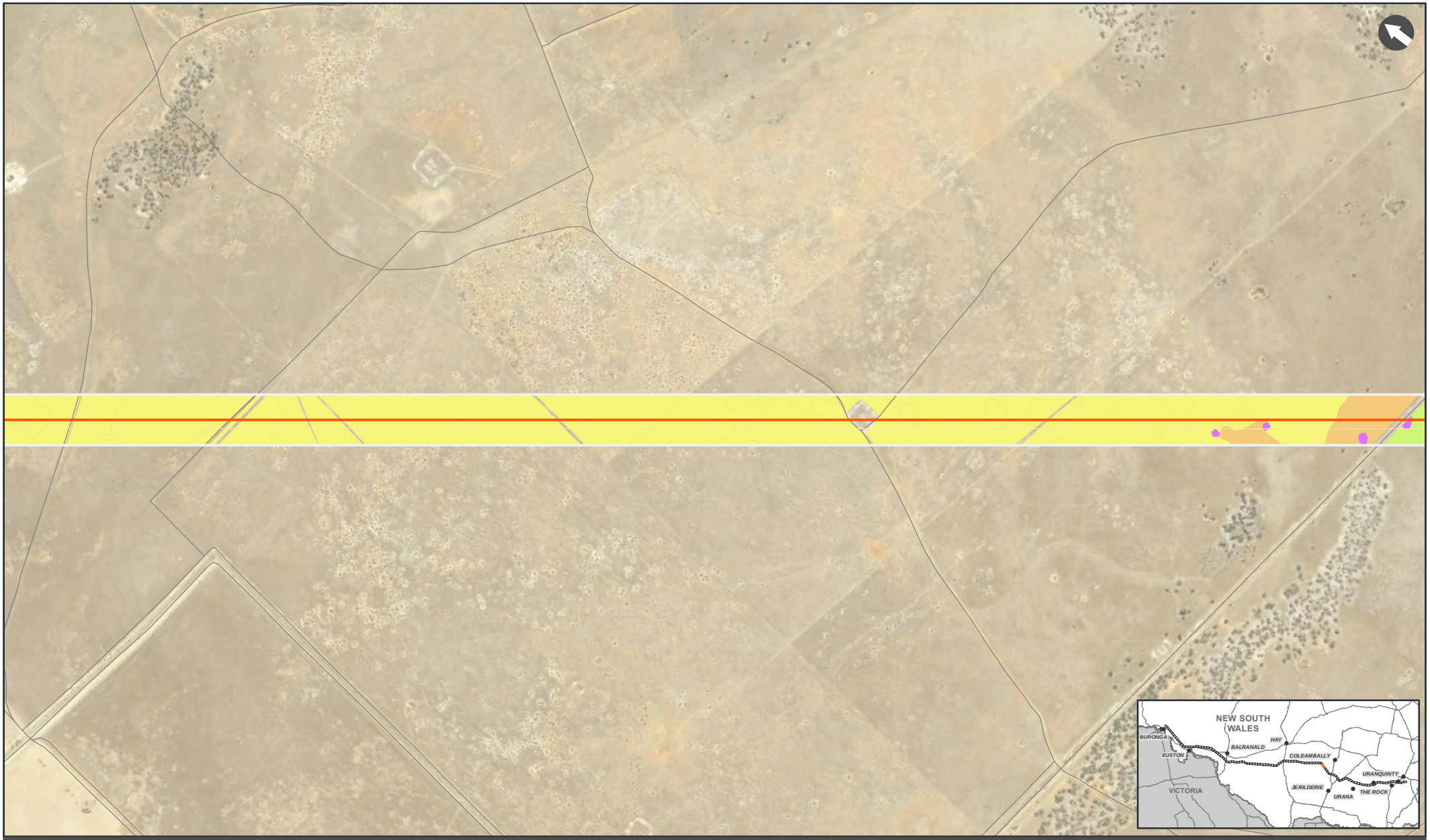
- Arid woodland/shrublands
- Riverine

BDAR - Figure C-6

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-6

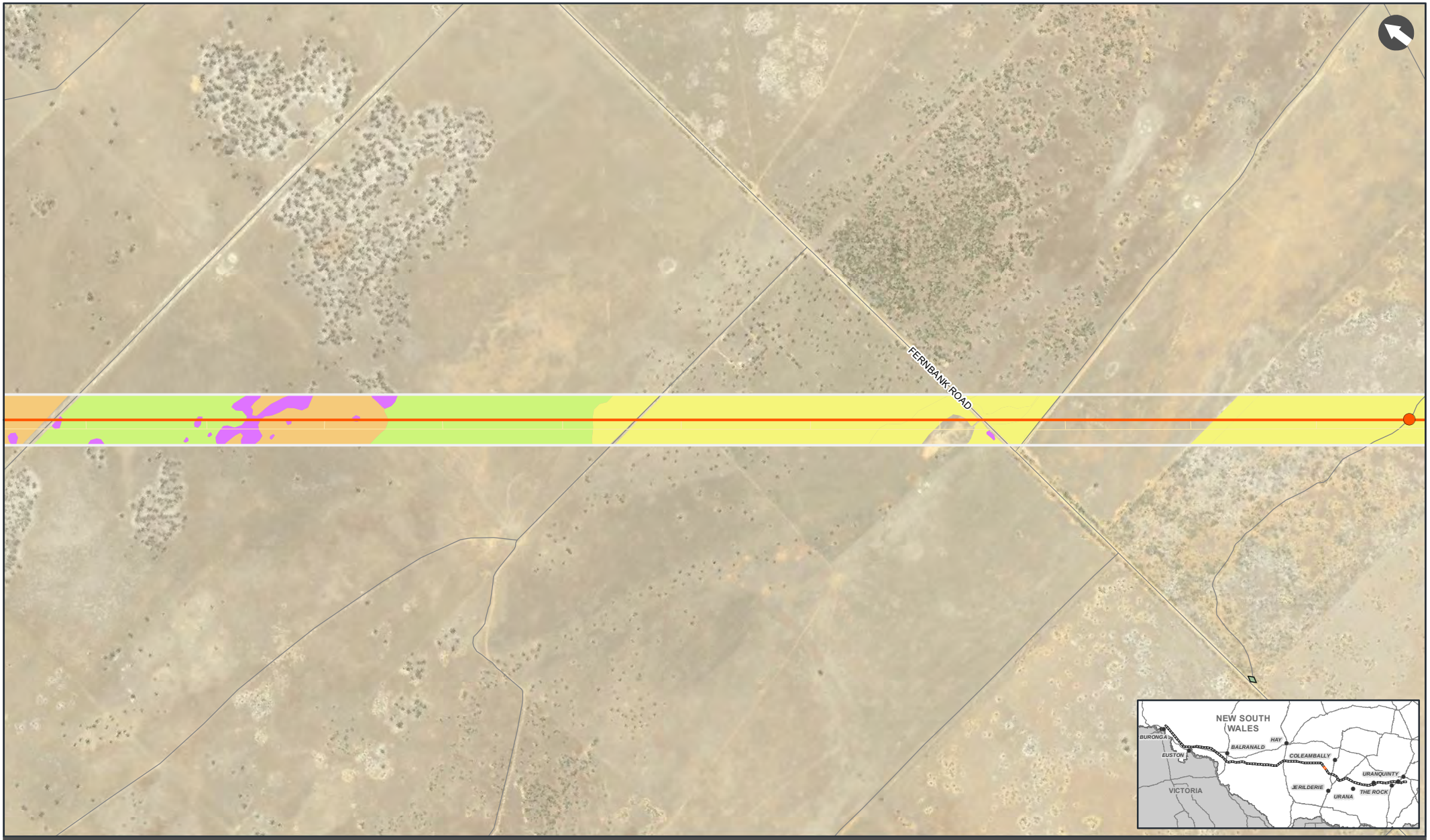
Threatened Fauna
Field Survey Effort

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area

Fauna Stratification
- Arid woodland/shrublands
- Chenopod shrublands
- Grasslands
- Riverine

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-6

Threatened Fauna
Field Survey Effort

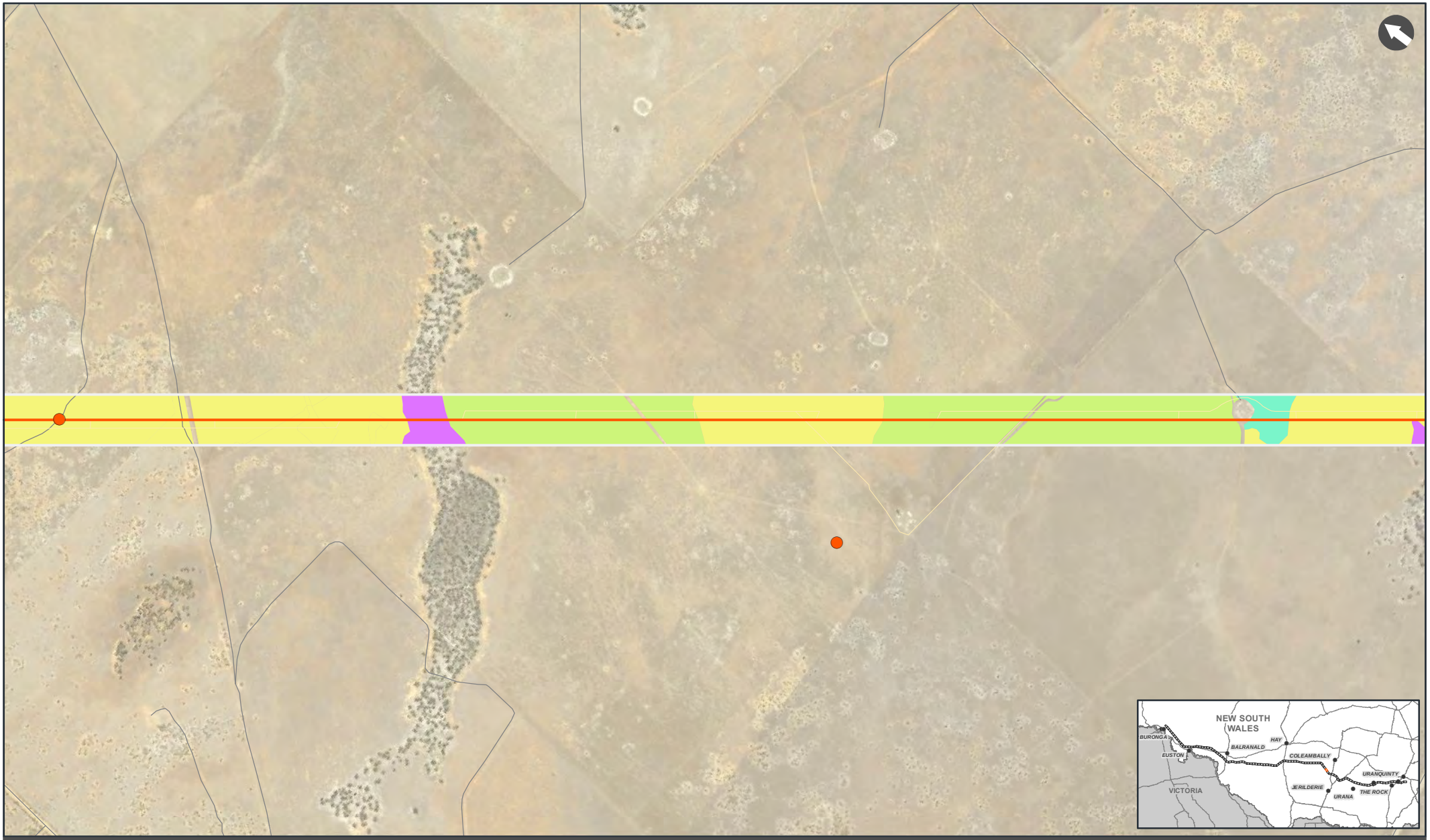
Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area

Fauna Stratification
- Arid woodland/shrublands
- Chenopod shrublands
- Grasslands
- Riverine

Fauna Survey Effort
- Bird Survey
- Observation

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area

Fauna Stratification
- Arid woodland/shrublands
- Grasslands
- Riverine
- Wetlands

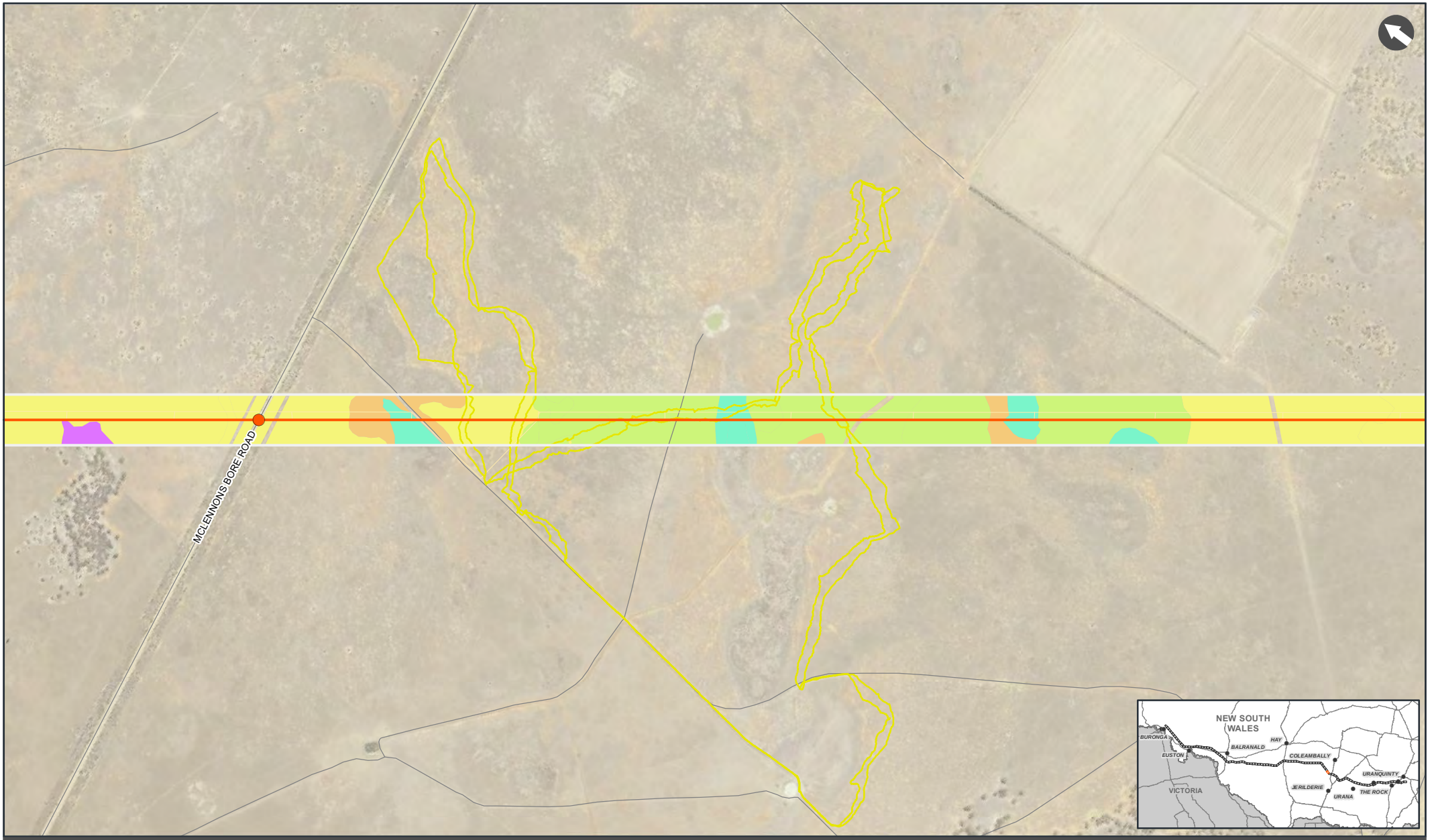
Fauna Survey Effort
- Bird Survey

BDAR - Figure C-6z

Threatened Fauna
Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Plains Wanderer Survey

Fauna Stratification
- Arid woodland/shrublands
- Chenopod shrublands
- Grasslands
- Riverine
- Wetlands

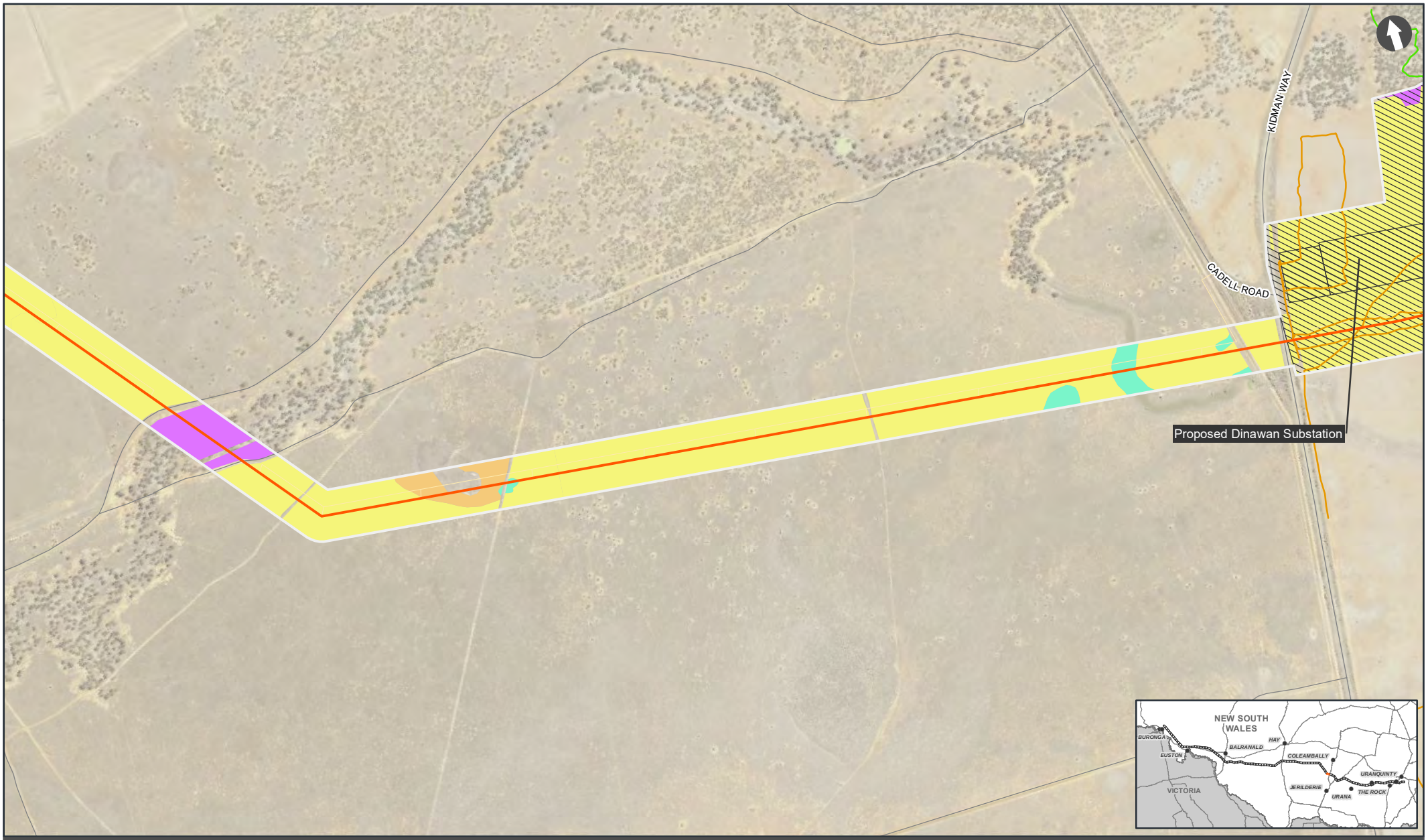
Fauna Survey Effort
- Bird Survey

BDAR - Figure C-6aa

Threatened Fauna
Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect
- Koala Survey Transects

Fauna Stratification

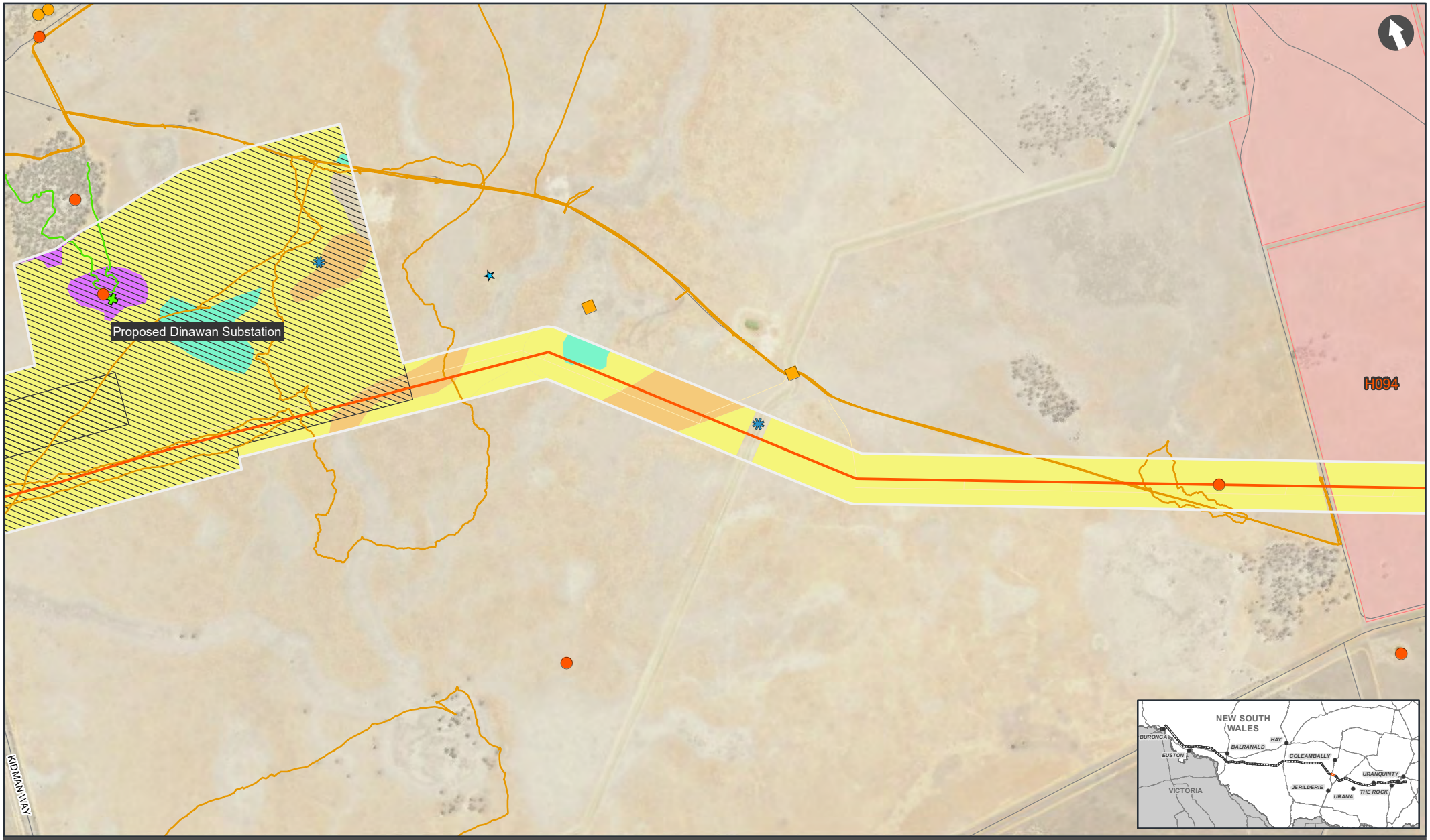
- Arid woodland/shrublands
- Chenopod shrublands
- Grasslands
- Riverine
- Wetlands

BDAR - Figure C-6

Threatened Fauna
Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-6

Threatened Fauna Field Survey Effort

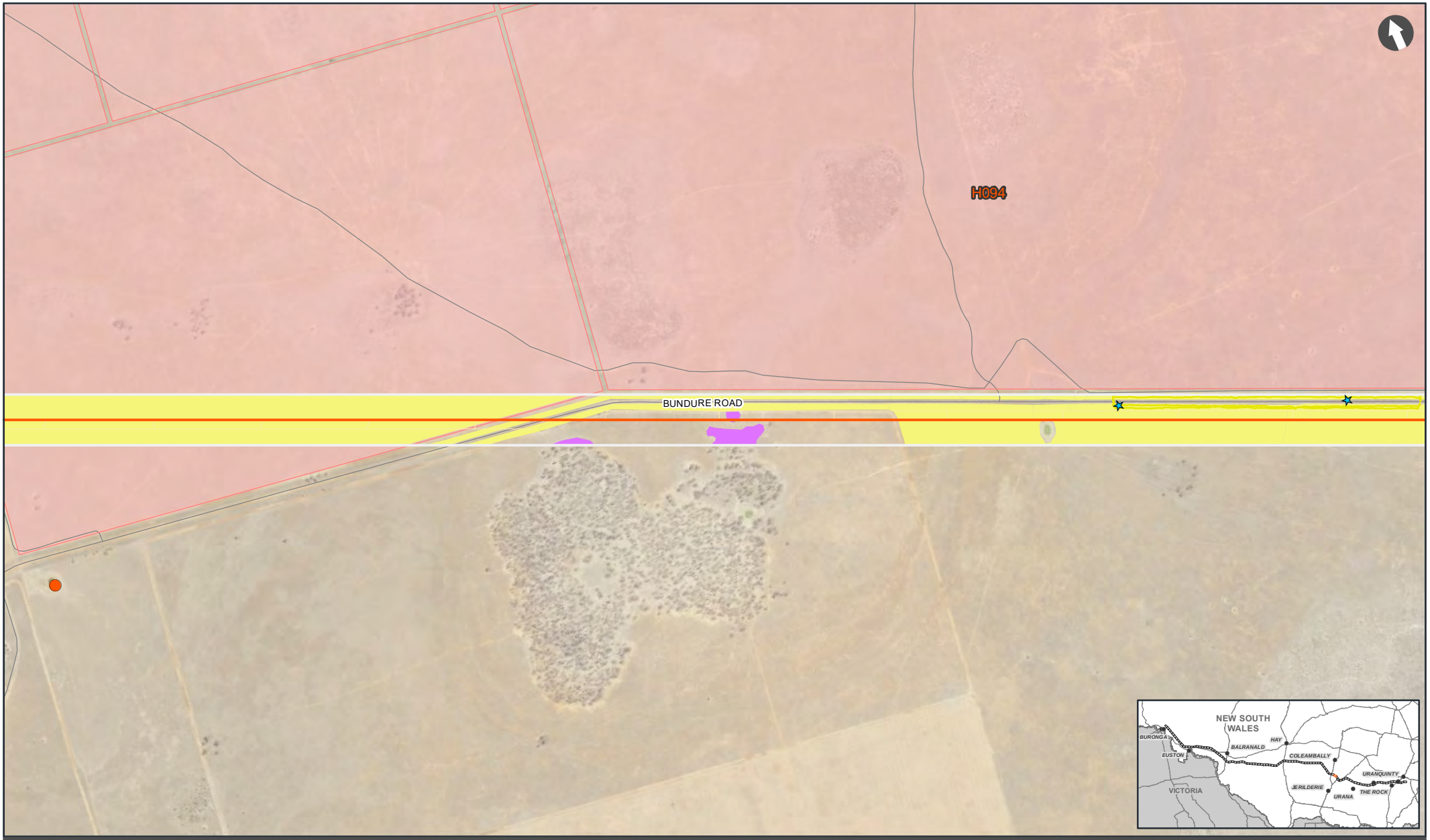
Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Holdings - No Access
- Fauna Survey Transect
- Koala Survey Transects

Fauna Stratification
- Arid woodland/shrublands
- Chenopod shrublands
- Grasslands
- Riverine
- Wetlands

Fauna Survey Effort
- Babbler Nest
- Bird Survey
- Frog Habitat Assessment
- Koala SAT
- Plains Wanderer Survey
- Spotlighting Start Point

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Holdings - No Access
- Plains Wanderer Survey

Fauna Stratification
- Arid woodland/shrublands
- Riverine

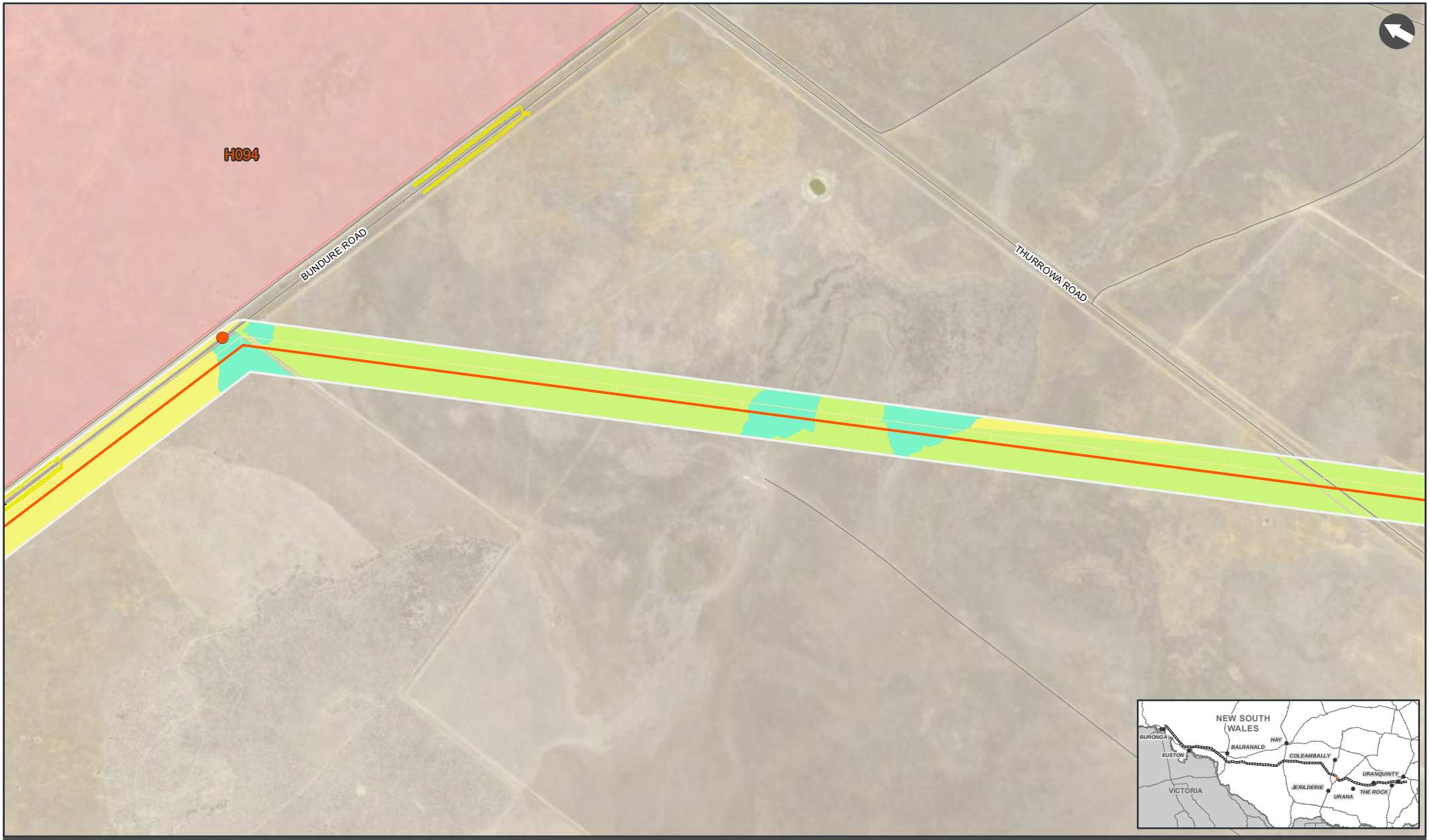
Fauna Survey Effort
- Bird Survey
- Plains Wanderer Survey

BDAR - Figure C-6

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-6

Threatened Fauna Field Survey Effort

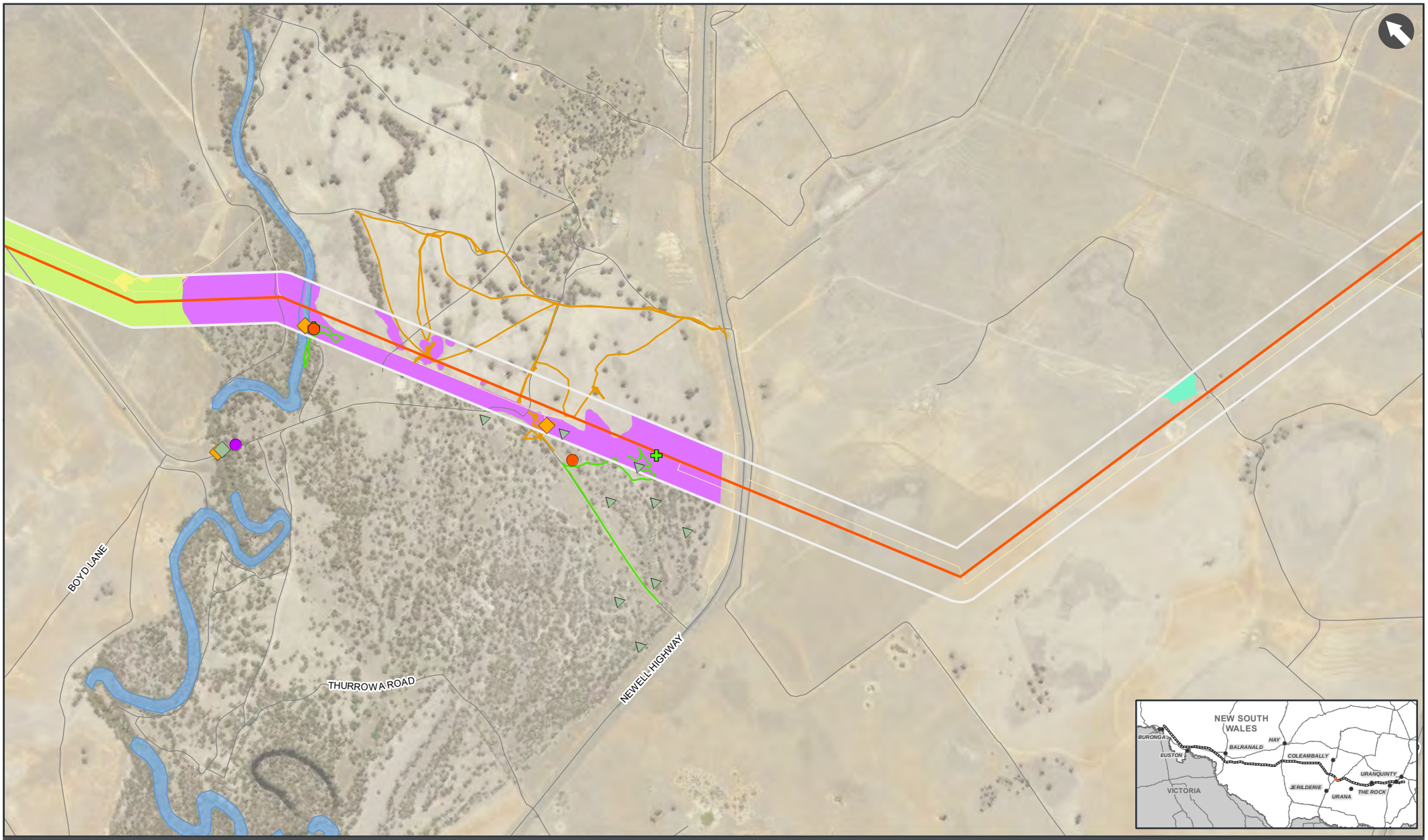
Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Holdings - No Access
- Plains Wanderer Survey

Fauna Stratification
- Arid woodland/shrublands
- Grasslands
- Wetlands

Fauna Survey Effort
- Bird Survey
- Plains Wanderer Survey

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect
- Koala Survey Transects

Fauna Stratification
- Arid woodland/shrublands
- Grasslands
- Riverine
- Wetlands

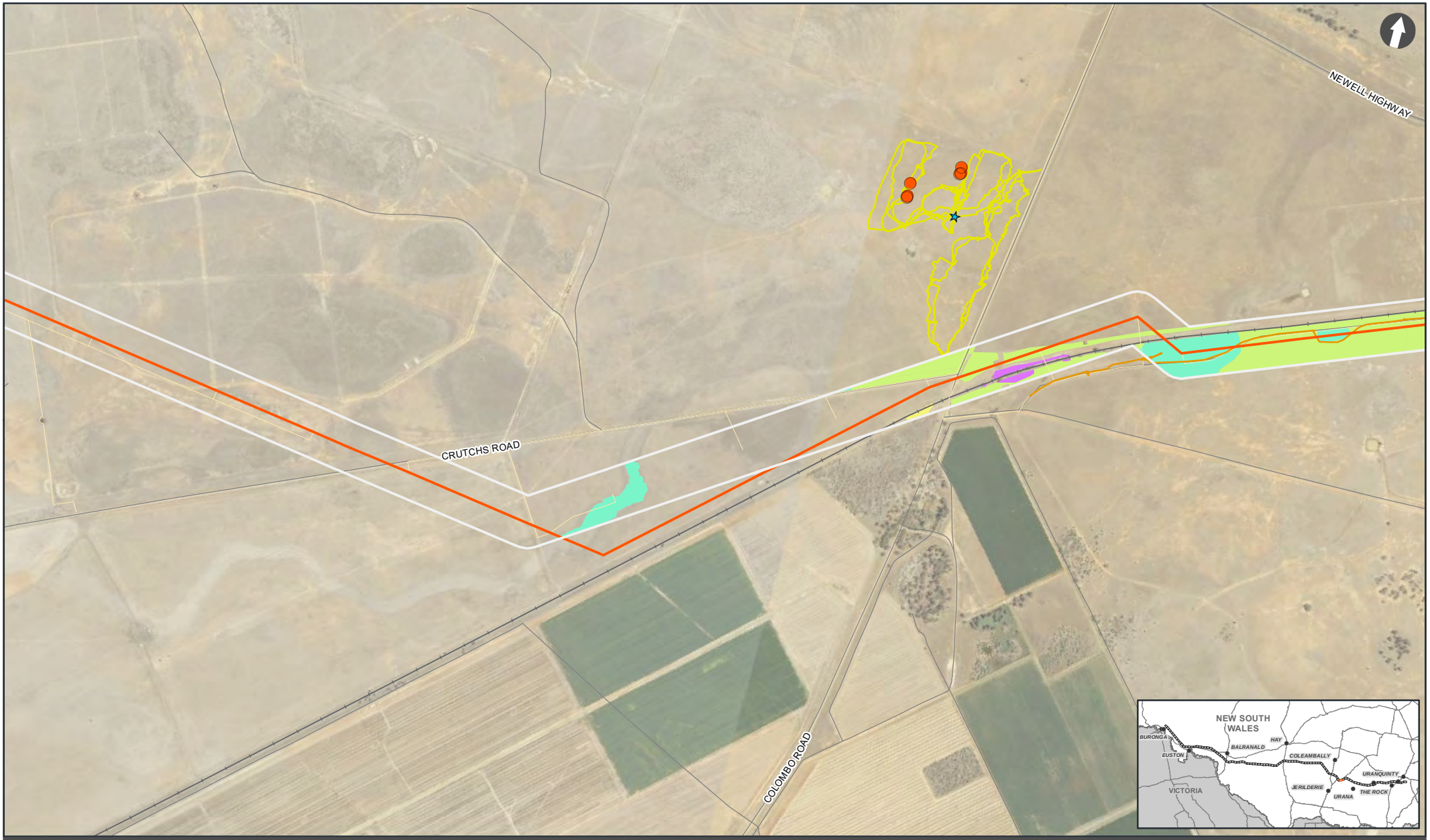
Fauna Survey Effort
- Bird Survey
- Call Playback
- Camera
- Frog Survey
- Frog Habitat Assessment
- Koala SAT

BDAR - Figure C-6

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect
- Plains Wanderer Survey

Fauna Stratification
- Arid woodland/shrublands
- Grasslands
- Riverine
- Wetlands

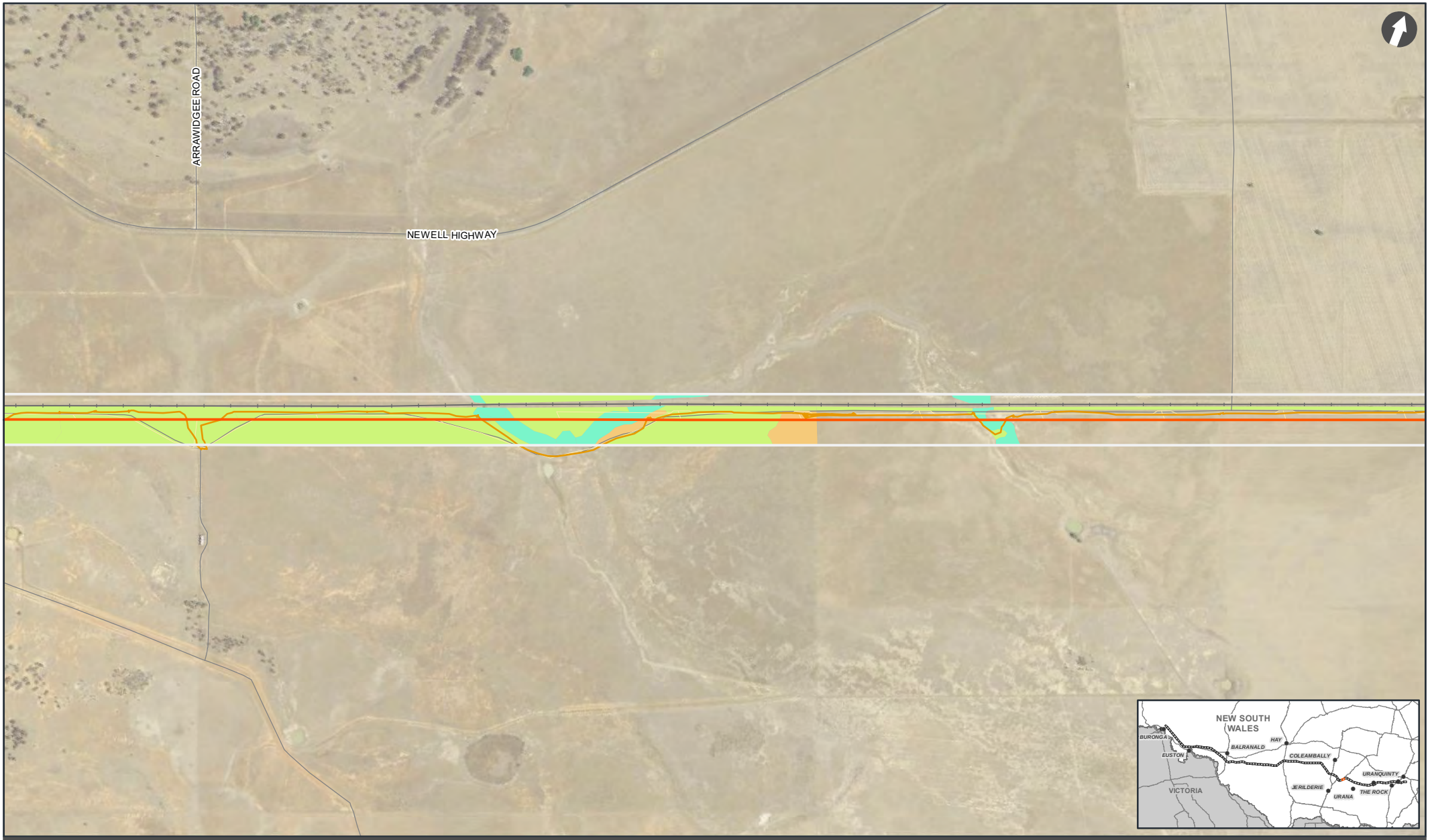
Fauna Survey Effort
- Bird Survey
- Plains Wanderer Survey

BDAR - Figure C-6ab

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-6ac

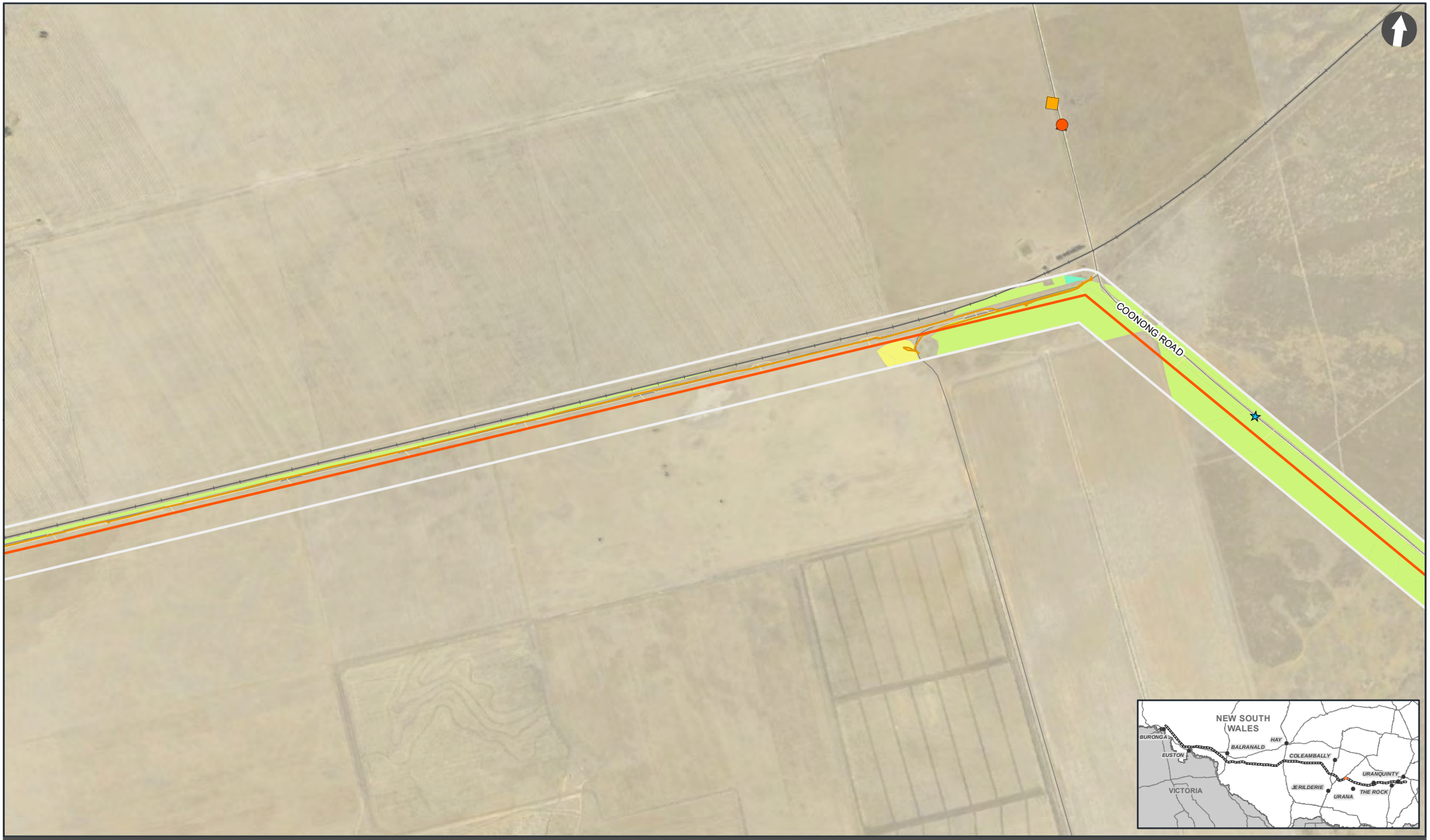
Threatened Fauna
Field Survey Effort

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect

Fauna Stratification
- Chenopod shrublands
- Grasslands
- Wetlands

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect

Fauna Stratification
- Arid woodland/shrublands
- Grasslands
- Wetlands

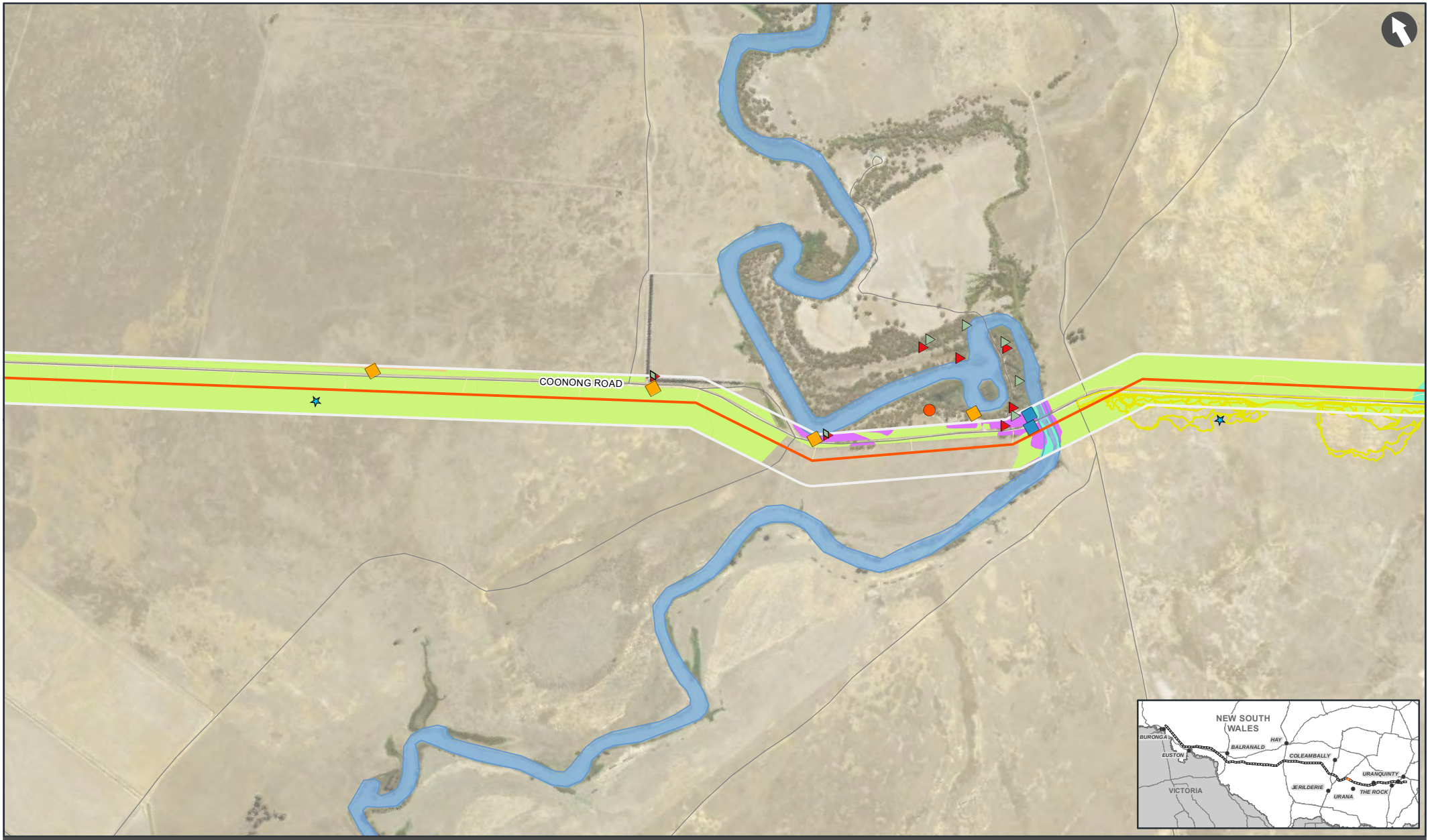
Fauna Survey Effort
- Bird Survey
- East Squirrel Glider Surveys
- Frog Habitat Assessment
- Plains Wanderer Survey

BDAR - Figure C-6ad

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-6ae

Threatened Fauna
Field Survey Effort

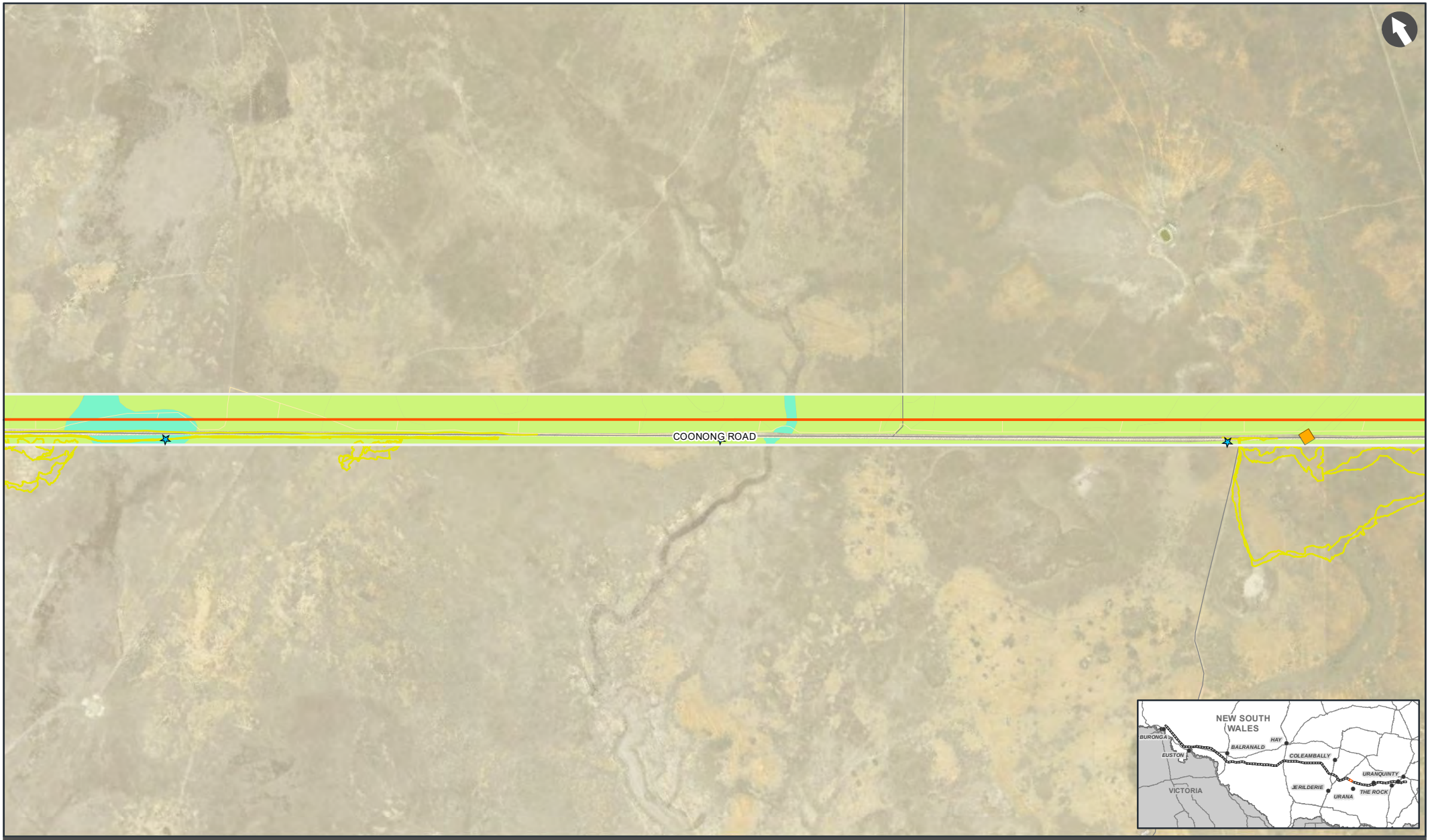
Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Plains Wanderer Survey

Fauna Stratification
- Chenopod shrublands
- Grasslands
- Riverine
- Wetlands

Fauna Survey Effort
- Bird Survey
- Camera
- East Squirrel Glider Surveys
- Frog Call Playback
- Frog Habitat Assessment
- Observation
- Plains Wanderer Survey

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-6af

Threatened Fauna
Field Survey Effort

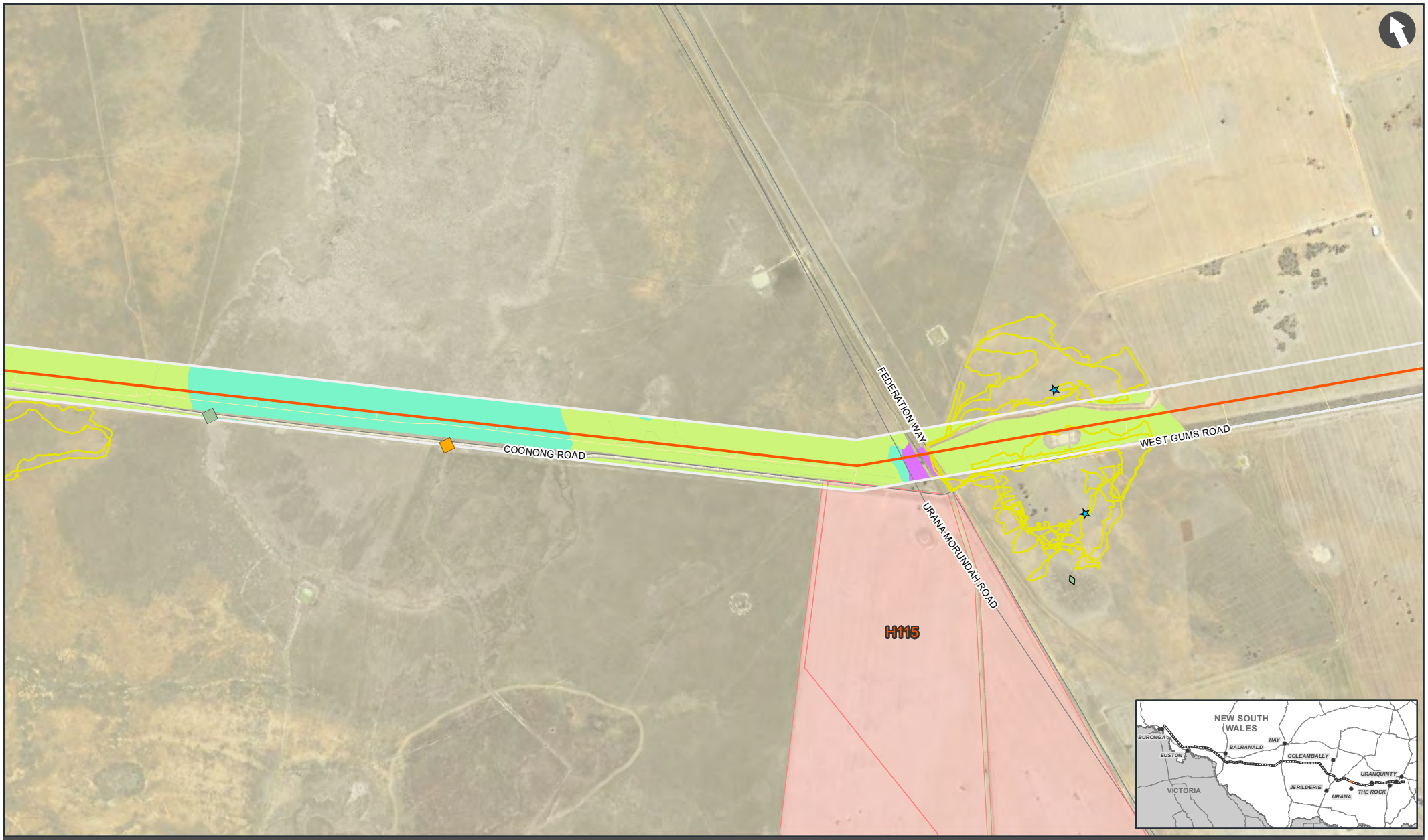
Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Plains Wanderer Survey

Fauna Stratification
- Grasslands
- Wetlands

Fauna Survey Effort
- Frog Habitat Assessment
- Plains Wanderer Survey

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Holdings - No Access
- Plains Wanderer Survey

Fauna Stratification
- Grasslands
- Riverine
- Wetlands

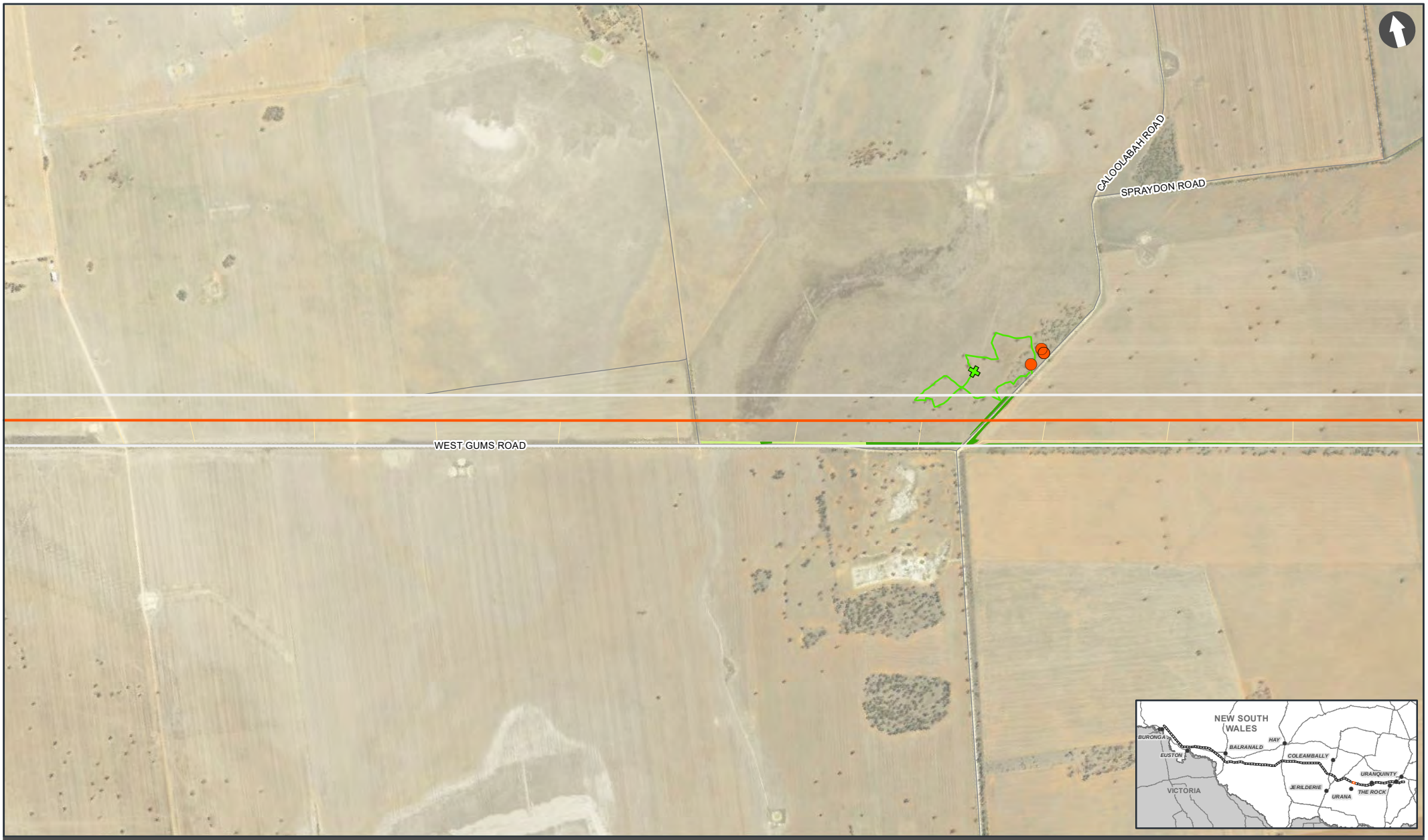
Fauna Survey Effort
- Frog Survey
- Frog Habitat Assessment
- Observation
- Plains Wanderer Survey

BDAR - Figure C-6ag

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Koala Survey Transects

Fauna Stratification
- Grasslands
- Grassy Woodlands

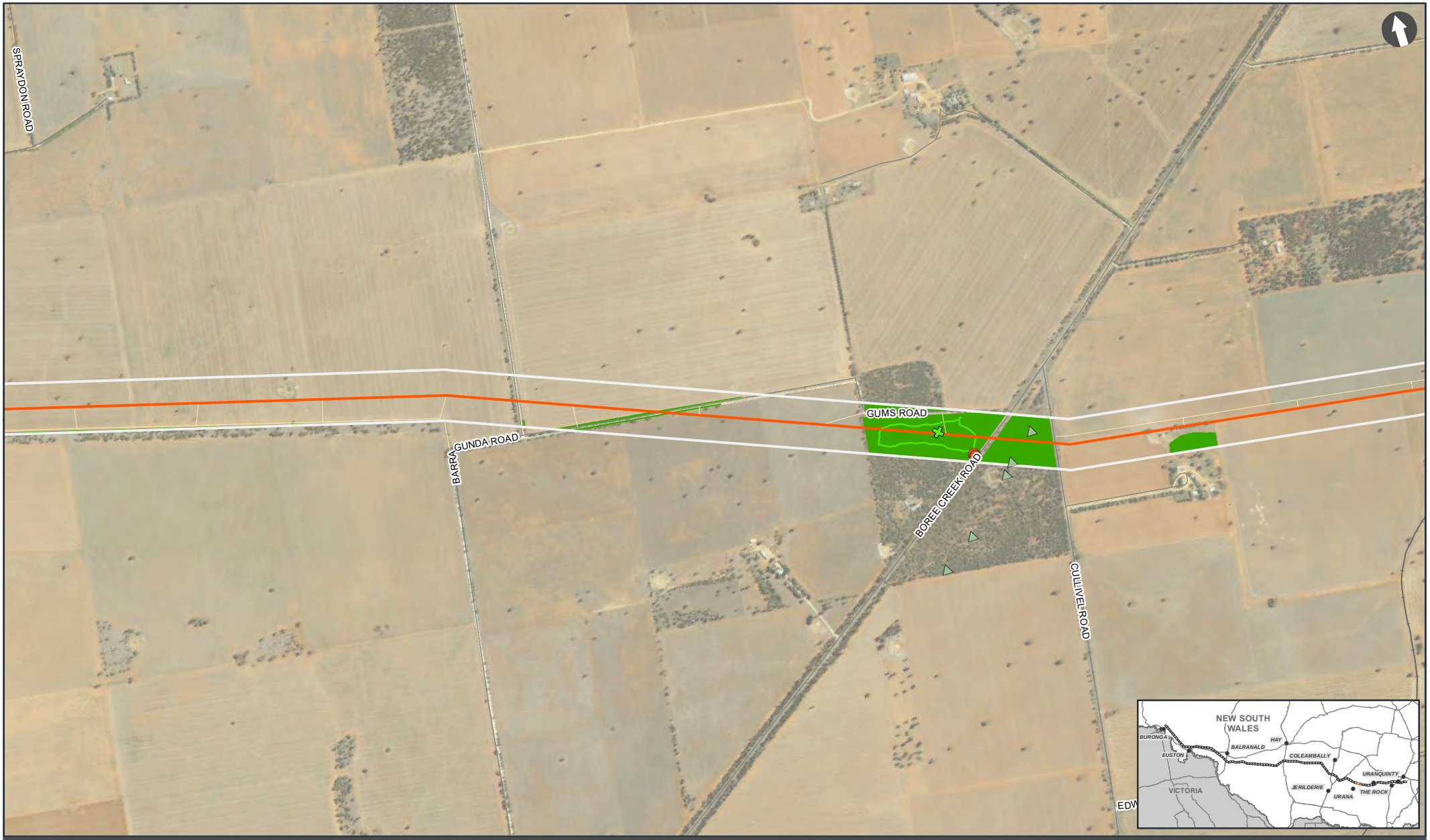
Fauna Survey Effort
- Bird Survey
- Koala SAT

BDAR - Figure C-6

Threatened Fauna
Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure C-6

Threatened Fauna
Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect
- Koala Survey Transects

Fauna Stratification
- Arid woodland/shrublands
- Grassy Woodlands
- Riverine

Fauna Survey Effort
- Bird Survey
- Camera
- Koala SAT

BDAR - Figure C-6

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect

Fauna Stratification
- Riverine

BDAR - Figure C-6

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

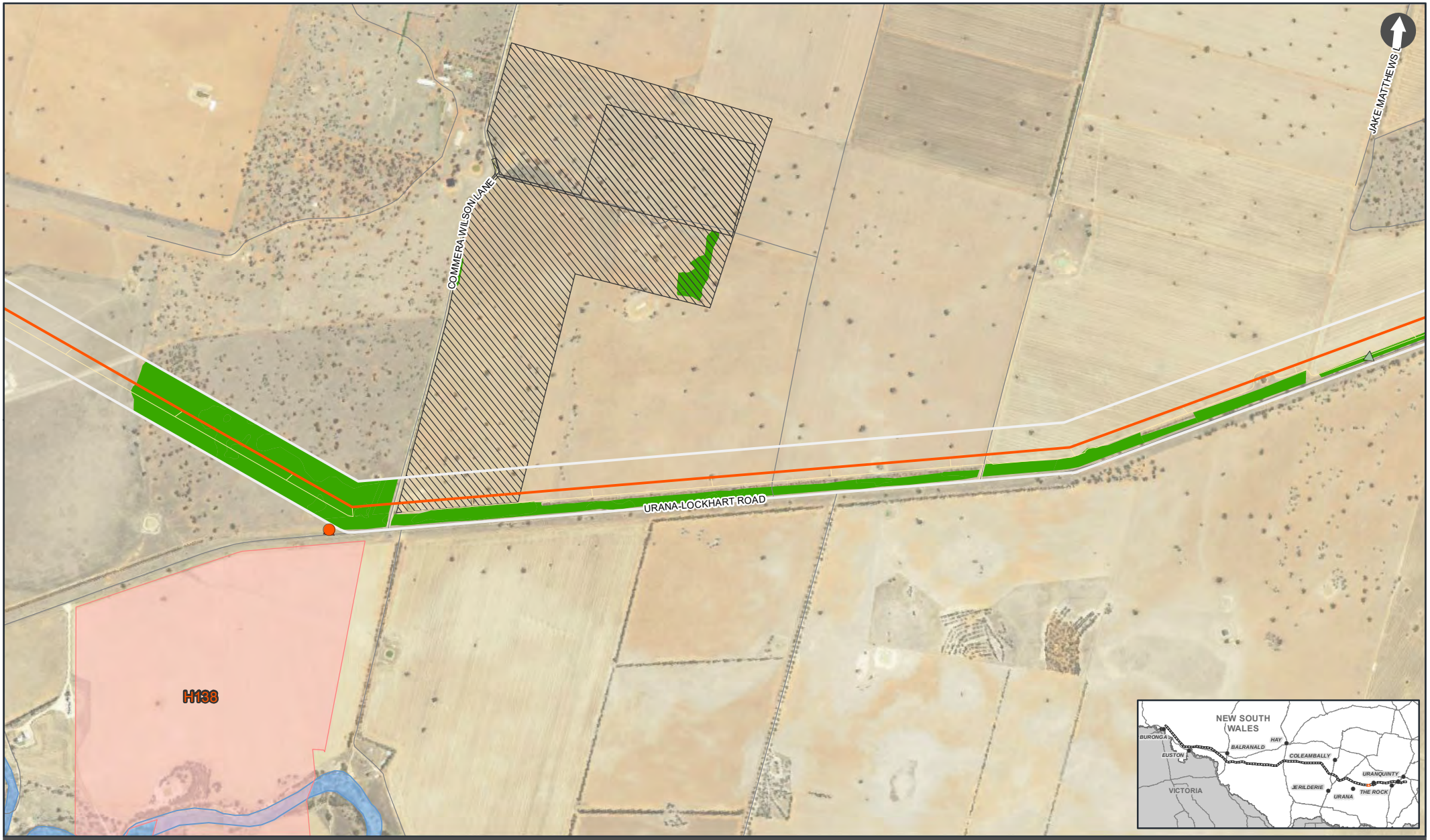
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area

BDAR - Figure C-6

Threatened Fauna
Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Holdings - No Access

Fauna Stratification
- Arid woodland/shrublands
- Grassy Woodlands

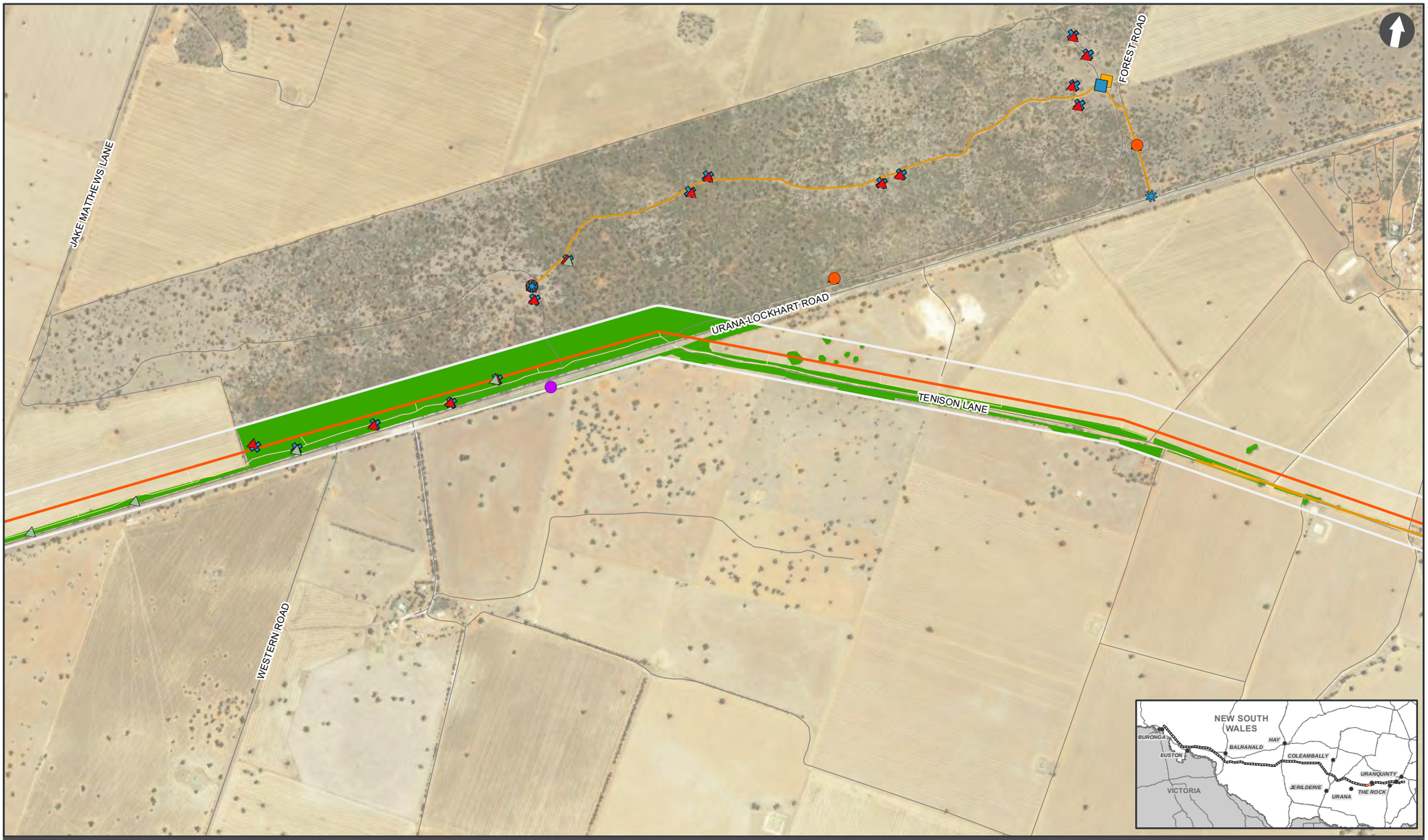
Fauna Survey Effort
- Bird Survey
- Camera
- East Squirrel Glider Surveys

BDAR - Figure C-6

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect

Fauna Stratification

- Grassy Woodlands

Fauna Survey Effort

- Bird Survey
- Call Playback
- Camera
- East Squirrel Glider Surveys
- Frog Call Playback
- Frog Habitat Assessment
- Glider Cage Trap
- Spotlighting Start Point

BDAR - Figure C-6

Threatened Fauna
Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect
- Koala Survey Transects

Fauna Stratification
- Grassy Woodlands

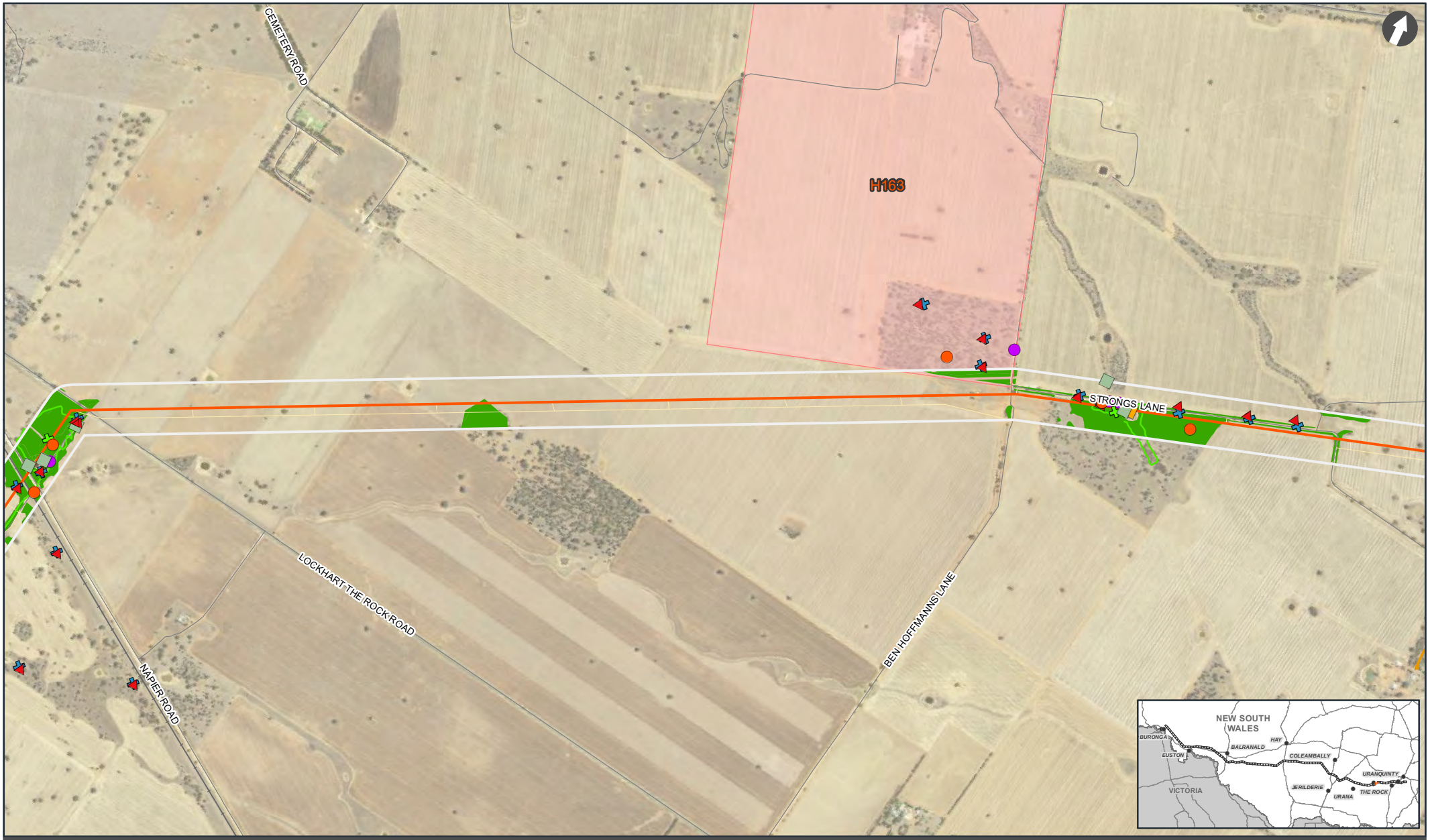
Fauna Survey Effort
- Bird Survey
- Call Playback
- Camera
- East Squirrel Glider Surveys
- Frog Survey
- Frog Habitat Assessment
- Glider Cage Trap
- Koala SAT

BDAR - Figure C-6

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Holdings - No Access
- Fauna Survey Transect
- Koala Survey Transects

Fauna Stratification
- Grassy Woodlands

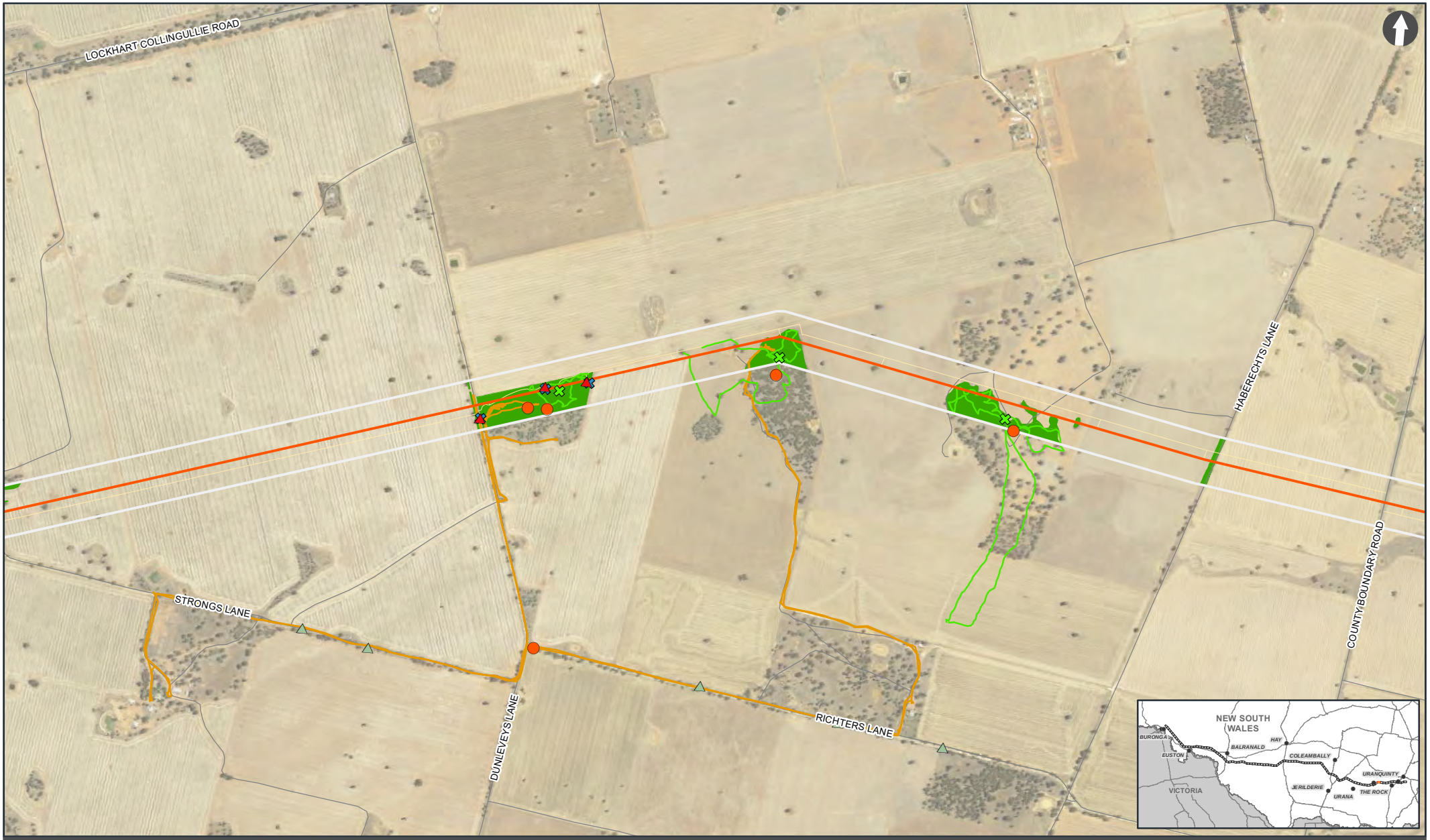
Fauna Survey Effort
- Bird Survey
- Call Playback
- East Squirrel Glider Surveys
- Frog Survey
- Frog Habitat Assessment
- Glider Cage Trap
- Koala SAT

BDAR - Figure C-6

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect
- Koala Survey Transects

Fauna Stratification

- Grassy Woodlands

Fauna Survey Effort

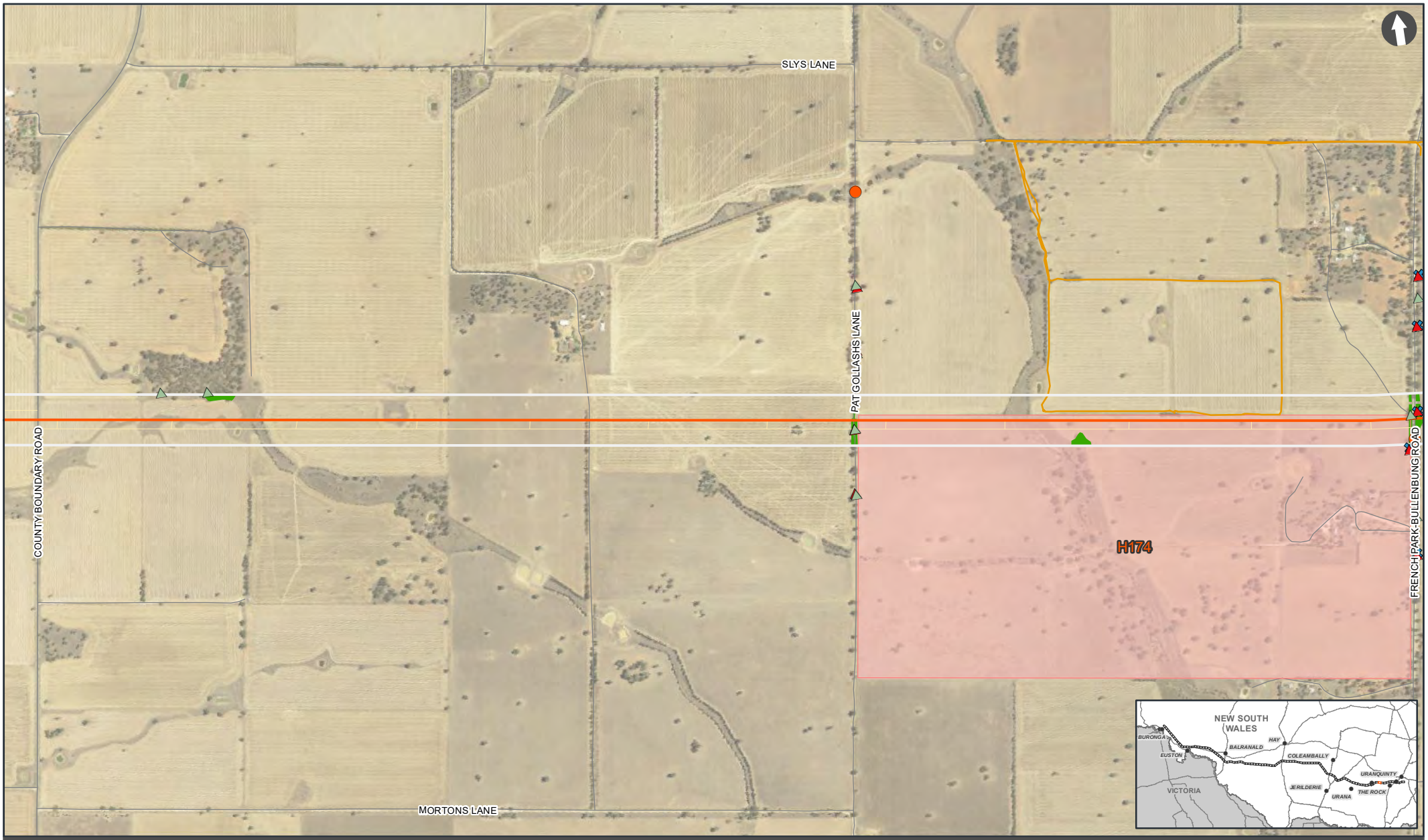
- Bird Survey
- Camera
- East Squirrel Glider Surveys
- Glider Cage Trap
- Koala SAT

BDAR - Figure C-6

Threatened Fauna
Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Holdings - No Access
- Fauna Survey Transect

Fauna Stratification
- Grassy Woodlands

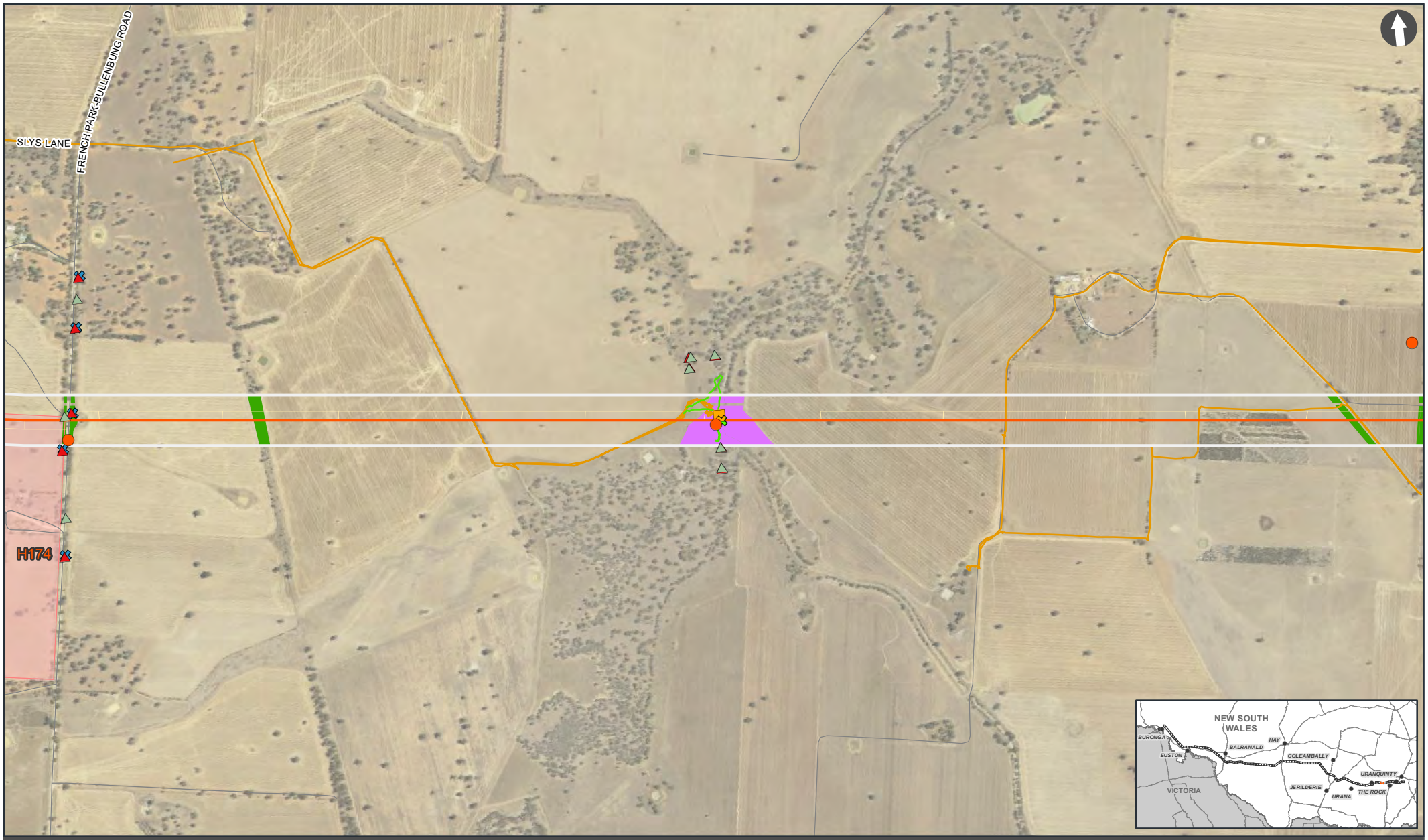
Fauna Survey Effort
- Bird Survey
- Camera
- East Squirrel Glider Surveys
- Glider Cage Trap

BDAR - Figure C-6

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Holdings - No Access
- Fauna Survey Transect
- Koala Survey Transects

Fauna Stratification
- Grassy Woodlands
- Riverine

Fauna Survey Effort
- Bird Survey
- Camera
- East Squirrel Glider Surveys
- Frog Habitat Assessment
- Glider Cage Trap
- Koala SAT

BDAR - Figure C-6

Threatened Fauna Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure C-6

Threatened Fauna
Field Survey Effort

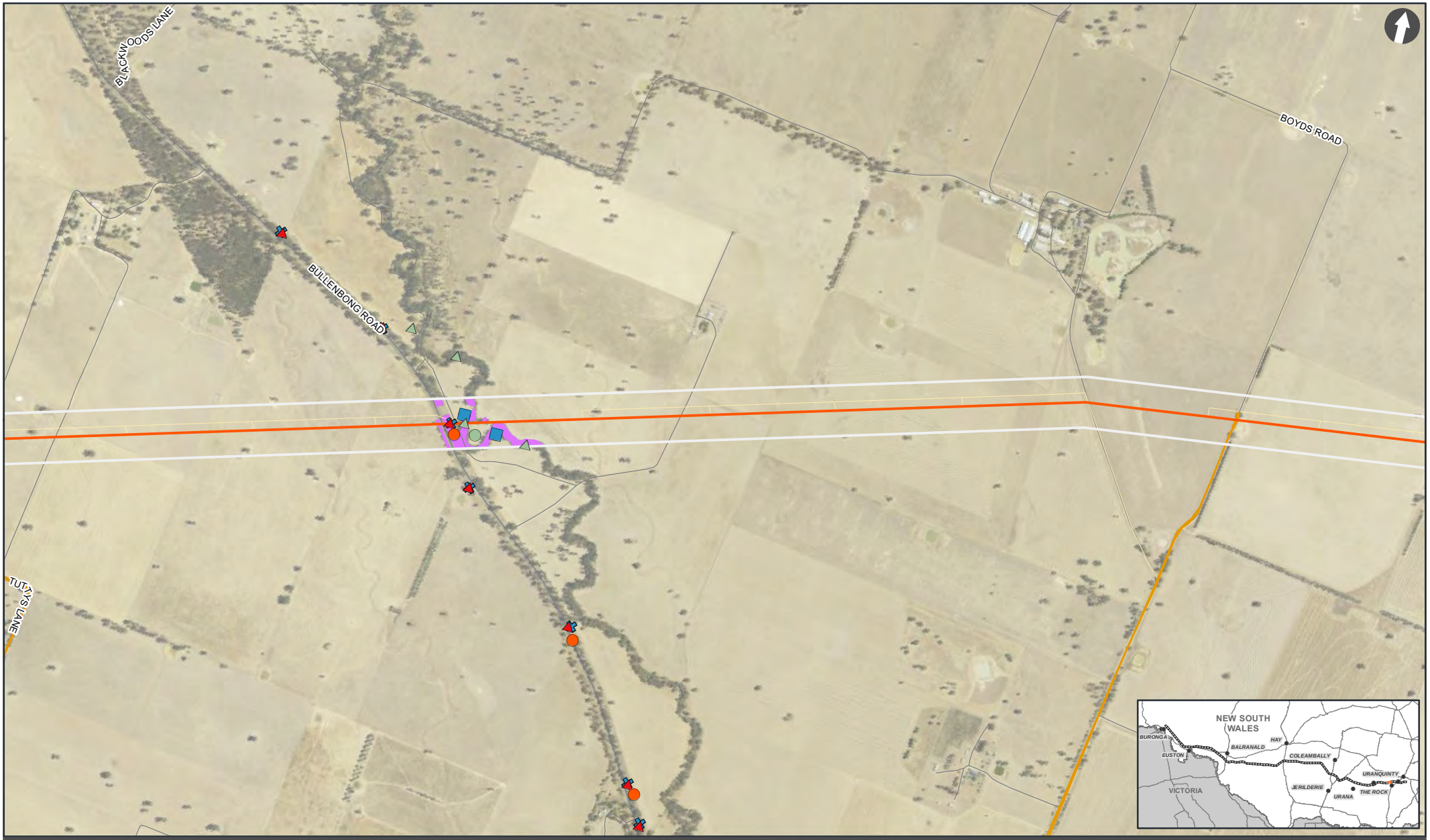
Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect

Fauna Stratification
- Grassy Woodlands

Fauna Survey Effort
- Bird Survey

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect

Fauna Stratification

- Riverine

Fauna Survey Effort

- Anabat
- Bird Survey
- Call Playback
- Camera
- East Squirrel Glider Surveys
- Frog Call Playback
- Glider Cage Trap

BDAR - Figure C-6

Threatened Fauna
Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-6

Threatened Fauna
Field Survey Effort

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect

Fauna Stratification
- Grassy Woodlands

Fauna Survey Effort
- Camera
- East Squirrel Glider Surveys

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect

Fauna Stratification
- Grassy Woodlands

BDAR - Figure C-6

Threatened Fauna
Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area

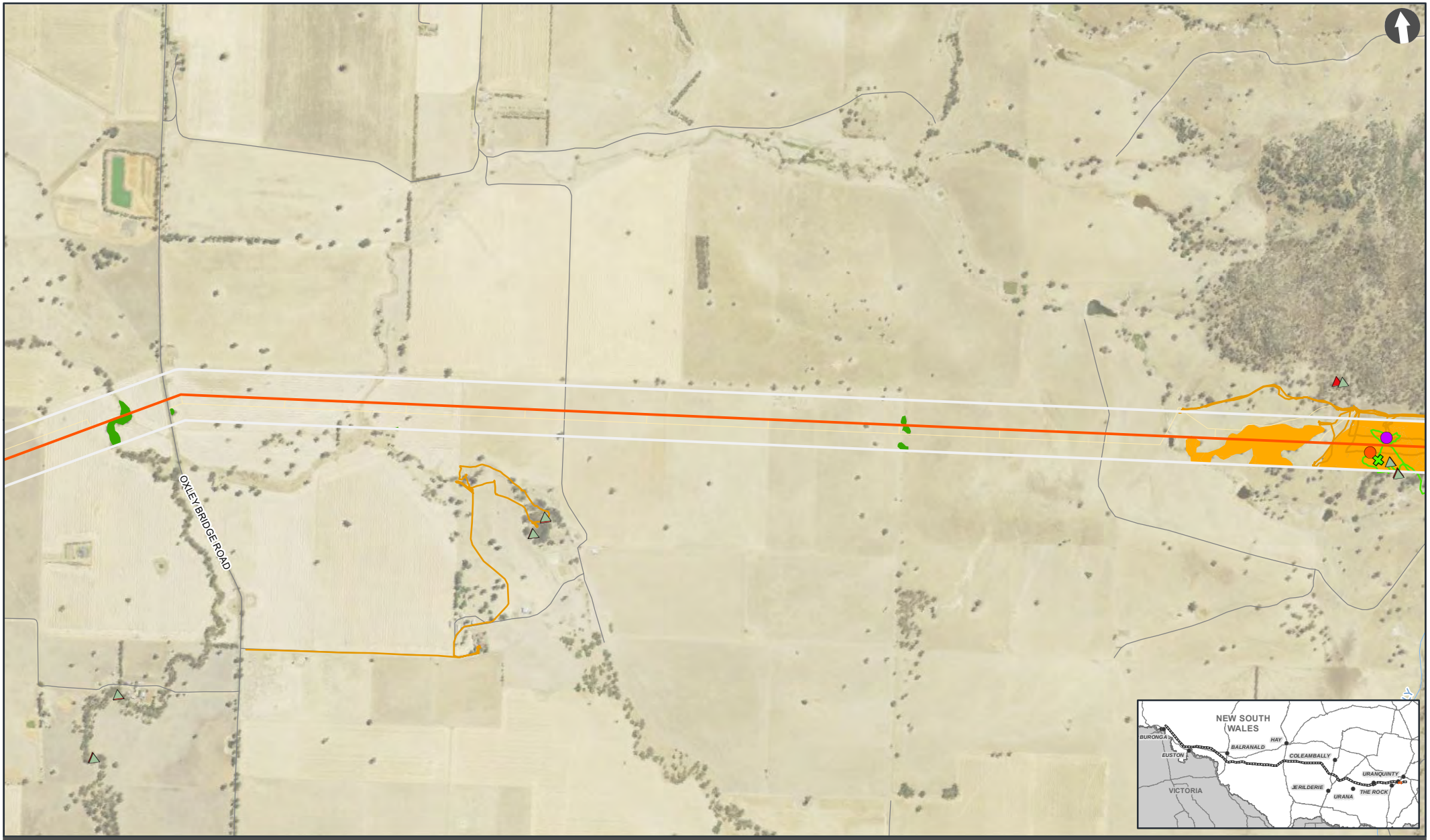
Fauna Stratification
- Grassy Woodlands

BDAR - Figure C-6

Threatened Fauna
Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect
- Koala Survey Transects

Fauna Stratification
- Grassy Woodlands
- Rocky Woodlands

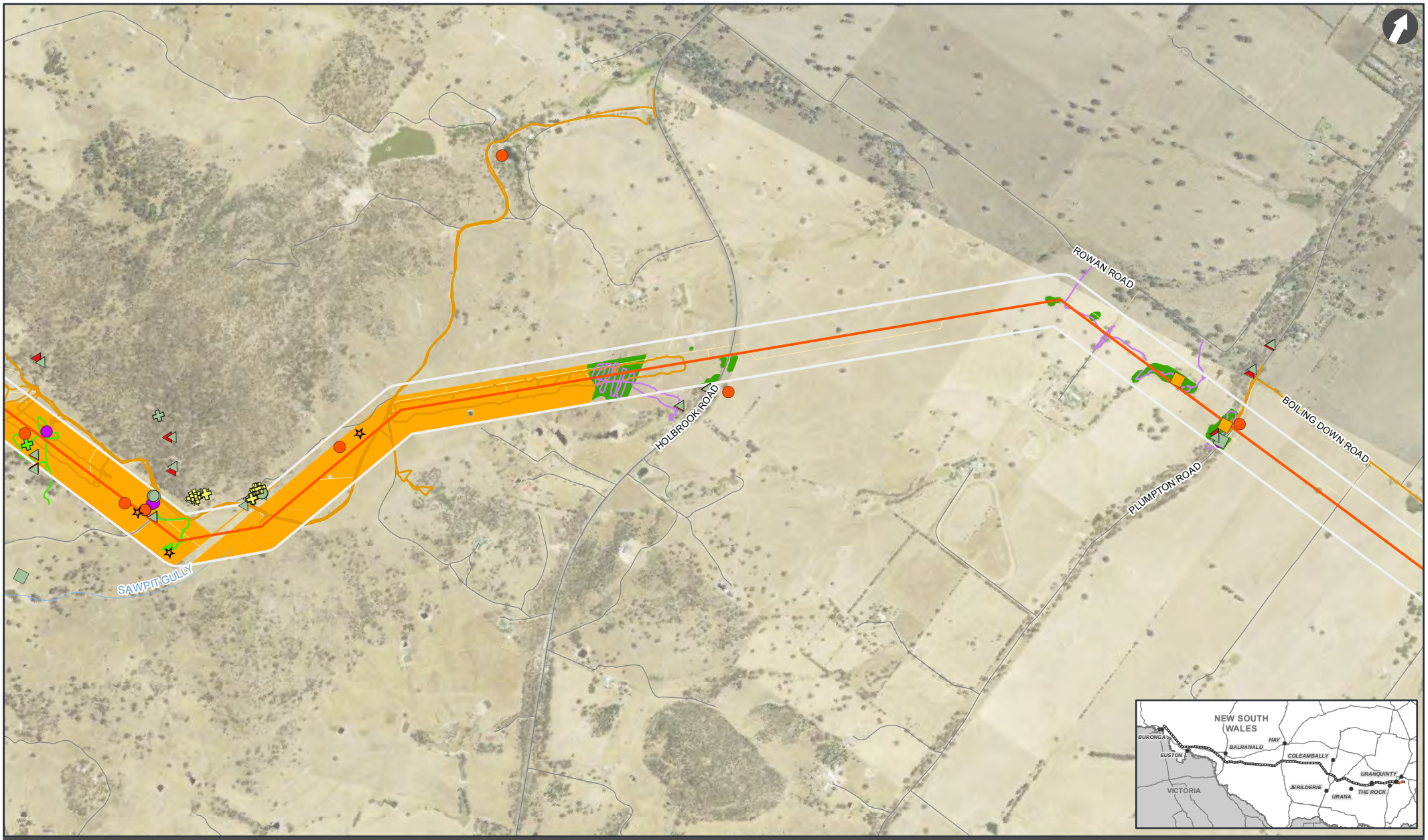
Fauna Survey Effort
- Bird Survey
- Call Playback
- Camera
- East Squirrel Glider Surveys
- Koala SAT

BDAR - Figure C-6

Threatened Fauna
Field Survey Effort

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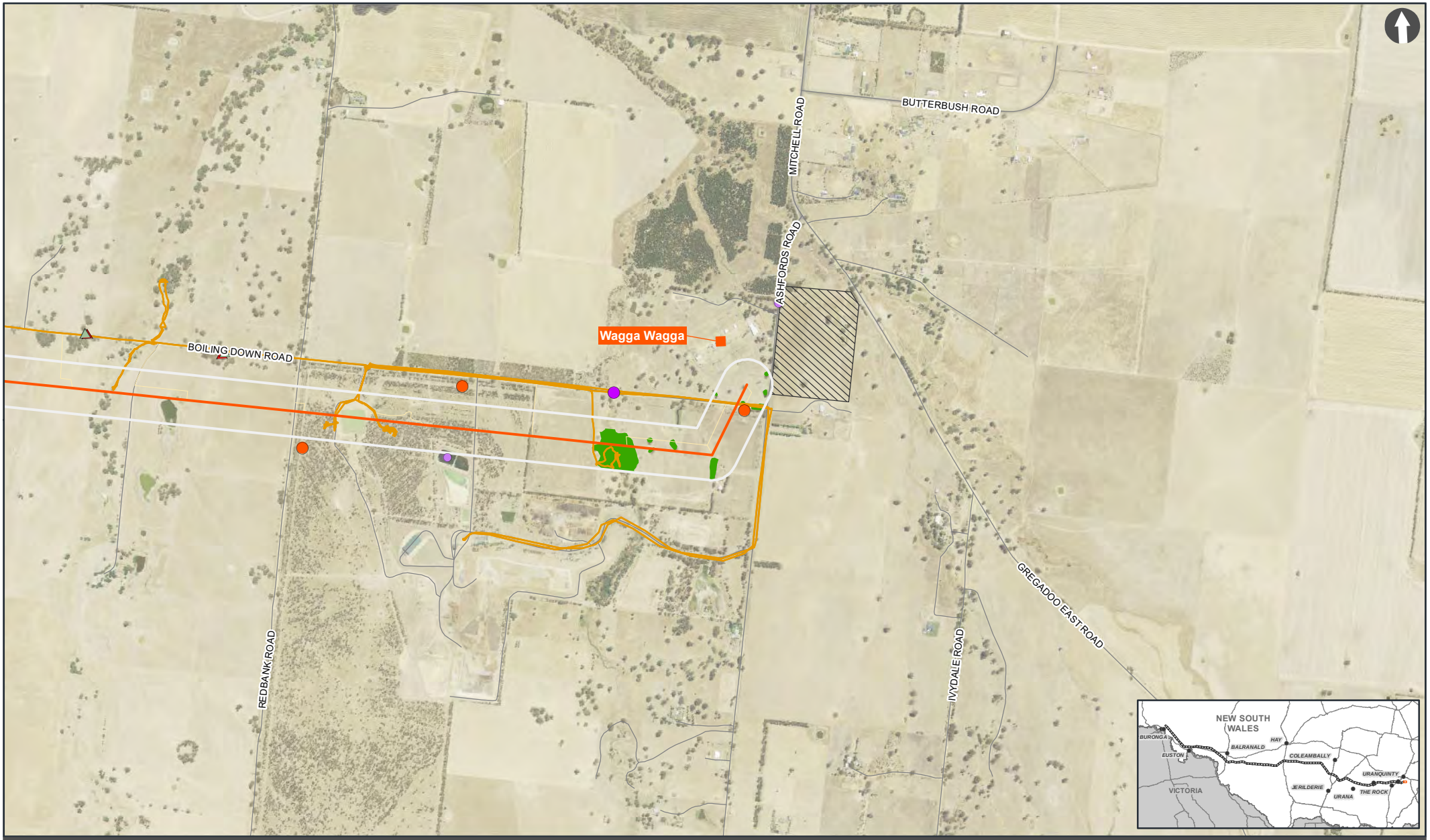


BDAR - Figure C-6

Threatened Fauna
Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Fauna Survey Transect

Fauna Stratification
- Grassy Woodlands

Fauna Survey Effort
- Bird Survey
- Call Playback
- Camera
- East Squirrel Glider Surveys

BDAR - Figure C-6

Threatened Fauna
Field Survey Effort

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Source: NSWSS, ESRI, Transgrid, WSP

APPENDIX C-7
Threatened flora species individual and polygon maps



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Project Components

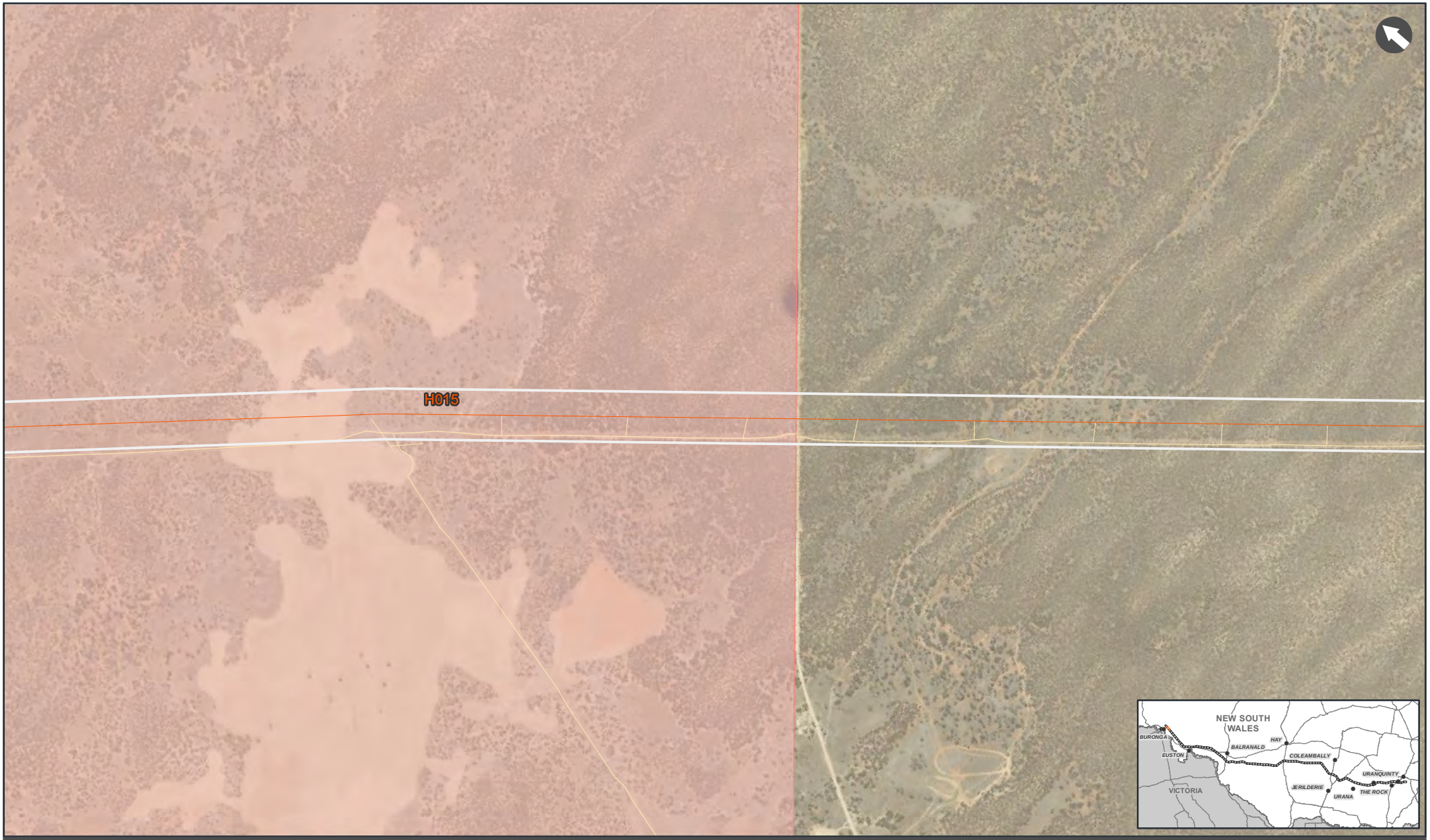
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Holdings - No Access
- Waterbody

BDAR - Figure C-7a

Threatened Flora Species Individual and Species Polygons

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Holdings - No Access
- Waterbody

BDAR - Figure C-7b

Threatened Flora Species Individual and Species Polygons

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\03_AppendixC\PS117658_BDAR_C007_FloraSpeciesIndividualAndPolygons_r1v9.mxd

Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

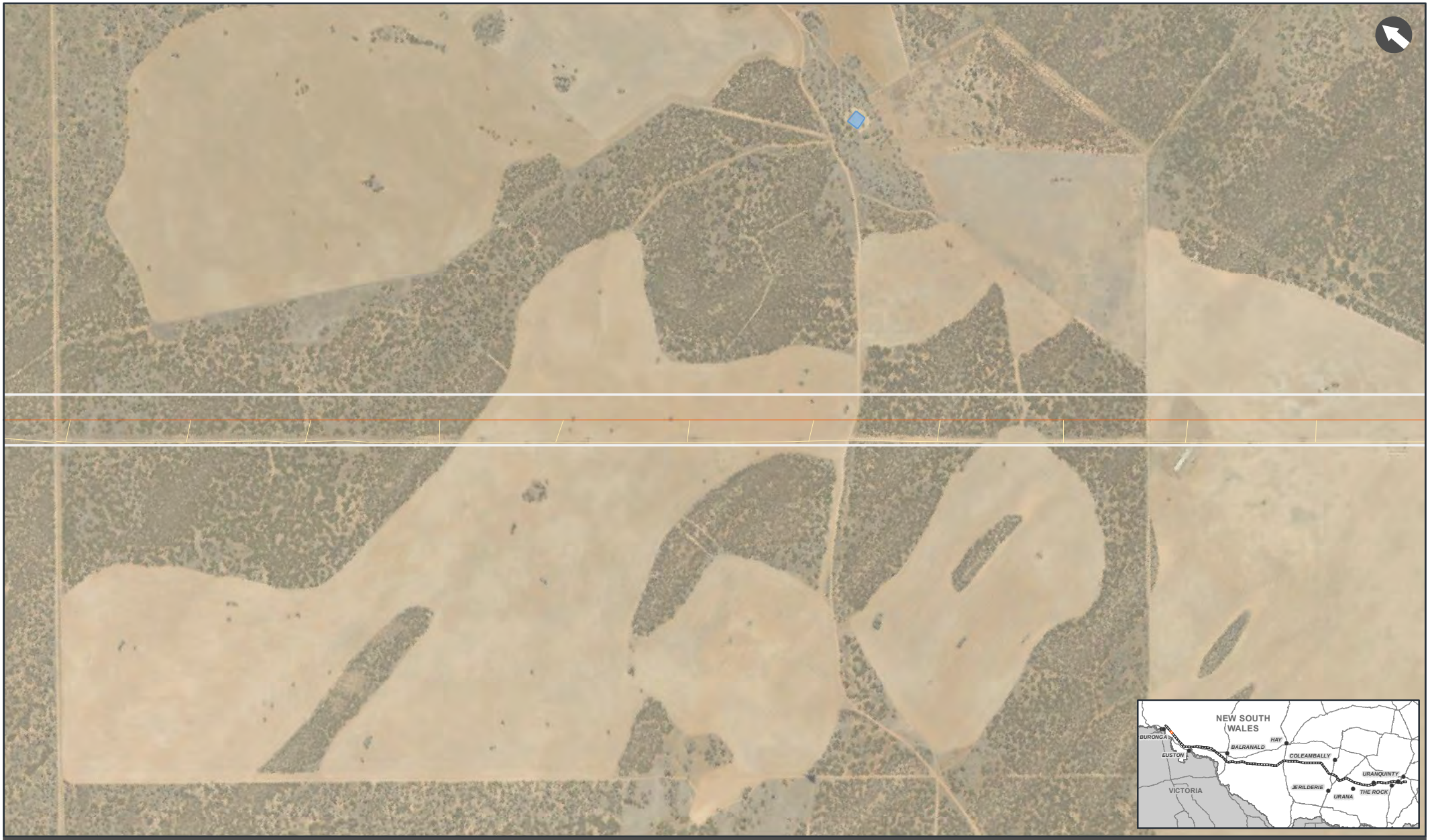
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

BDAR - Figure C-7c

Threatened Flora Species Individual and Species Polygons

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

BDAR - Figure C-7d

Threatened Flora Species Individual and Species Polygons

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

BDAR - Figure C-7e

Threatened Flora Species Individual and Species Polygons

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-7f

Threatened Flora Species Individual and Species Polygons

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-7g

Threatened Flora Species Individual and Species Polygons

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

Threatened Flora Species
- *Santalum murrayanum* (1)

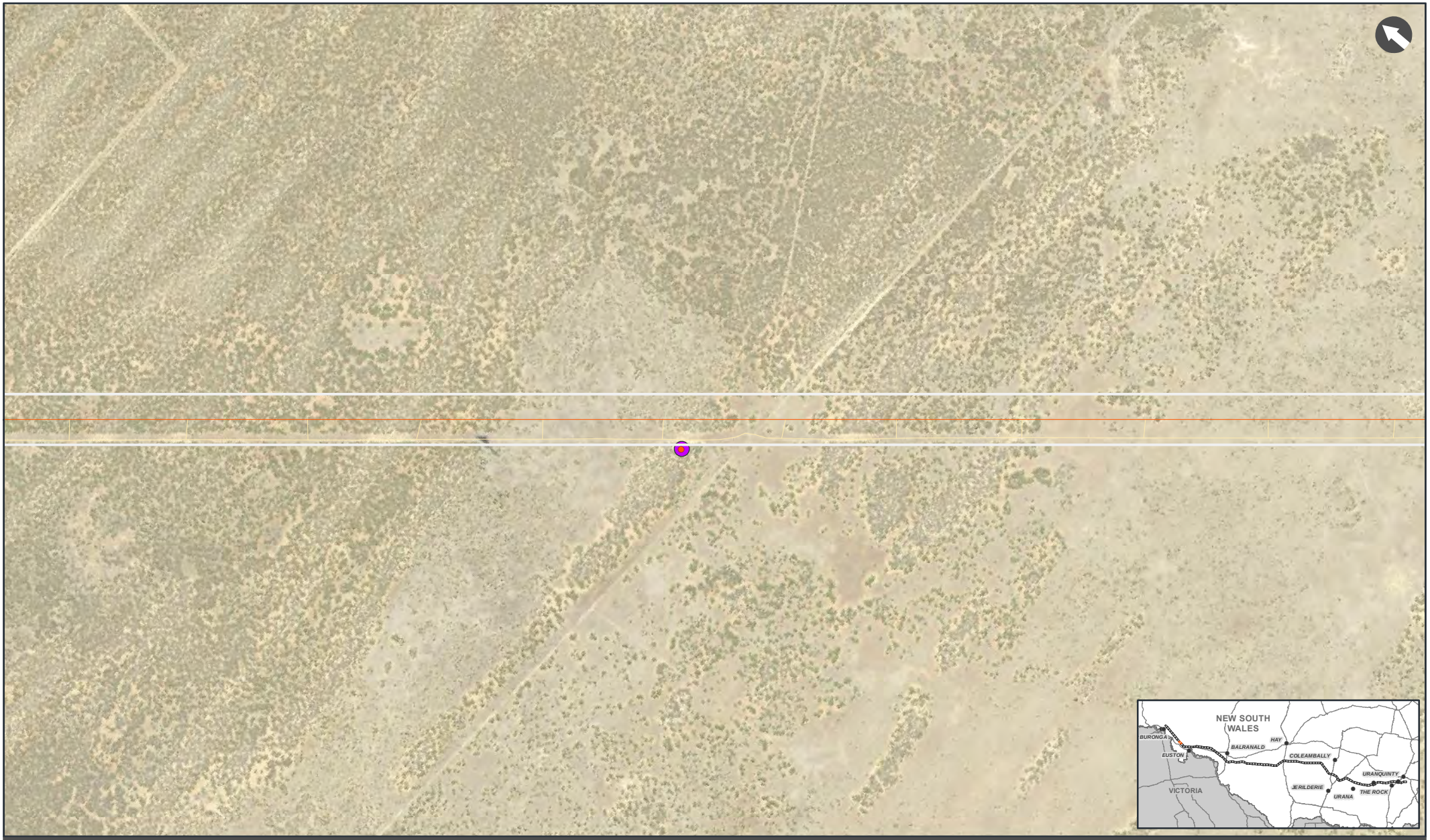
Threatened Flora Species Polygons
- *Santalum murrayanum*

BDAR - Figure C-7h

Threatened Flora Species Individual and Species Polygons

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

Threatened Flora Species

- *Santalum murrayanum* (1)

Threatened Flora Species Polygons

- *Santalum murrayanum*

BDAR - Figure C-7i

Threatened Flora Species Individual and Species Polygons

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

BDAR - Figure C-7j

Threatened Flora Species Individual and Species Polygons

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

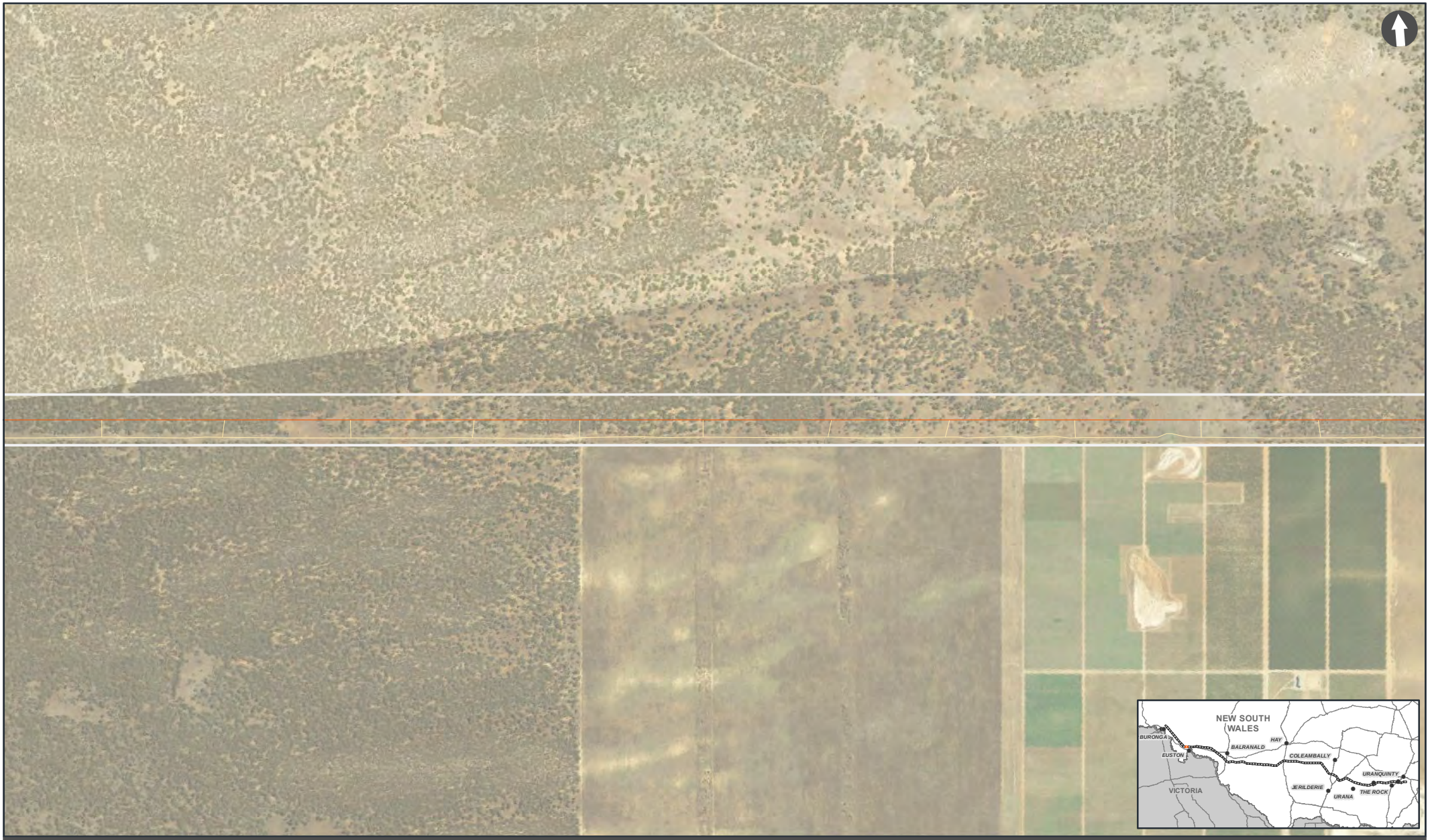
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

BDAR - Figure C-7k

Threatened Flora Species Individual and Species Polygons

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

BDAR - Figure C-7l

Threatened Flora Species Individual and Species Polygons

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

Threatened Flora Species

- *Pimelea serpyllifolia subsp. serpyllifolia* (14)

Threatened Flora Species Polygons

- *Pimelea serpyllifolia subsp. serpyllifolia*

BDAR - Figure C-7m

Threatened Flora Species Individual and Species Polygons

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

BDAR - Figure C-7n

Threatened Flora Species Individual and Species Polygons

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

Threatened Flora Species

- *Santalum murrayanum* (2)

Threatened Flora Species Polygons

- *Santalum murrayanum*

BDAR - Figure C-7o

Threatened Flora Species Individual and Species Polygons

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

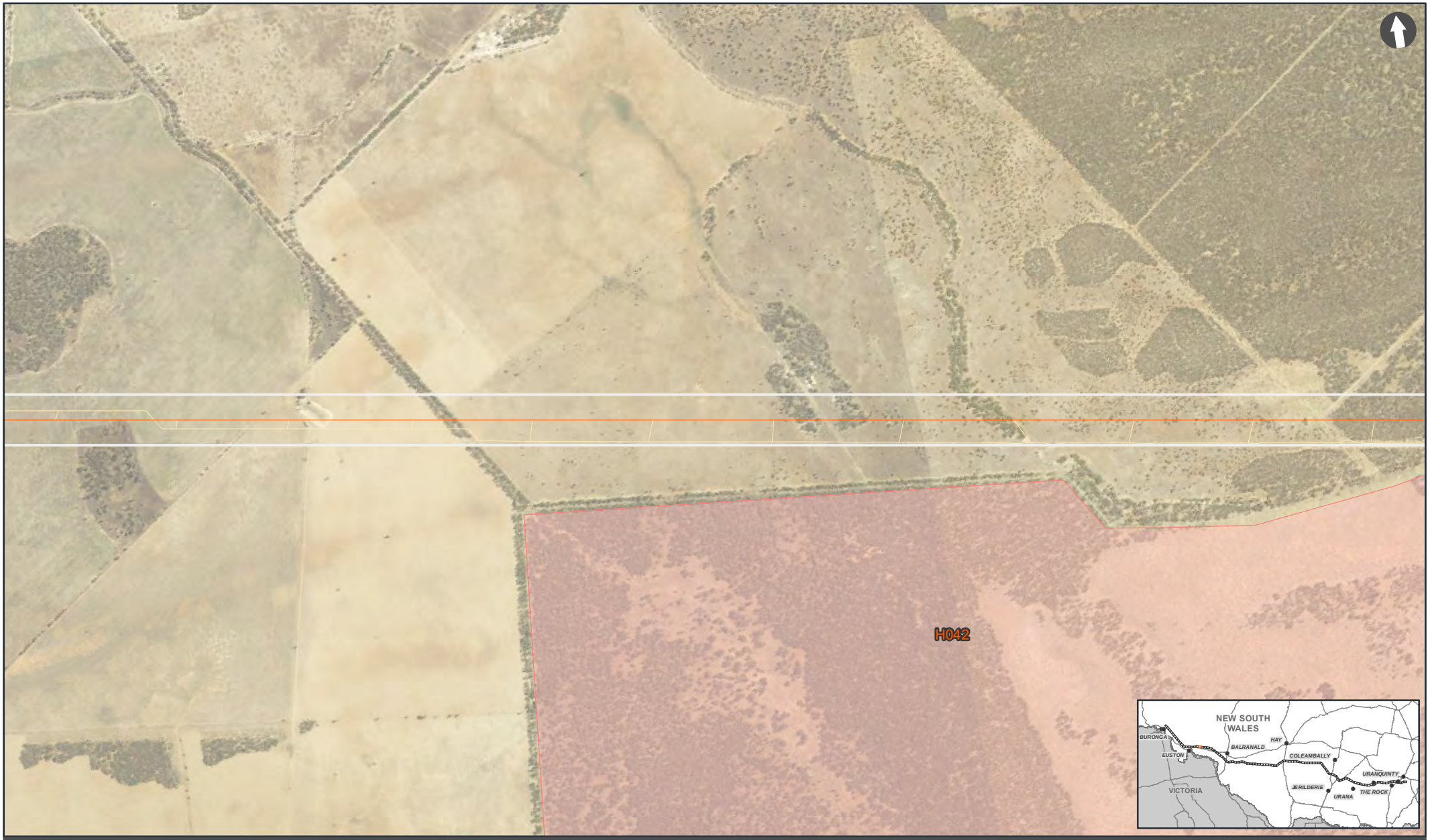
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

BDAR - Figure C-7p

Threatened Flora Species Individual and Species Polygons

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Holdings - No Access
- Waterbody

BDAR - Figure C-7q

Threatened Flora Species Individual and Species Polygons

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-7r

Threatened Flora Species Individual and Species Polygons

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Holdings - No Access
- Waterbody

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-7s

Threatened Flora Species Individual and Species Polygons

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

BDAR - Figure C-7t

Threatened Flora Species Individual and Species Polygons

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

BDAR - Figure C-7u

Threatened Flora Species Individual and Species Polygons

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-7v

Threatened Flora Species Individual and Species Polygons

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

BDAR - Figure C-7w

Threatened Flora Species Individual and Species Polygons

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

BDAR - Figure C-7x

Threatened Flora Species Individual and Species Polygons

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

BDAR - Figure C-7y

Threatened Flora Species Individual and Species Polygons

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

BDAR - Figure C-7z

Threatened Flora Species Individual and Species Polygons

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

BDAR - Figure C-7aa

Threatened Flora Species Individual and Species Polygons

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

BDAR - Figure C-7ab

Threatened Flora Species Individual and Species Polygons

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

BDAR - Figure C-7ac

Threatened Flora Species Individual and Species Polygons

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

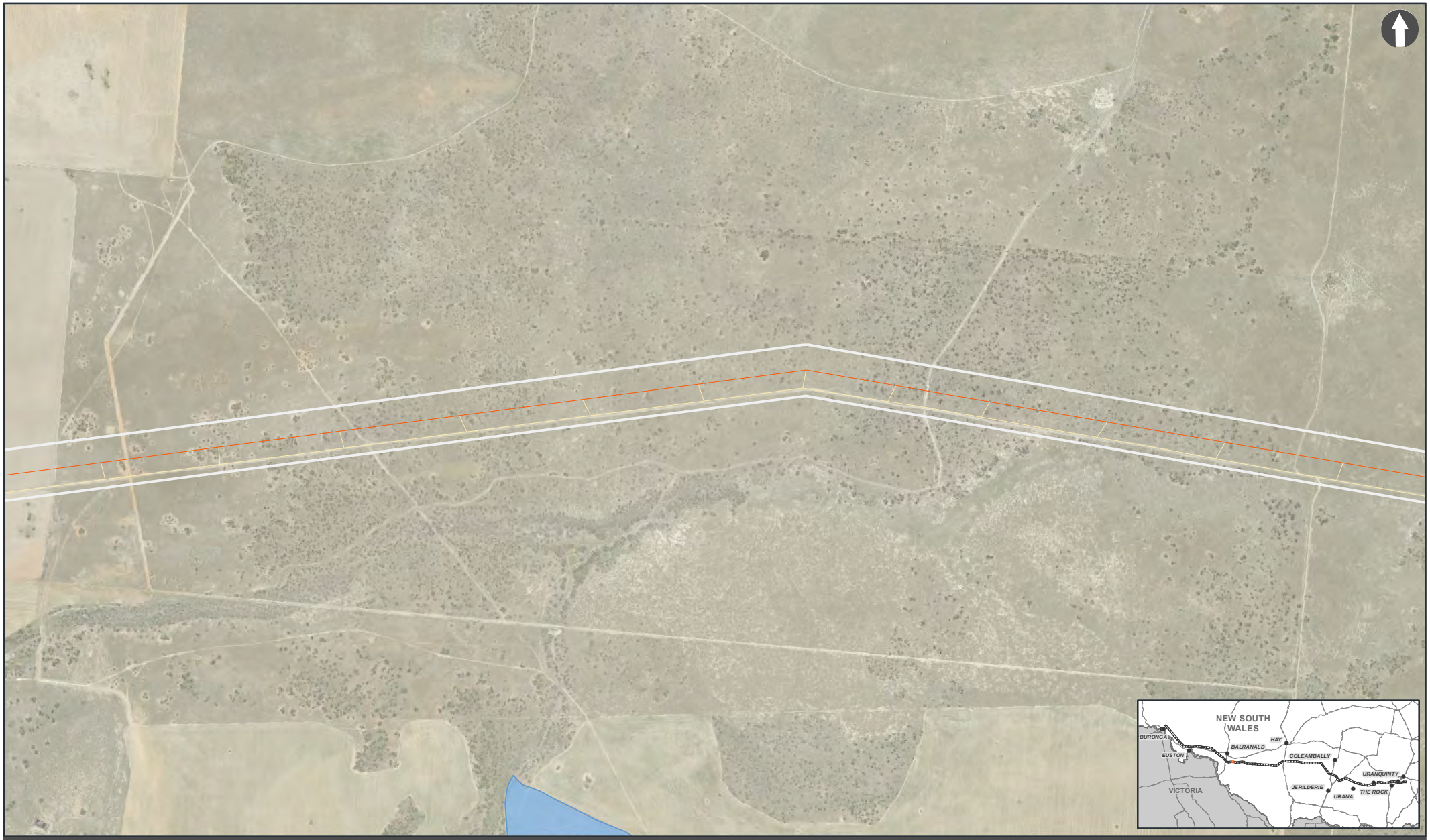
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

BDAR - Figure C-7ad

Threatened Flora Species Individual and Species Polygons

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

BDAR - Figure C-7ae

Threatened Flora Species Individual and Species Polygons

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

BDAR - Figure C-7af

Threatened Flora Species Individual and Species Polygons

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-7ag

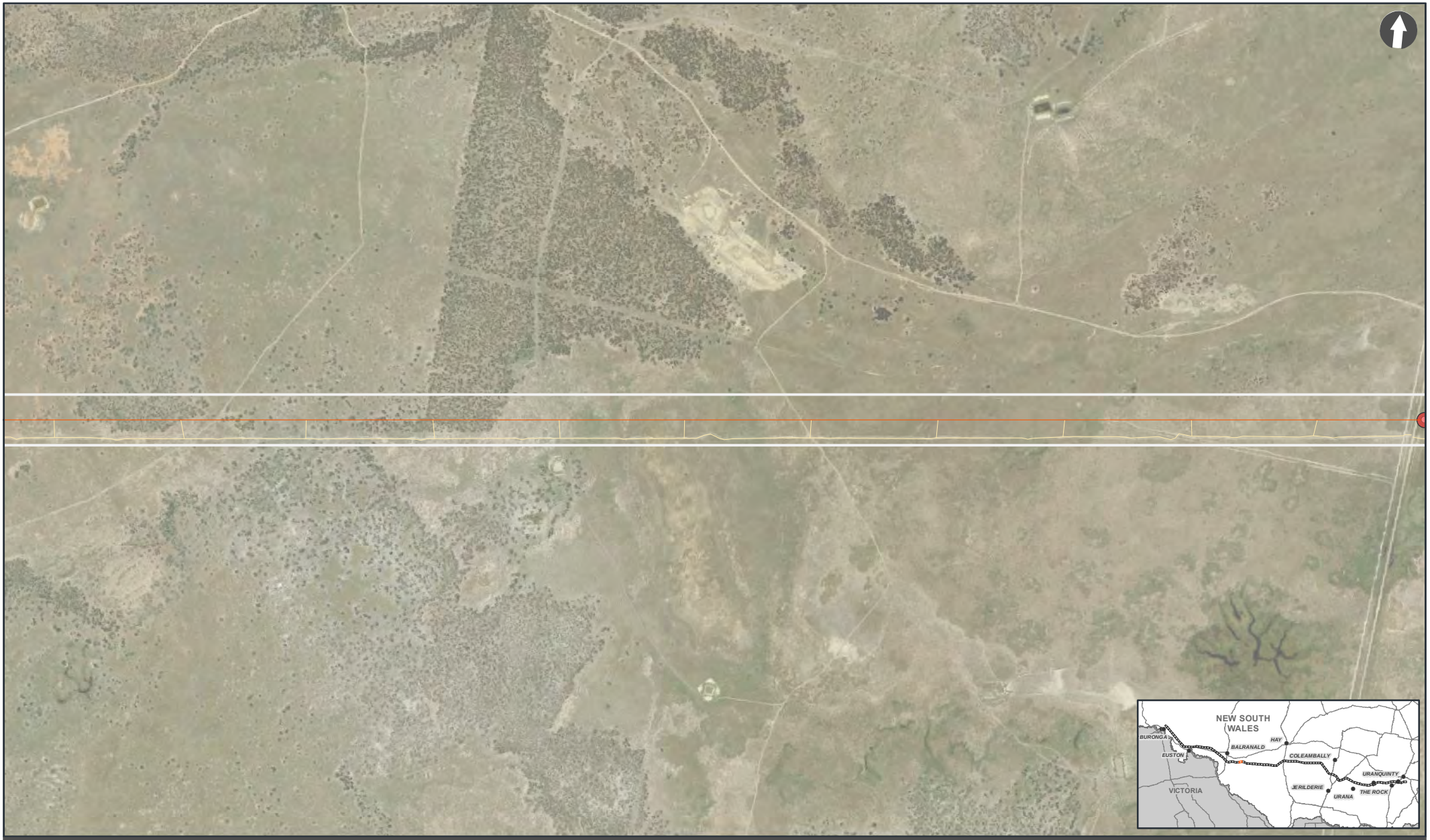
Threatened Flora Species Individual and Species Polygons

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

Threatened Flora Species

- *Brachyscome papillosa* (1)

Threatened Flora Species Polygons

- *Brachyscome papillosa*

BDAR - Figure C-7ah

Threatened Flora Species Individual and Species Polygons

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

Threatened Flora Species
- *Brachyscome papillosa* (1)
- *Maeriana cheelii* (161)

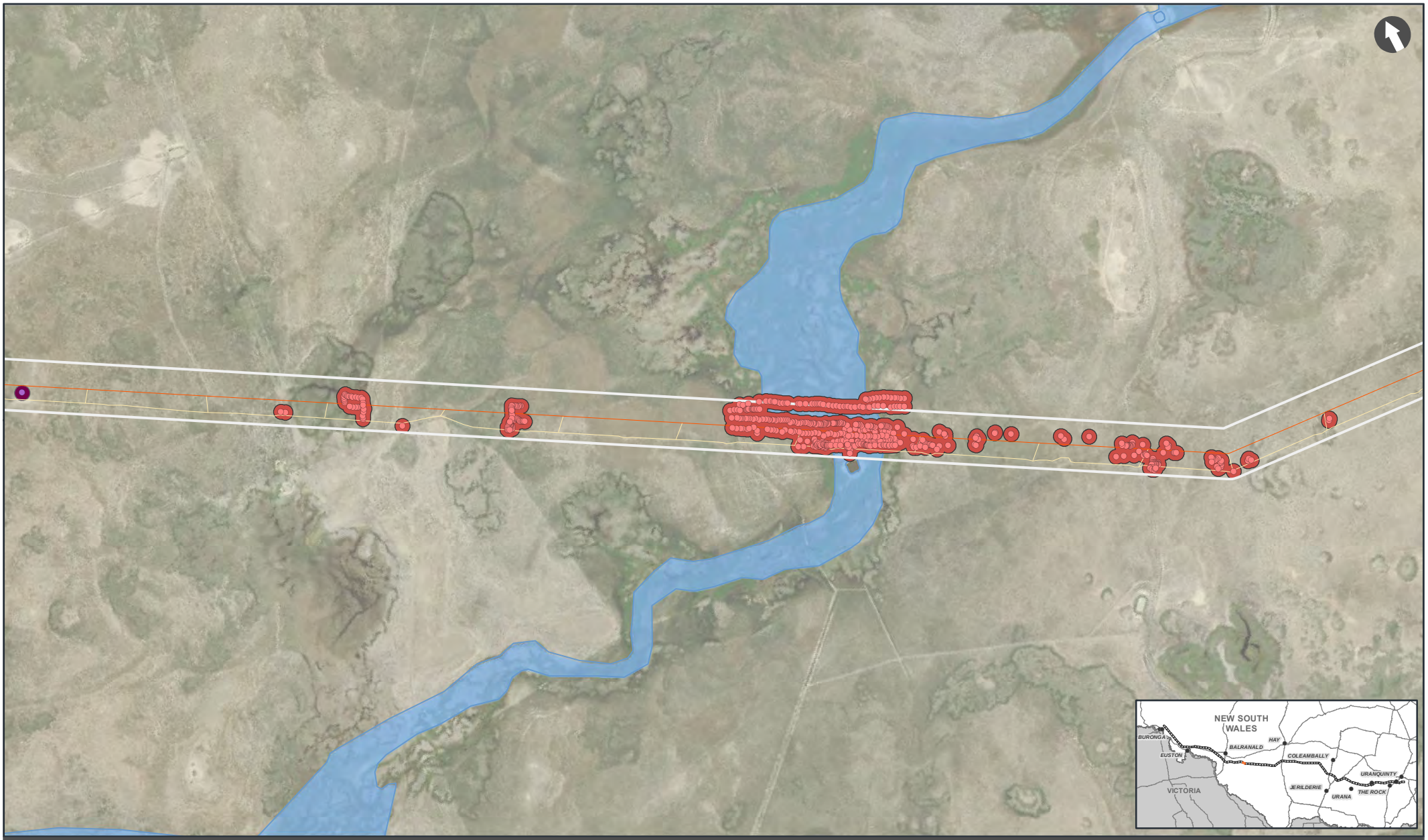
Threatened Flora Species Polygons
- *Brachyscome papillosa*
- *Maeriana cheelii*

BDAR - Figure C-7ai

Threatened Flora Species Individual and Species Polygons

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-7aj

Threatened Flora Species Individual and Species Polygons

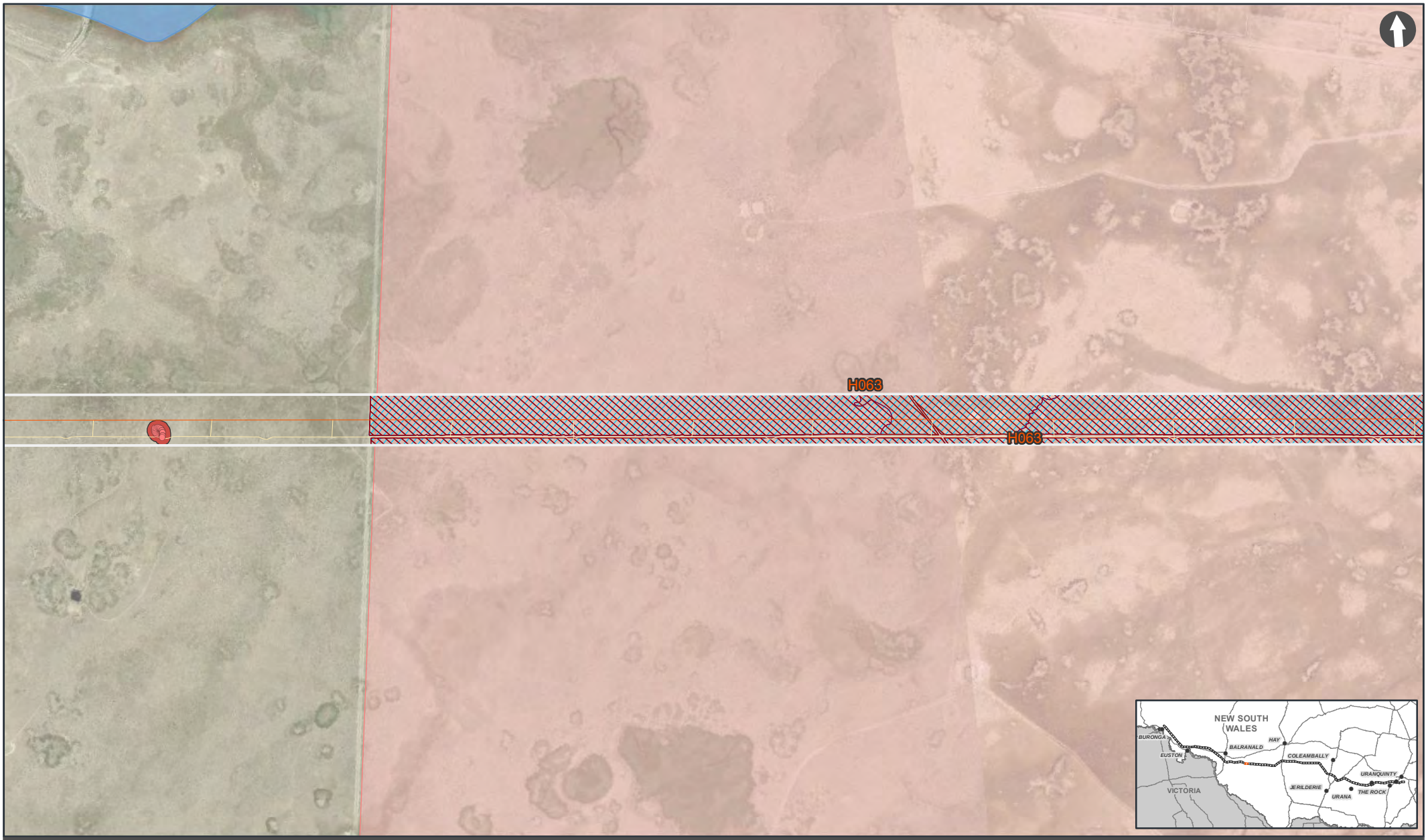
Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

Threatened Flora Species
- *Brachyscome papillosa* (542)
- *Maeriana cheelii* (1)

Threatened Flora Species Polygons
- *Brachyscome papillosa*
- *Maeriana cheelii*

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-7ak

Threatened Flora Species Individual and Species Polygons

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Holdings - No Access
- Waterbody

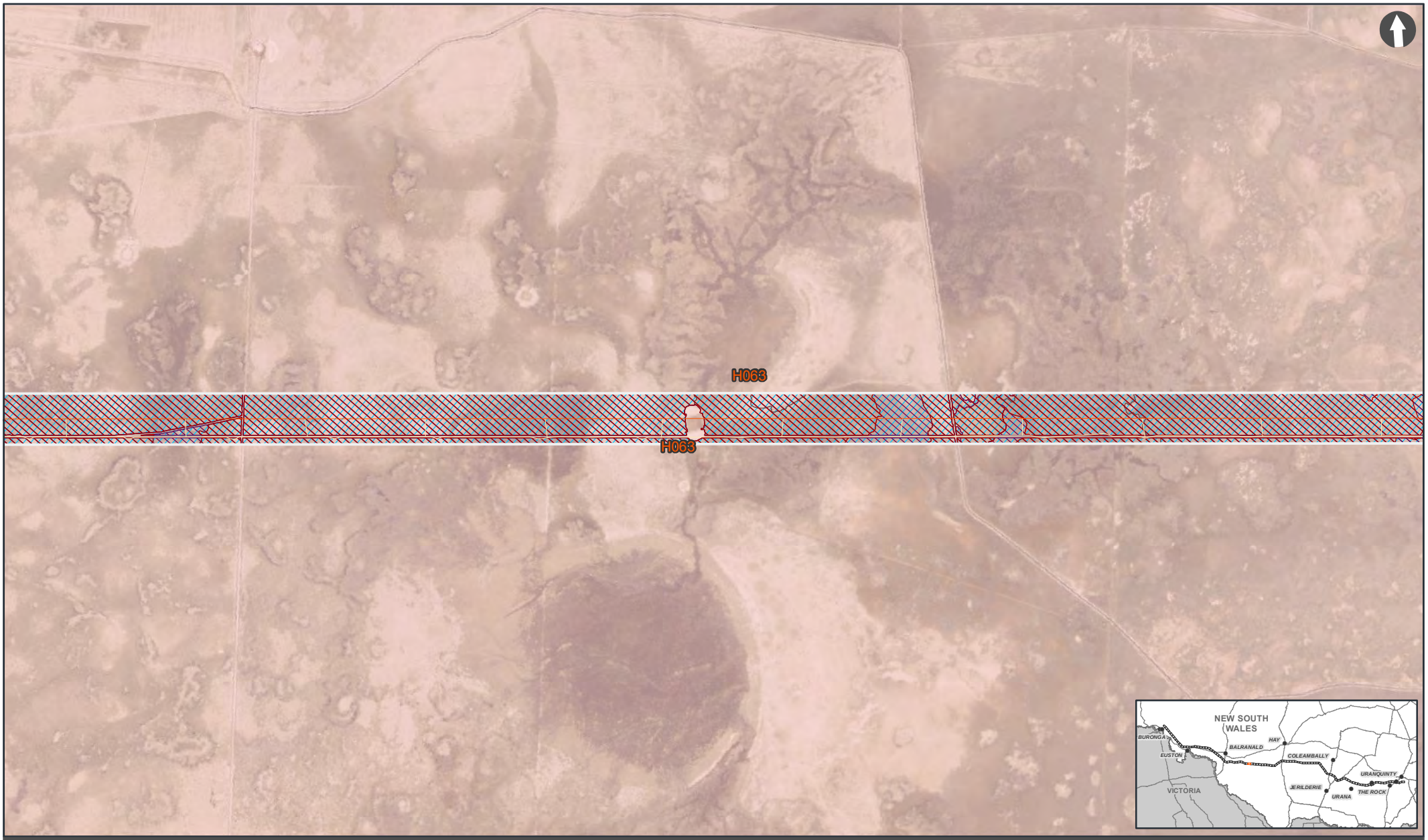
Threatened Flora Species
- *Brachyscome papillosa* (18)

Threatened Flora Species Polygons
- *Brachyscome papillosa*

Assumed Species Presence Polygon
- *Brachyscome papillosa*
- *Maireana cheelii*
- *Pilularia novae-hollandiae*
- *Swainsona murrayana*
- *Swainsona sericea*

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-7al

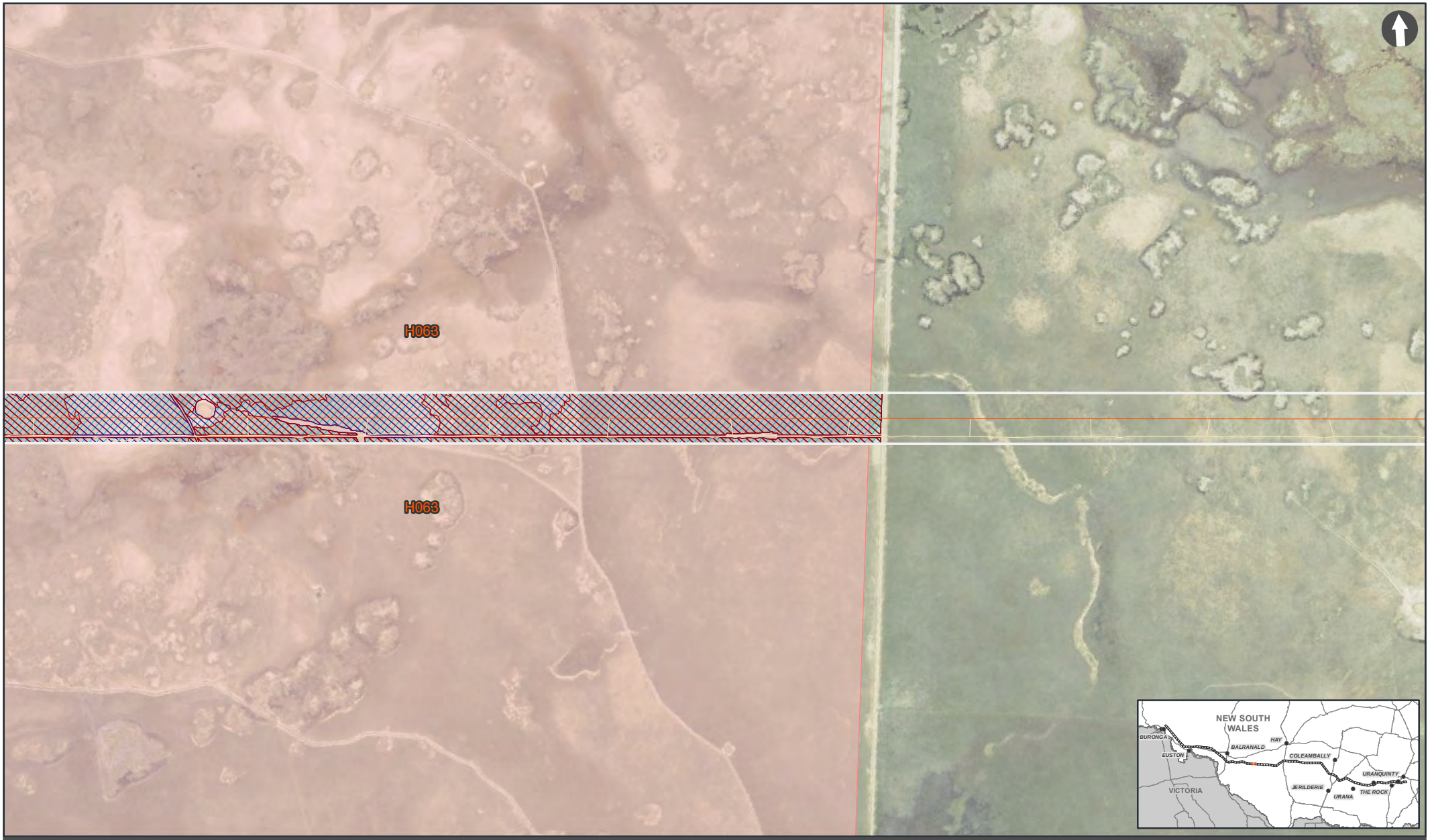
Threatened Flora Species Individual and Species Polygons

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Holdings - No Access
- Waterbody

Assumed Species Presence Polygon
- *Swainsona sericea*
- *Brachyscome papillosa*
- *Maireana cheelii*
- *Pilularia novae-hollandiae*
- *Swainsona murrayana*

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-7am

Threatened Flora Species Individual and Species Polygons

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Holdings - No Access
- Waterbody

Assumed Species Presence Polygon
- *Swainsona sericea*
- *Brachyscome papillosa*
- *Maireana cheelii*
- *Pilularia novae-hollandiae*
- *Swainsona murrayana*

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

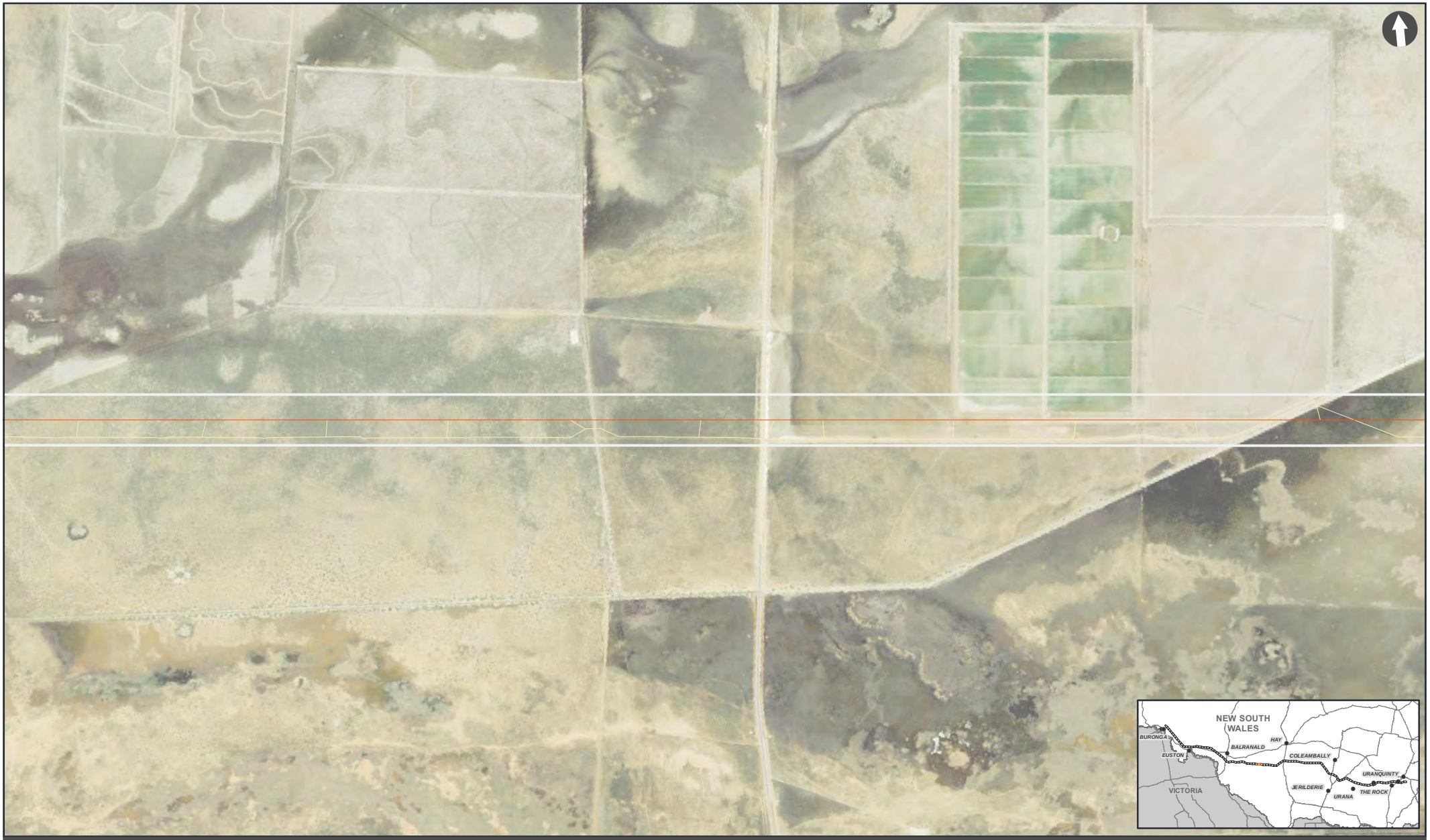
Threatened Flora Species
- *Maeriana cheelii* (21)

Threatened Flora Species Polygons
- *Maeriana cheelii*

BDAR - Figure C-7an
Threatened Flora Species Individual and Species Polygons

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

BDAR - Figure C-7ao

Threatened Flora Species Individual and Species Polygons

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\03_AppendixC\PS117658_BDAR_C007_FloraSpeciesIndividualAndPolygons_r1v9.mxd

Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

Threatened Flora Species

- *Maeriana cheelii* (287)

Threatened Flora Species Polygons

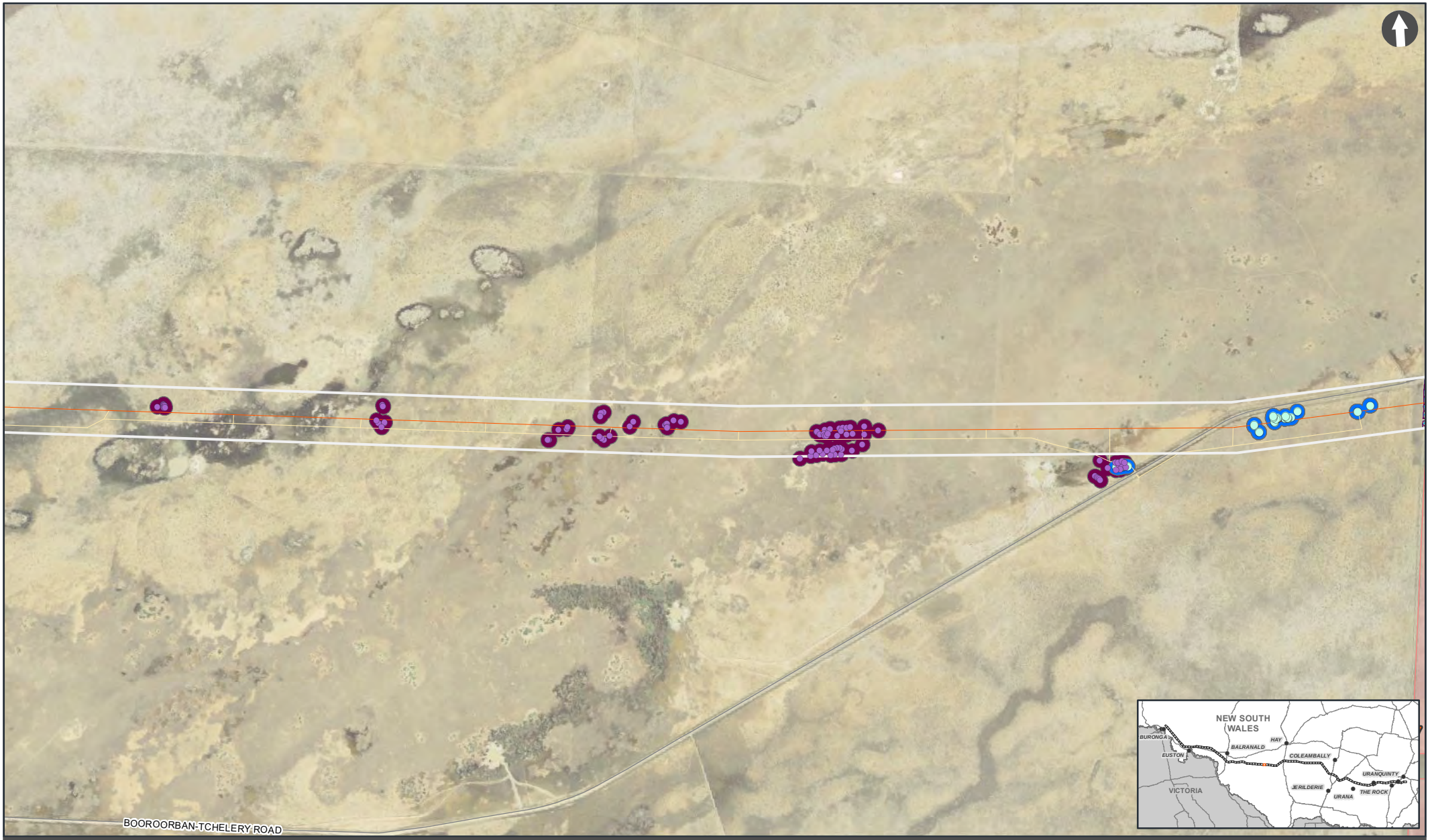
- *Maeriana cheelii*

BDAR - Figure C-7ap

Threatened Flora Species Individual and Species Polygons

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\03_AppendixC\PS117658_BDAR_C007_FloraSpeciesIndividualAndPolygons_r1v9.mxd

Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-7aq

Threatened Flora Species Individual and Species Polygons

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Holdings - No Access
- Waterbody

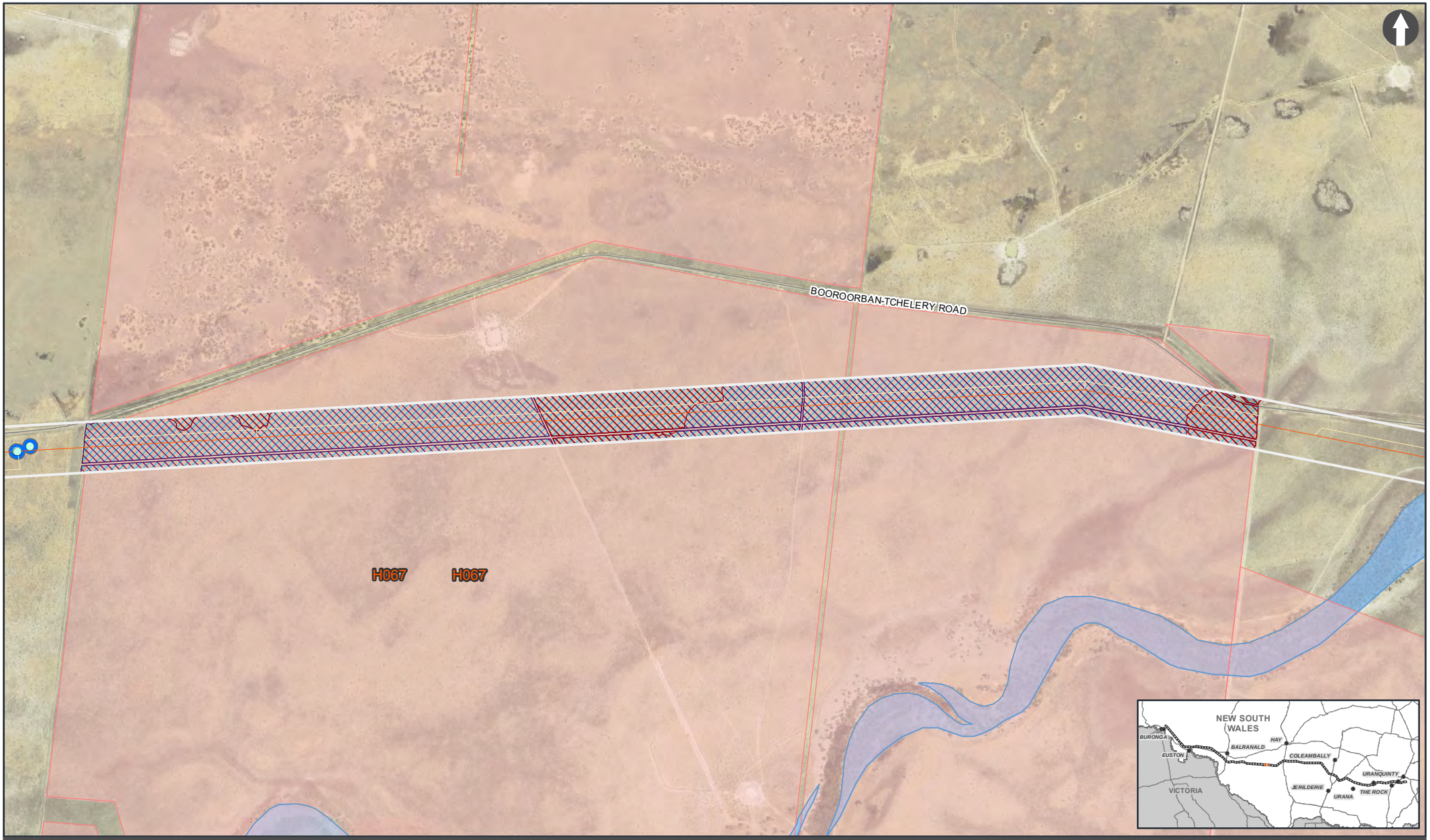
Threatened Flora Species
- *Maeriana cheelii* (99)
- *Swainsona murrayana* (31)

Threatened Flora Species Polygons
- *Maeriana cheelii*
- *Swainsona murrayana*
- *Swainsona sericea*

Assumed Species Presence Polygon
- *Maireana cheelii*
- *Swainsona murrayana*

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-7ar

Threatened Flora Species Individual and Species Polygons

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Holdings - No Access
- Waterbody

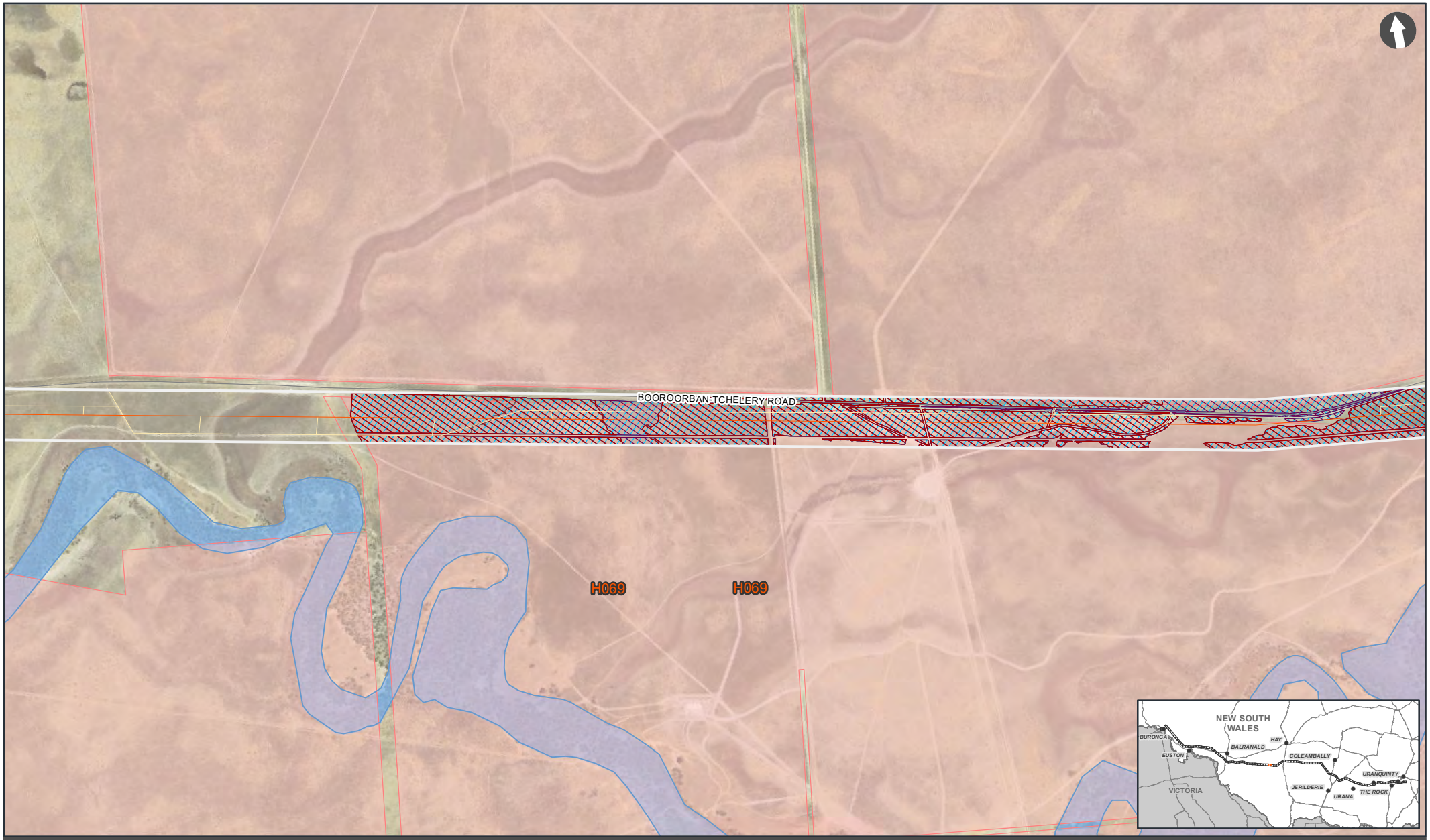
Threatened Flora Species
- *Swainsona murrayana* (3)

Threatened Flora Species Polygons
- *Swainsona murrayana*
- *Swainsona sericea*

Assumed Species Presence Polygon
- *Brachyscome papillosa*
- *Maireana cheelii*
- *Swainsona murrayana*
- *Swainsona sericea*

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-7as

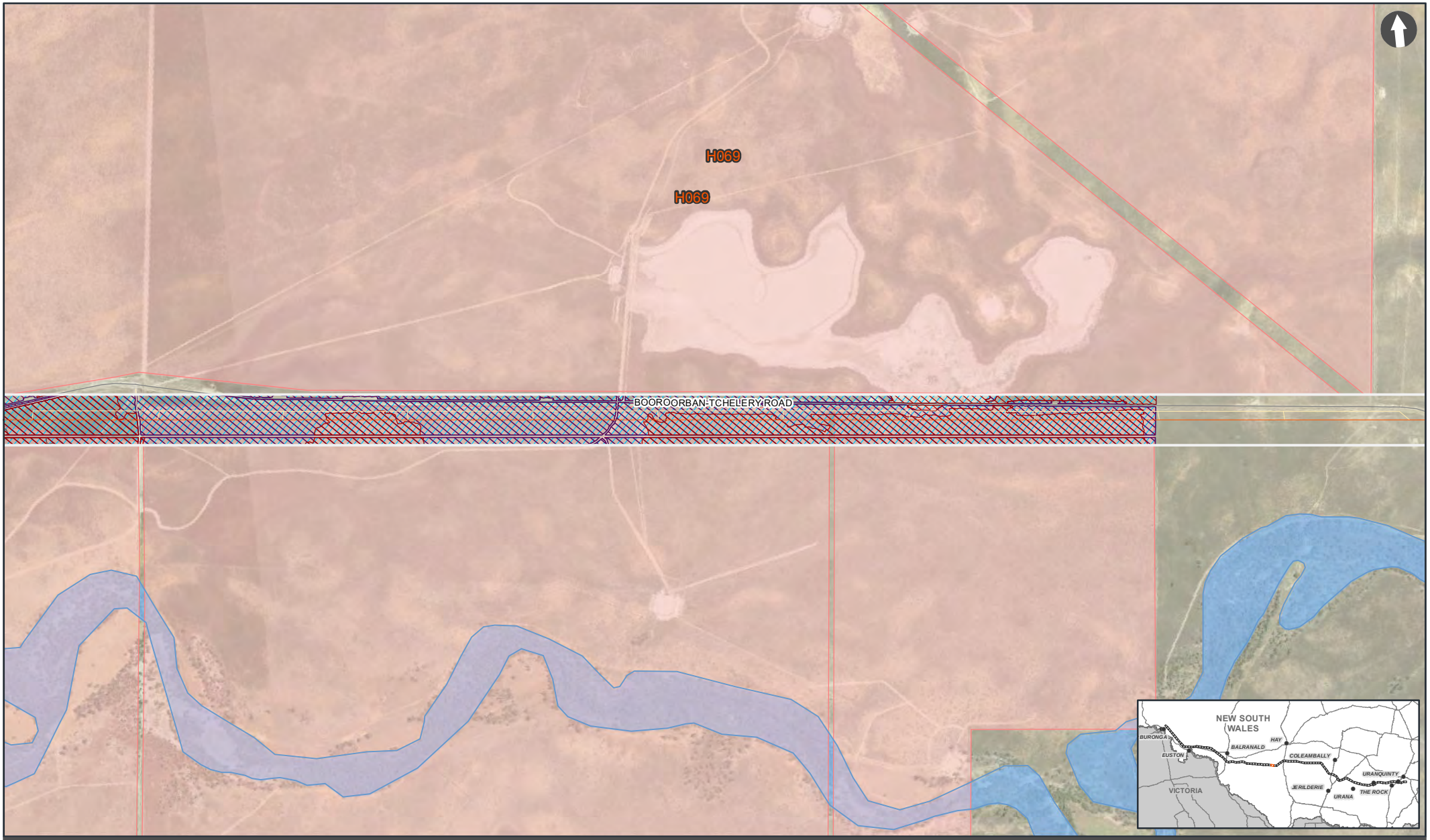
Threatened Flora Species Individual and Species Polygons

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Holdings - No Access
- Waterbody

Assumed Species Presence Polygon
- *Swainsona sericea*
- *Brachyscome papillosa*
- *Maireana cheelii*
- *Pilularia novae-hollandiae*
- *Swainsona murrayana*

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Holdings - No Access
- Waterbody

Assumed Species Presence Polygon

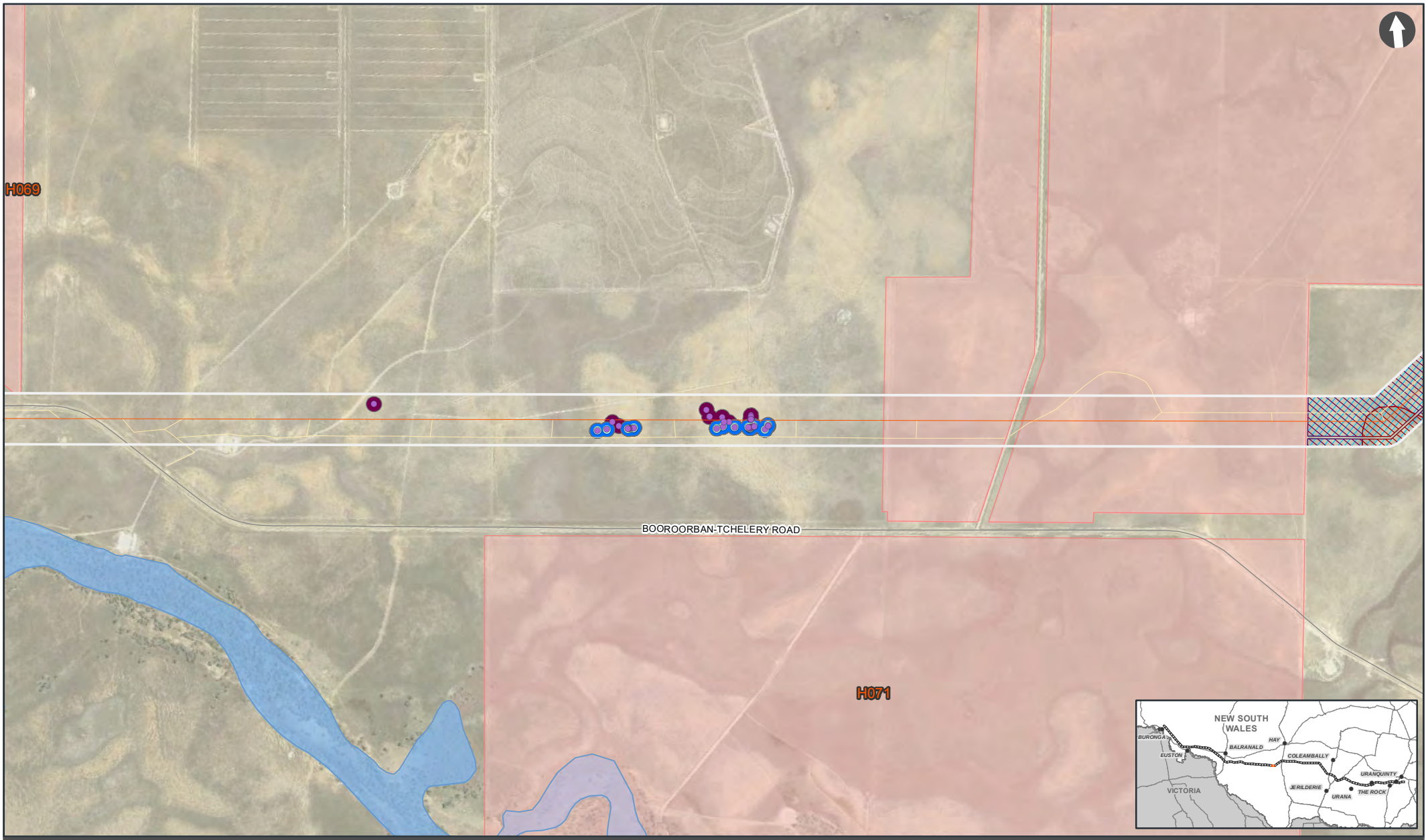
- *Swainsona sericea*
- *Brachyscome papillosa*
- *Maireana cheelii*
- *Pilularia novae-hollandiae*
- *Swainsona murrayana*

BDAR - Figure C-7at

Threatened Flora Species Individual and Species Polygons

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure C-7au

Threatened Flora Species Individual and Species Polygons

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Holdings - No Access
- Waterbody

Threatened Flora Species
- *Maeriana cheelii* (39)
- *Swainsona murrayana* (22)

Threatened Flora Species Polygons
- *Maeriana cheelii*
- *Swainsona murrayana*
- *Swainsona sericea*

Assumed Species Presence Polygon
- *Brachyscome papillosa*
- *Maireana cheelii*
- *Swainsona murrayana*

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure C-7av

Threatened Flora Species Individual and Species Polygons

Project Components

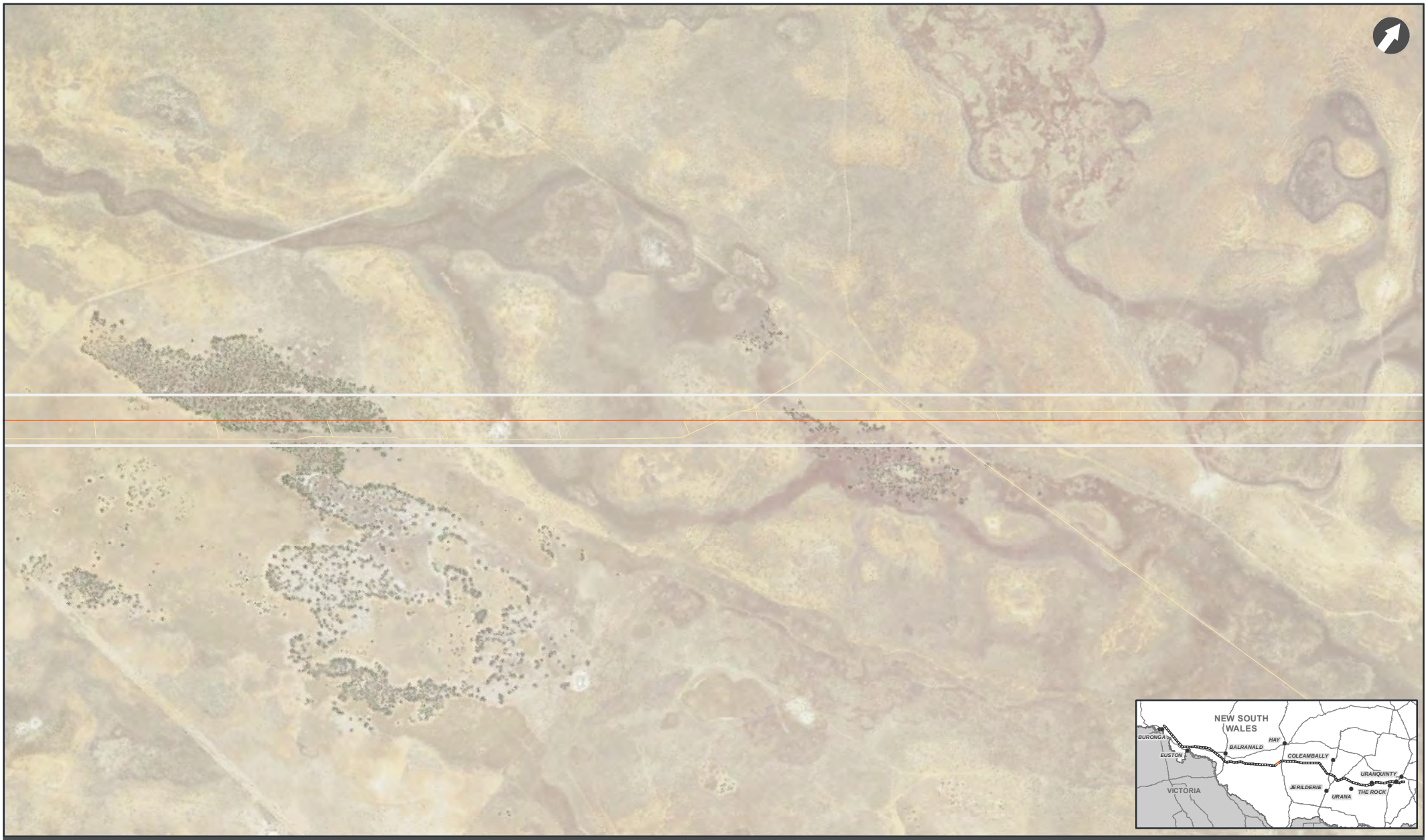
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Holdings - No Access
- Waterbody

Assumed Species Presence Polygon

- *Brachyscome papillosa*
- *Maireana cheelii*
- *Swainsona murrayana*
- *Swainsona sericea*

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

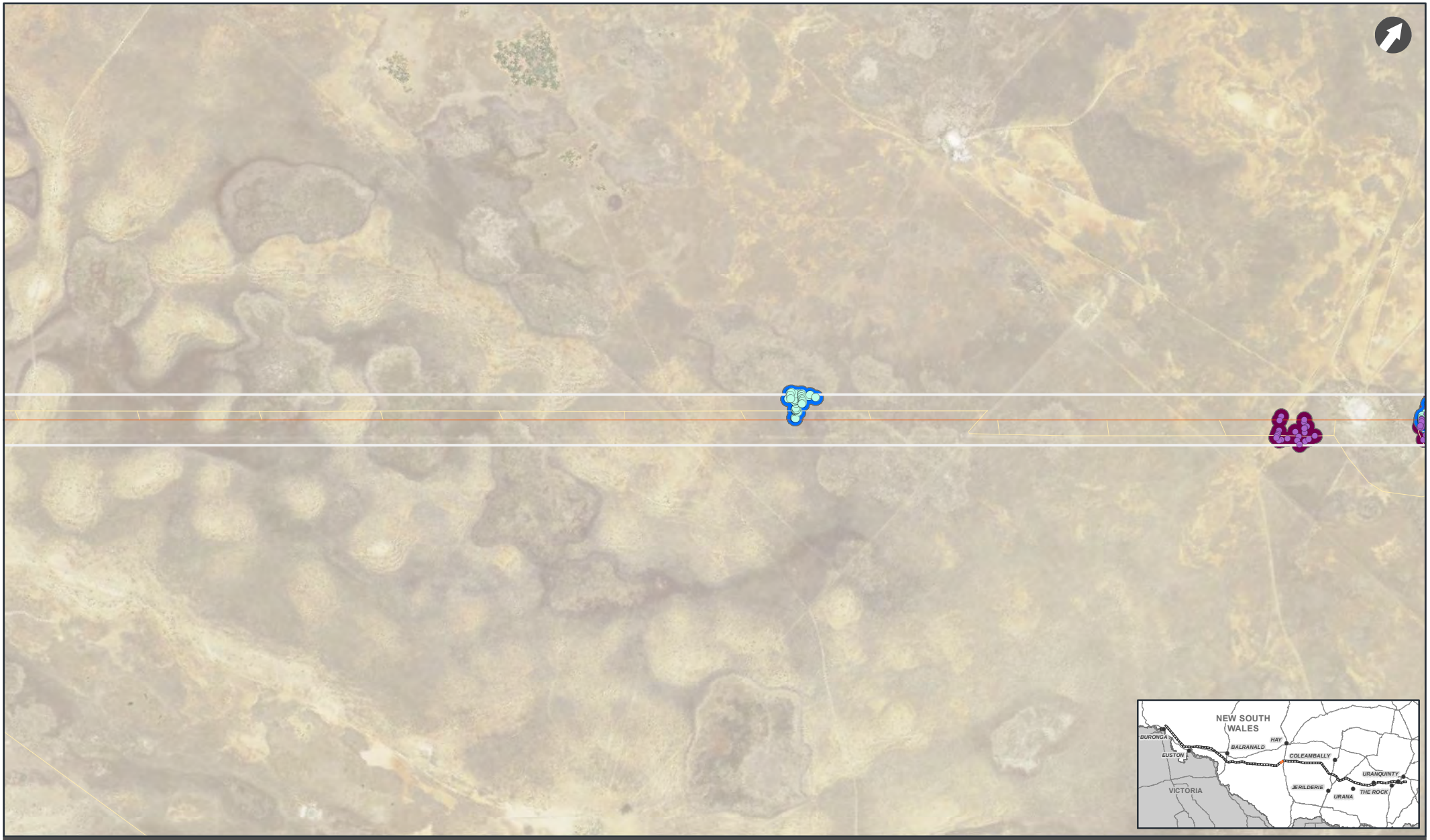
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

BDAR - Figure C-7aw

Threatened Flora Species Individual and Species Polygons

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-7ax

Threatened Flora Species Individual and Species Polygons

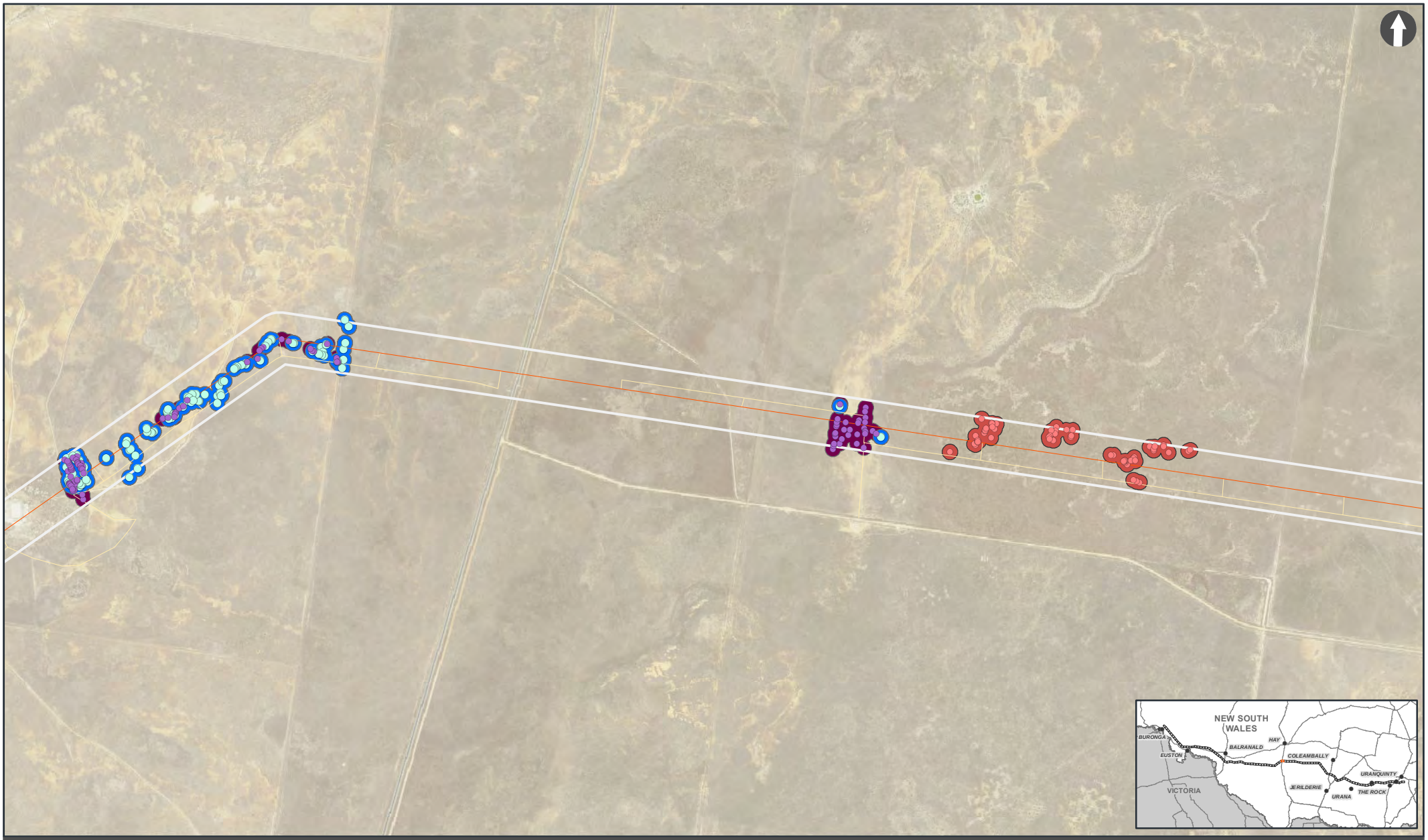
Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

Threatened Flora Species
- *Maeriana cheelii* (40)
- *Swainsona murrayana* (53)

Threatened Flora Species Polygons
- *Maeriana cheelii*
- *Swainsona murrayana*
- *Swainsona sericea*

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-7ay

Threatened Flora Species Individual and Species Polygons

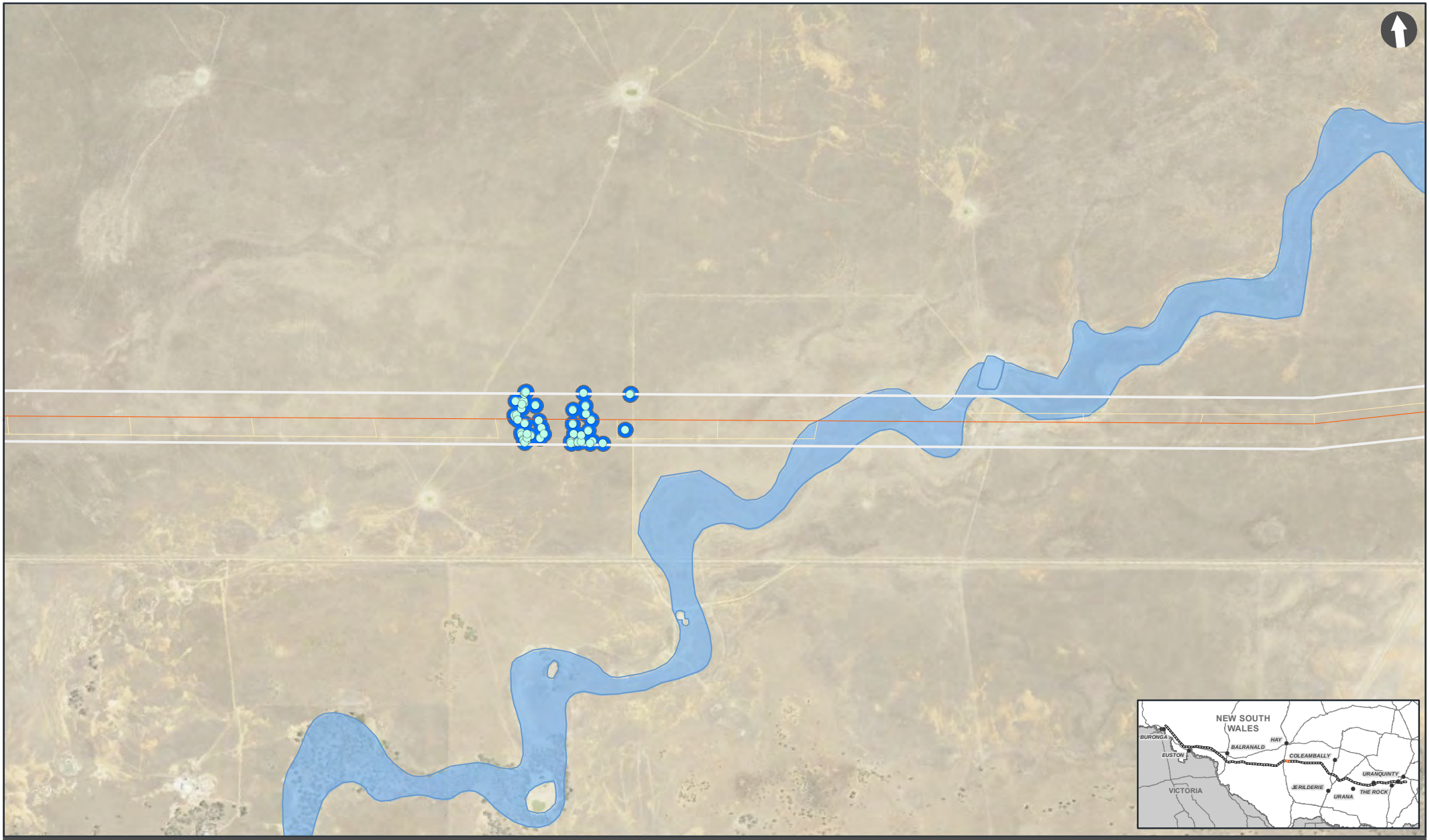
Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

Threatened Flora Species
- *Brachyscome papillosa* (56)
- *Maeriana cheelii* (94)
- *Swainsona murrayana* (97)

Threatened Flora Species Polygons
- *Brachyscome papillosa*
- *Maeriana cheelii*
- *Swainsona murrayana*
- *Swainsona sericea*

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-7az

Threatened Flora Species Individual and Species Polygons

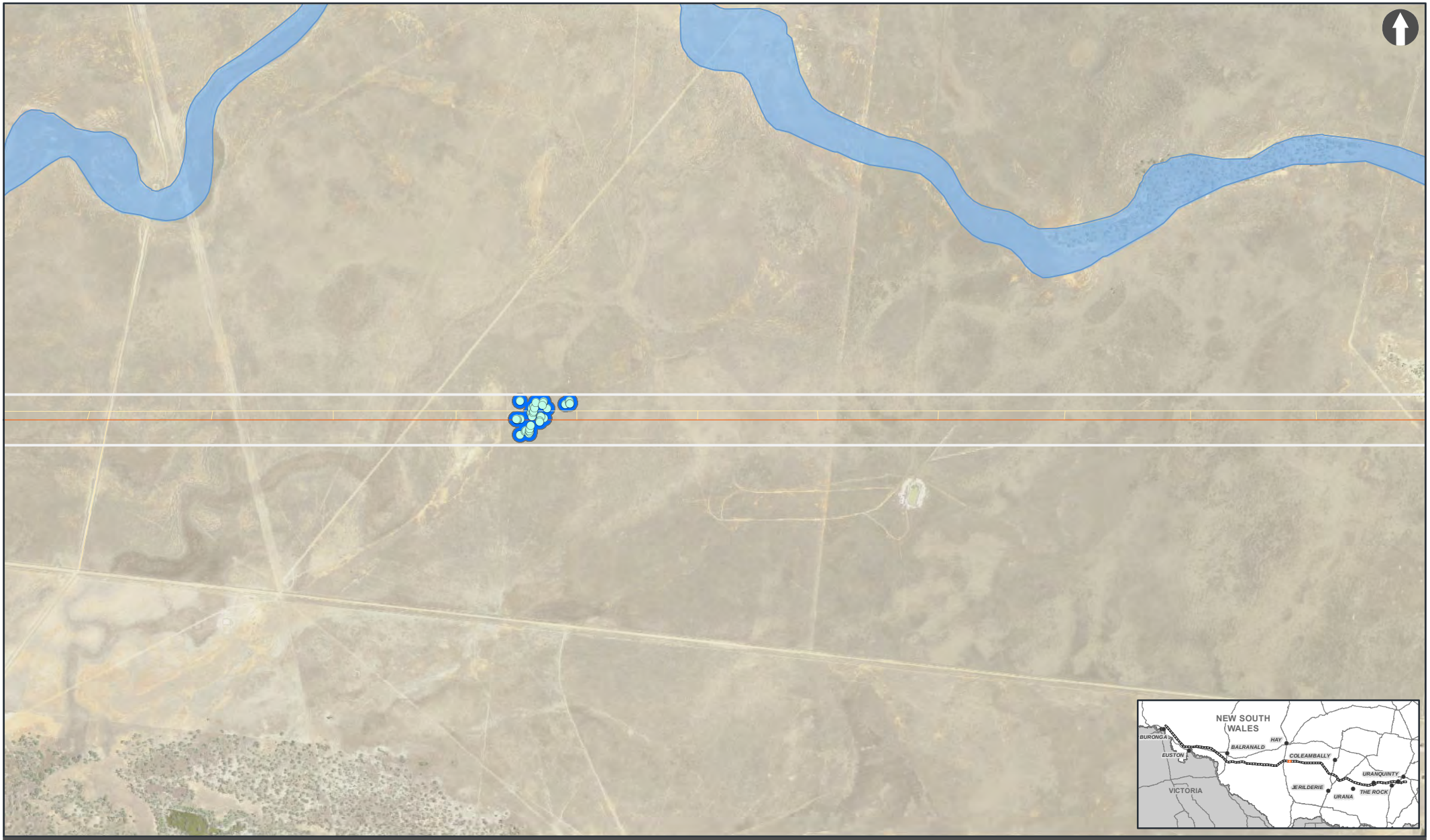
Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

Threatened Flora Species
- *Swainsona murrayana* (49)

Threatened Flora Species Polygons
- *Swainsona murrayana*
- *Swainsona sericea*

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

Threatened Flora Species
- *Swainsona murrayana* (36)

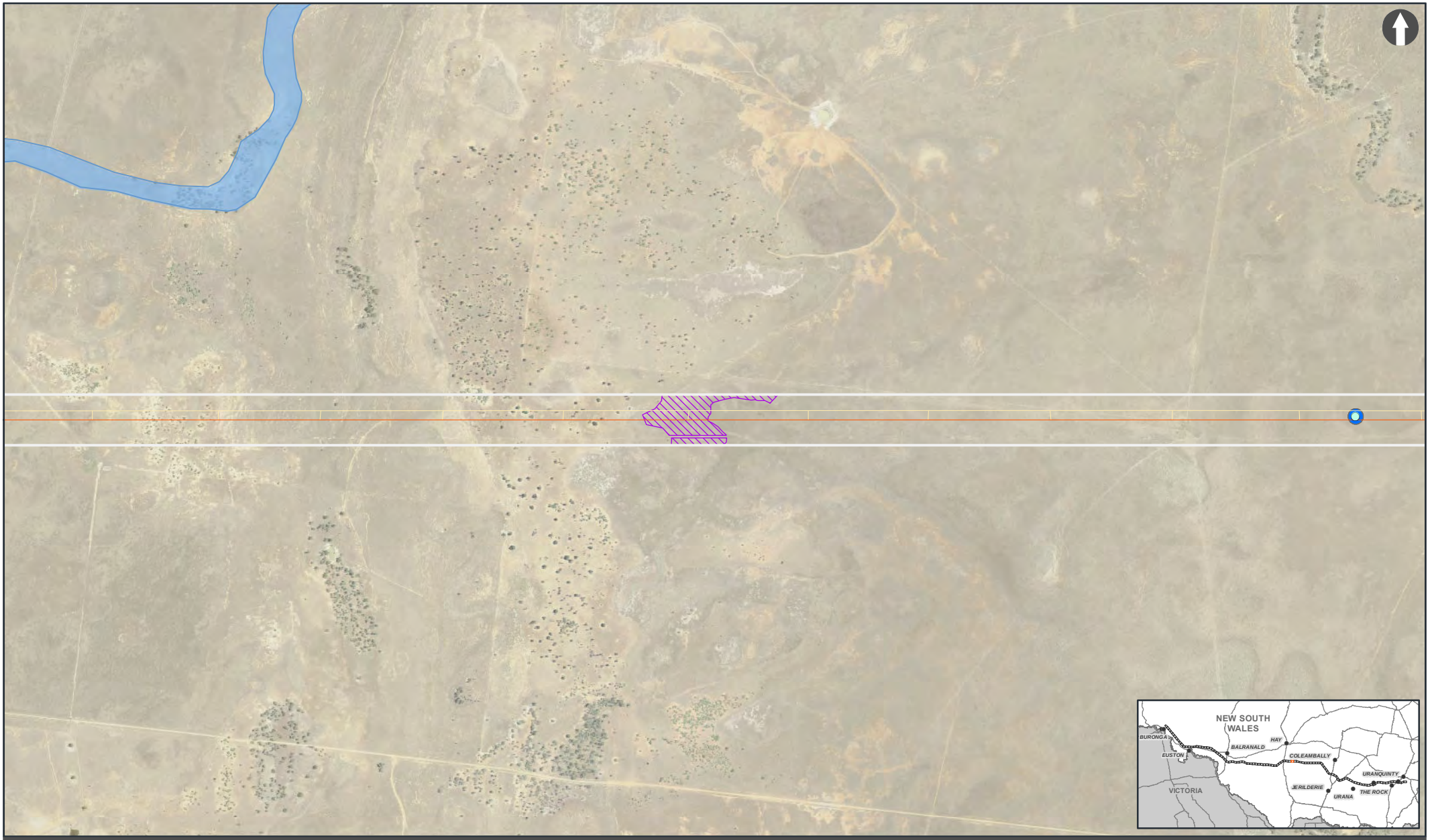
Threatened Flora Species Polygons
- *Swainsona murrayana*
- *Swainsona sericea*

BDAR - Figure C-7ba

Threatened Flora Species Individual and Species Polygons

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-7bb

Threatened Flora Species Individual and Species Polygons

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

Threatened Flora Species
- *Swainsona murrayana* (2)

Threatened Flora Species Polygons
- *Swainsona murrayana*
- *Swainsona sericea*

Assumed Species Presence Polygon
- *Cullen parvum*

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

Threatened Flora Species
- *Swainsona murrayana* (8)

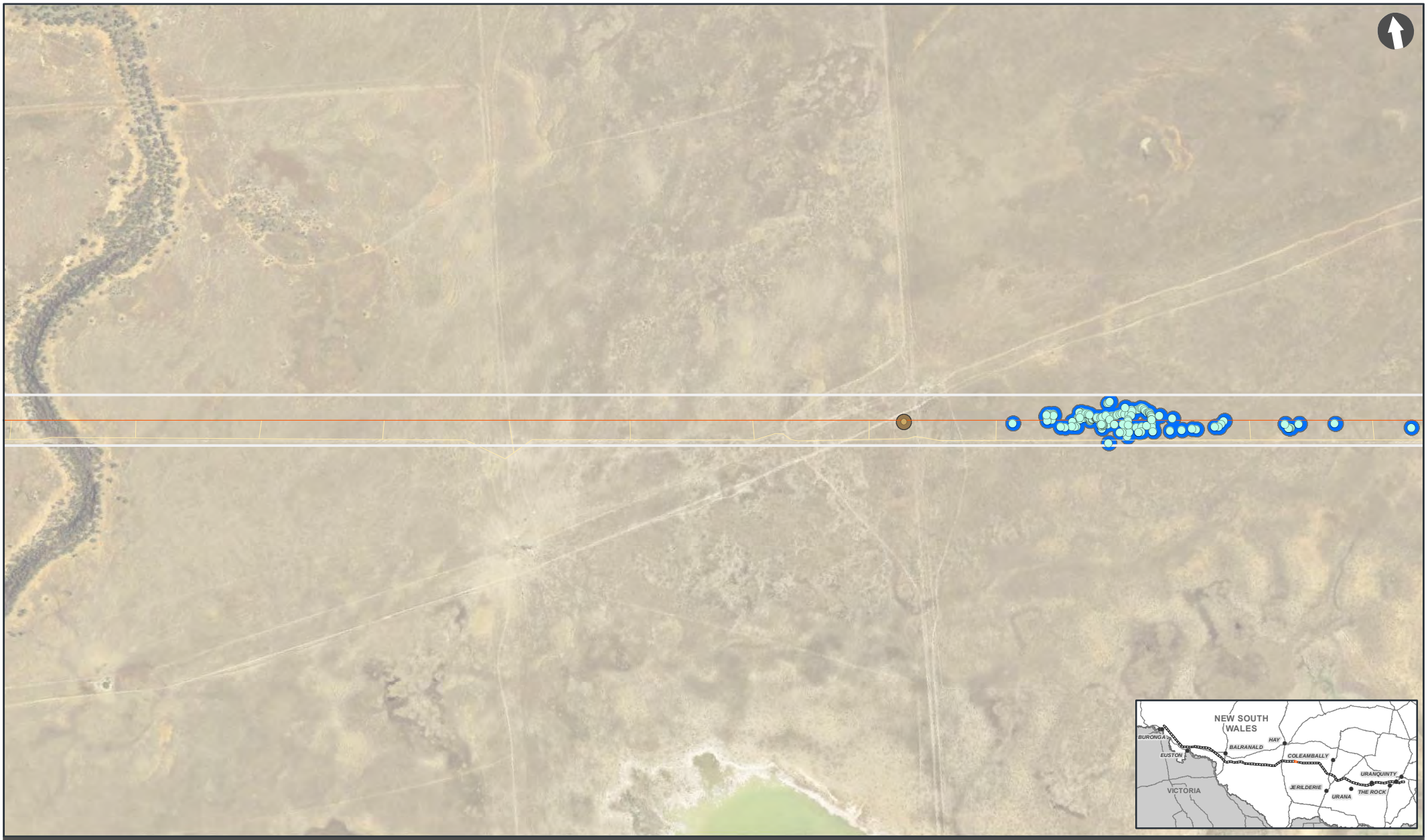
Threatened Flora Species Polygons
- *Swainsona murrayana*
- *Swainsona sericea*

BDAR - Figure C-7bc

Threatened Flora Species Individual and Species Polygons

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\03_AppendixC\PS117658_BDAR_C007_FloraSpeciesIndividualAndPolygons_r1v9.mxd

Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-7bd

Threatened Flora Species Individual and Species Polygons

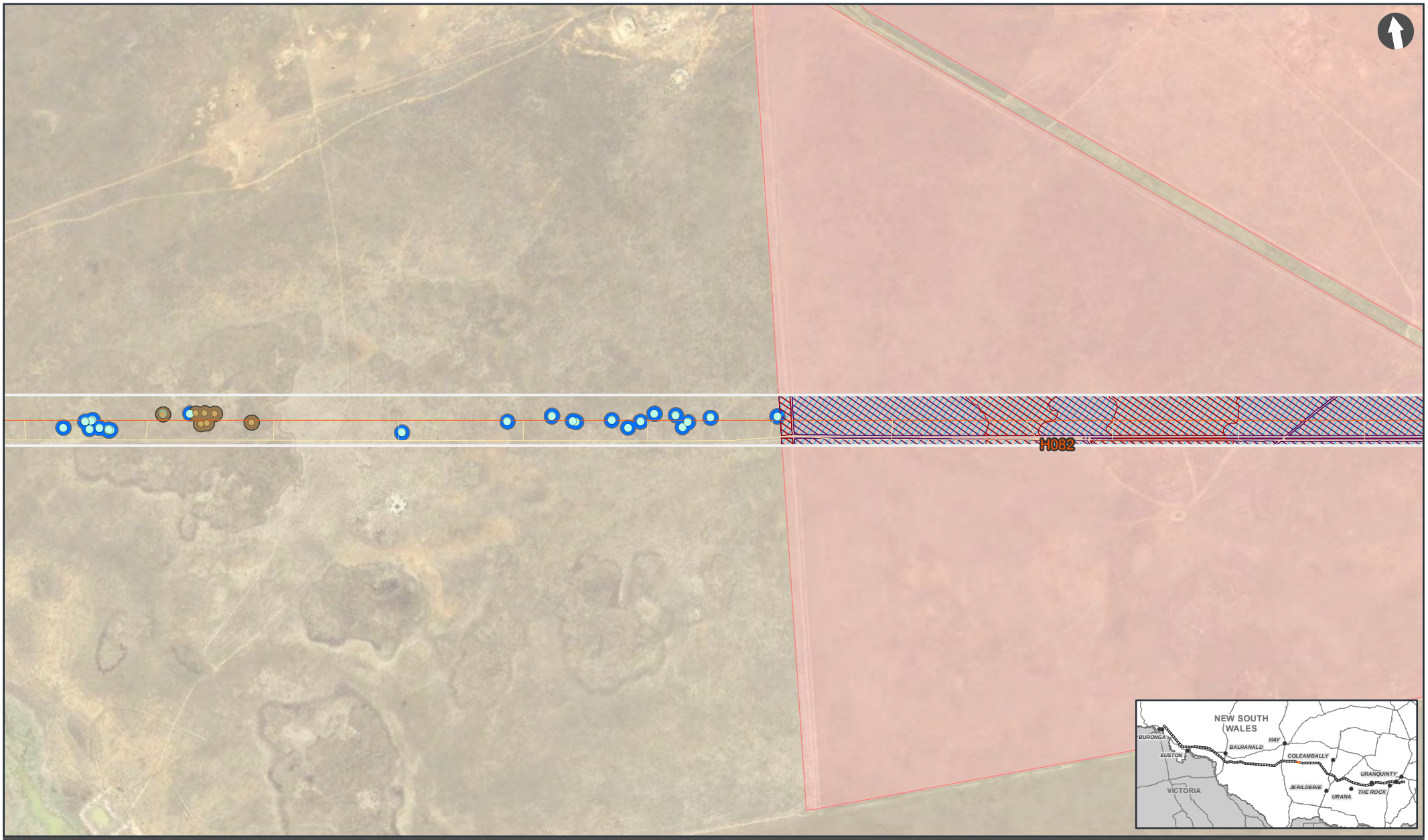
Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

Threatened Flora Species
- *Pilularia novae-hollandiae* (1)
- *Swainsona murrayana* (157)

Threatened Flora Species Polygons
- *Pilularia novae-hollandiae*
- *Swainsona murrayana*
- *Swainsona sericea*

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Holdings - No Access
- Waterbody

Threatened Flora Species
- *Pilularia novae-hollandiae* (8)
- *Swainsona murrayana* (32)

Threatened Flora Species Polygons
- *Pilularia novae-hollandiae*
- *Swainsona murrayana*
- *Swainsona sericea*

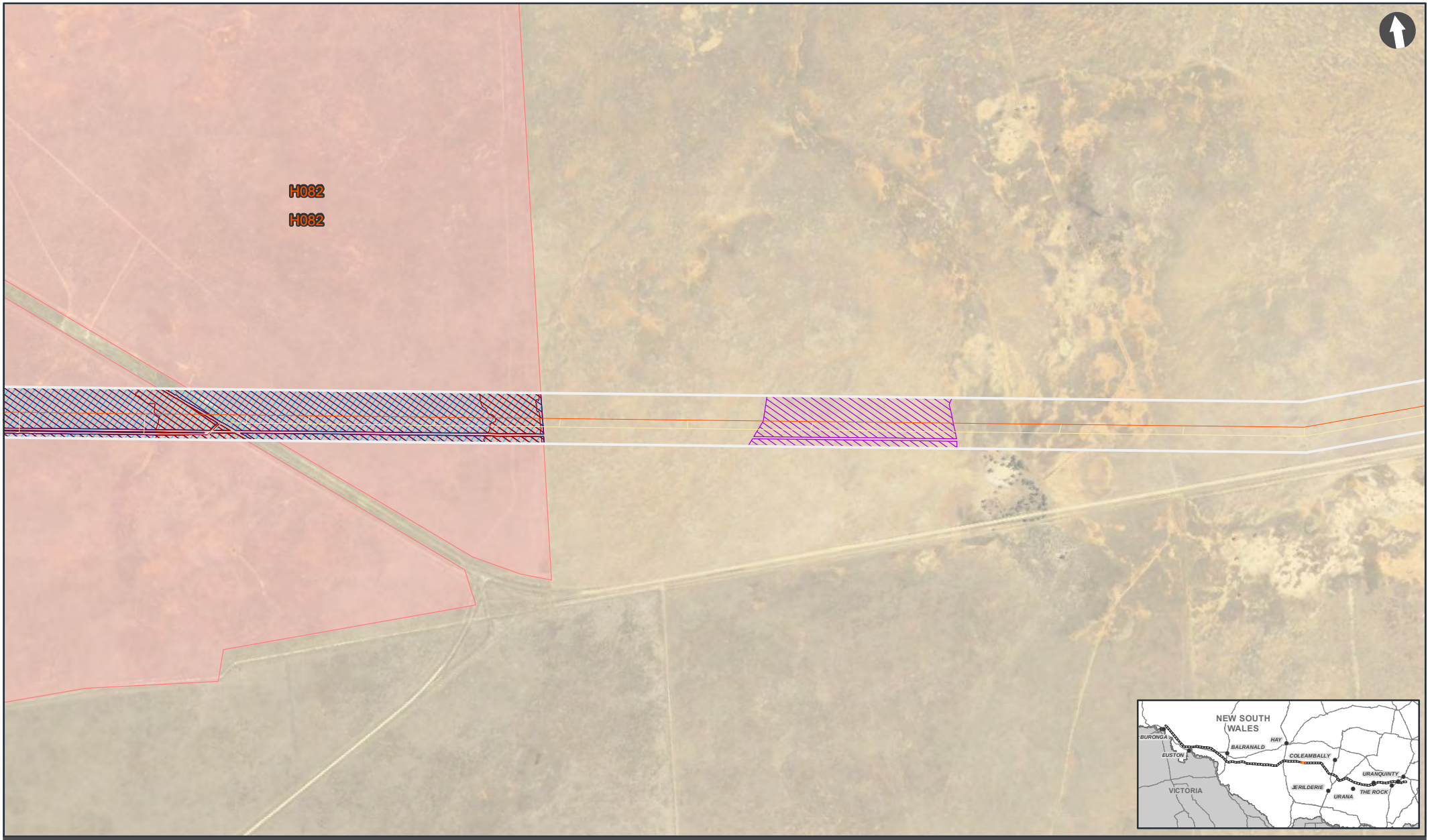
Assumed Species Presence Polygon
- *Brachyscome papillosa*
- *Maireana cheelii*
- *Swainsona murrayana*
- *Swainsona sericea*

BDAR - Figure C-7be

Threatened Flora Species Individual and Species Polygons

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-7bf

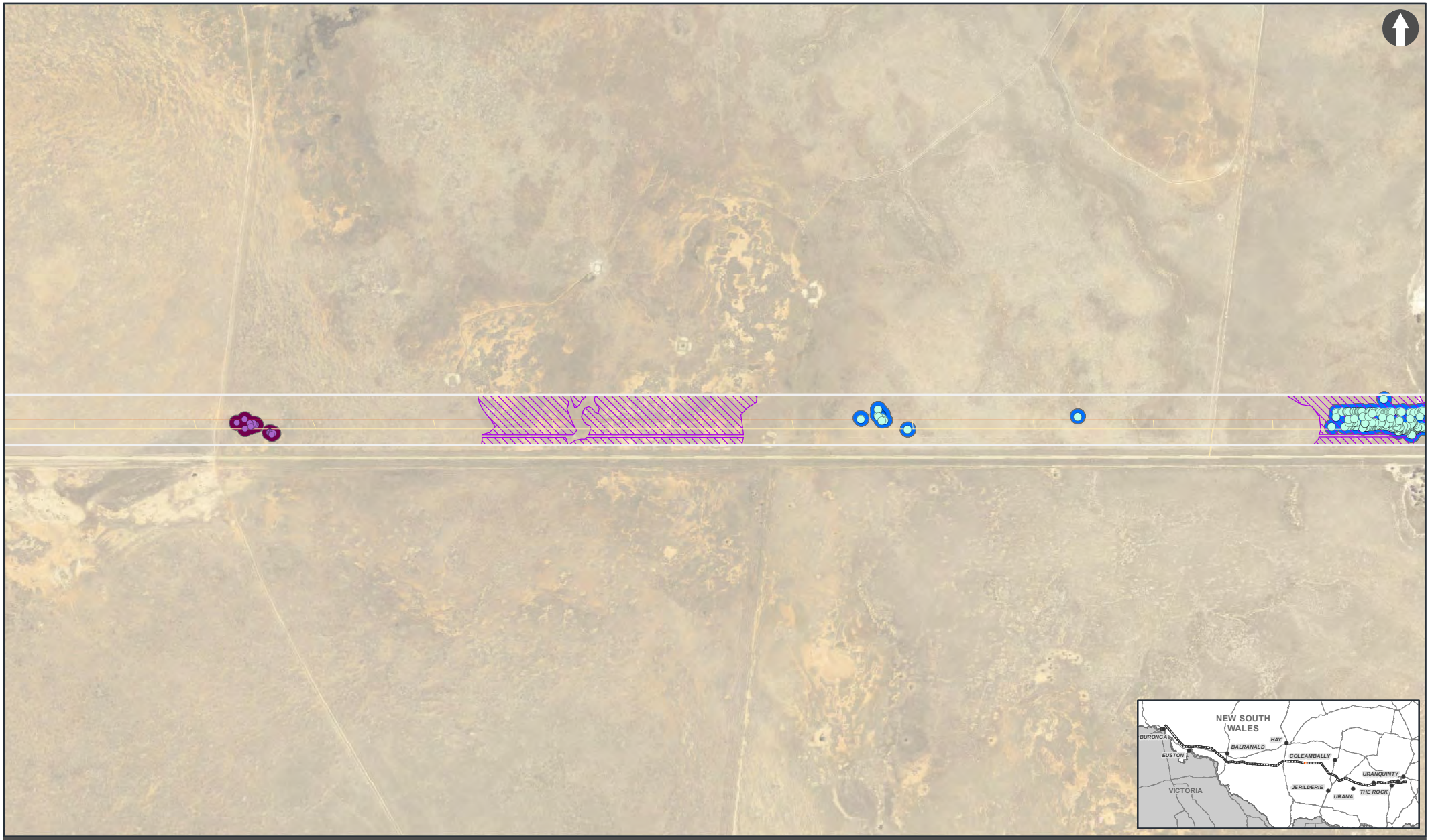
Threatened Flora Species Individual and Species Polygons

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Holdings - No Access
- Waterbody

Assumed Species Presence Polygon
- *Swainsona sericea*
- *Brachyscome papillosa*
- *Cullen parvum*
- *Maireana cheelii*
- *Swainsona murrayana*

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-7bg

Threatened Flora Species Individual and Species Polygons

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

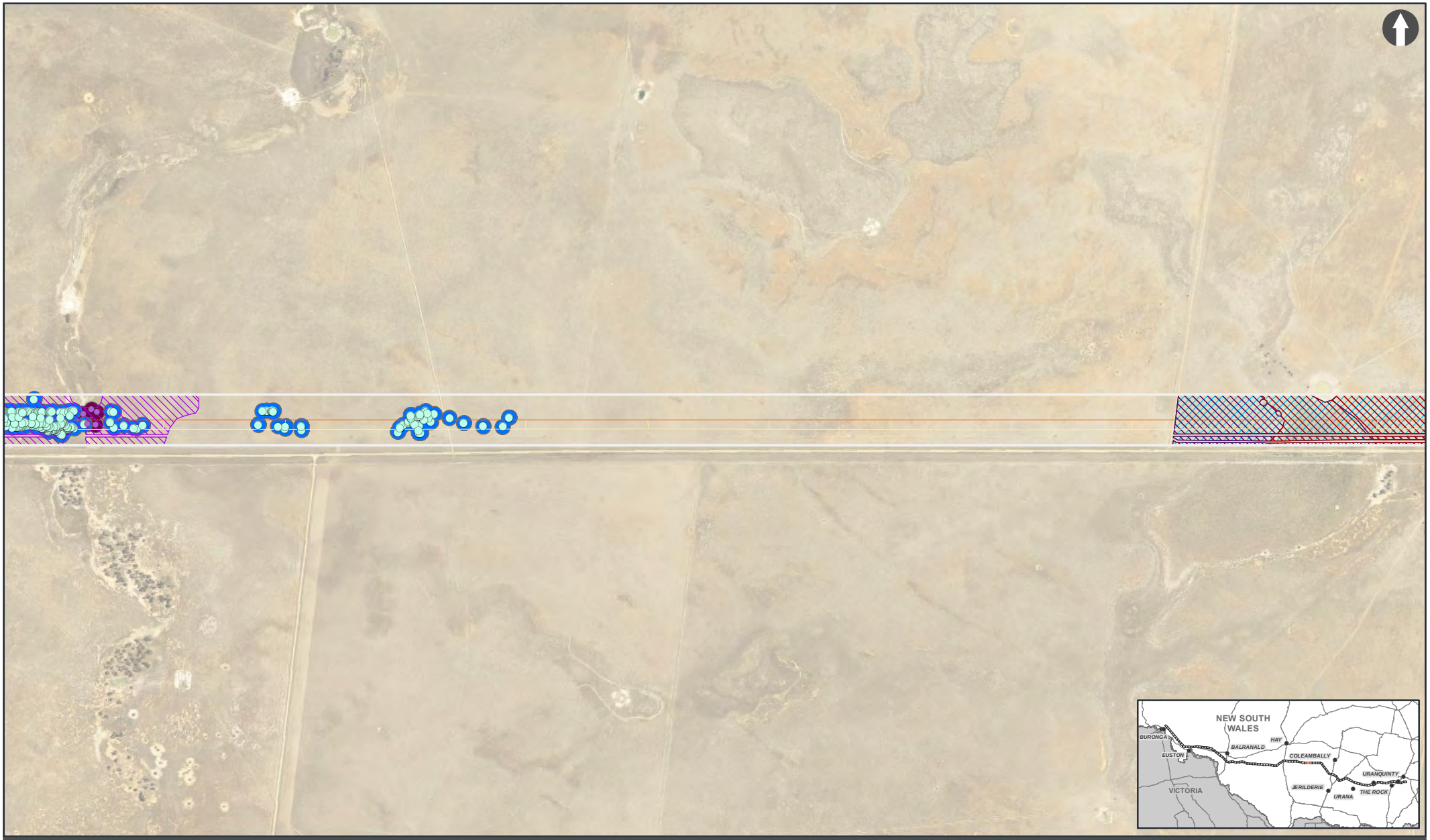
Threatened Flora Species
- *Maeriana cheelii* (22)
- *Swainsona murrayana* (160)
- *Swainsona sericea* (28)

Threatened Flora Species Polygons
- *Maeriana cheelii*
- *Swainsona murrayana*
- *Swainsona sericea*

Assumed Species Presence Polygon
- *Cullen parvum*

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-7bh

Threatened Flora Species Individual and Species Polygons

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

Threatened Flora Species
- *Maeriana cheelii* (5)
- *Swainsona murrayana* (203)

Threatened Flora Species Polygons
- *Maeriana cheelii*
- *Swainsona murrayana*
- *Swainsona sericea*

Assumed Species Presence Polygon
- *Brachyscome papillosa*
- *Cullen parvum*
- *Maireana cheelii*
- *Pilularia novae-hollandiae*
- *Swainsona murrayana*
- *Swainsona sericea*

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

Assumed Species Presence Polygon
- *Brachyscome papillosa*
- *Cullen parvum*
- *Maireana cheelii*
- *Pilularia novae-hollandiae*
- *Swainsona murrayana*
- *Swainsona sericea*

BDAR - Figure C-7bi

Threatened Flora Species Individual and Species Polygons

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

Assumed Species Presence Polygon
- *Cullen parvum*
- *Maireana cheelii*
- *Swainsona murrayana*
- *Swainsona sericea*

BDAR - Figure C-7bj

Threatened Flora Species Individual and Species Polygons

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

Threatened Flora Species

- *Swainsona murrayana* (39)

Threatened Flora Species Polygons

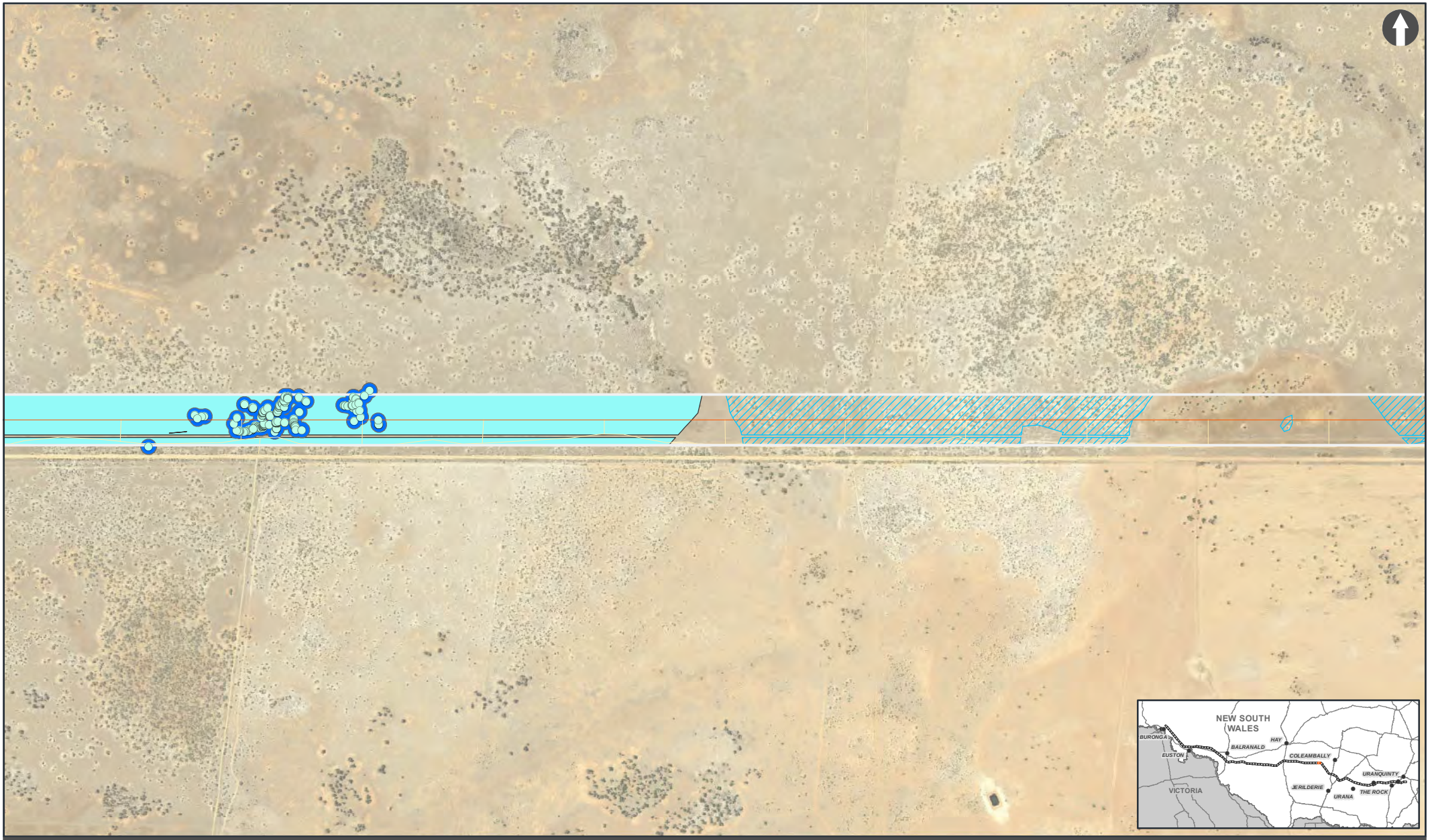
- *Swainsona murrayana*
- *Swainsona sericea*

BDAR - Figure C-7bk

Threatened Flora Species Individual and Species Polygons

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

Threatened Flora Species
- *Swainsona murrayana* (208)

Threatened Flora Species Polygons
- *Swainsona murrayana*
- *Swainsona sericea*

Assumed Species Presence Polygon
- *Swainsona murrayana*

BDAR - Figure C-7bl

Threatened Flora Species Individual and Species Polygons

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

Assumed Species Presence Polygon

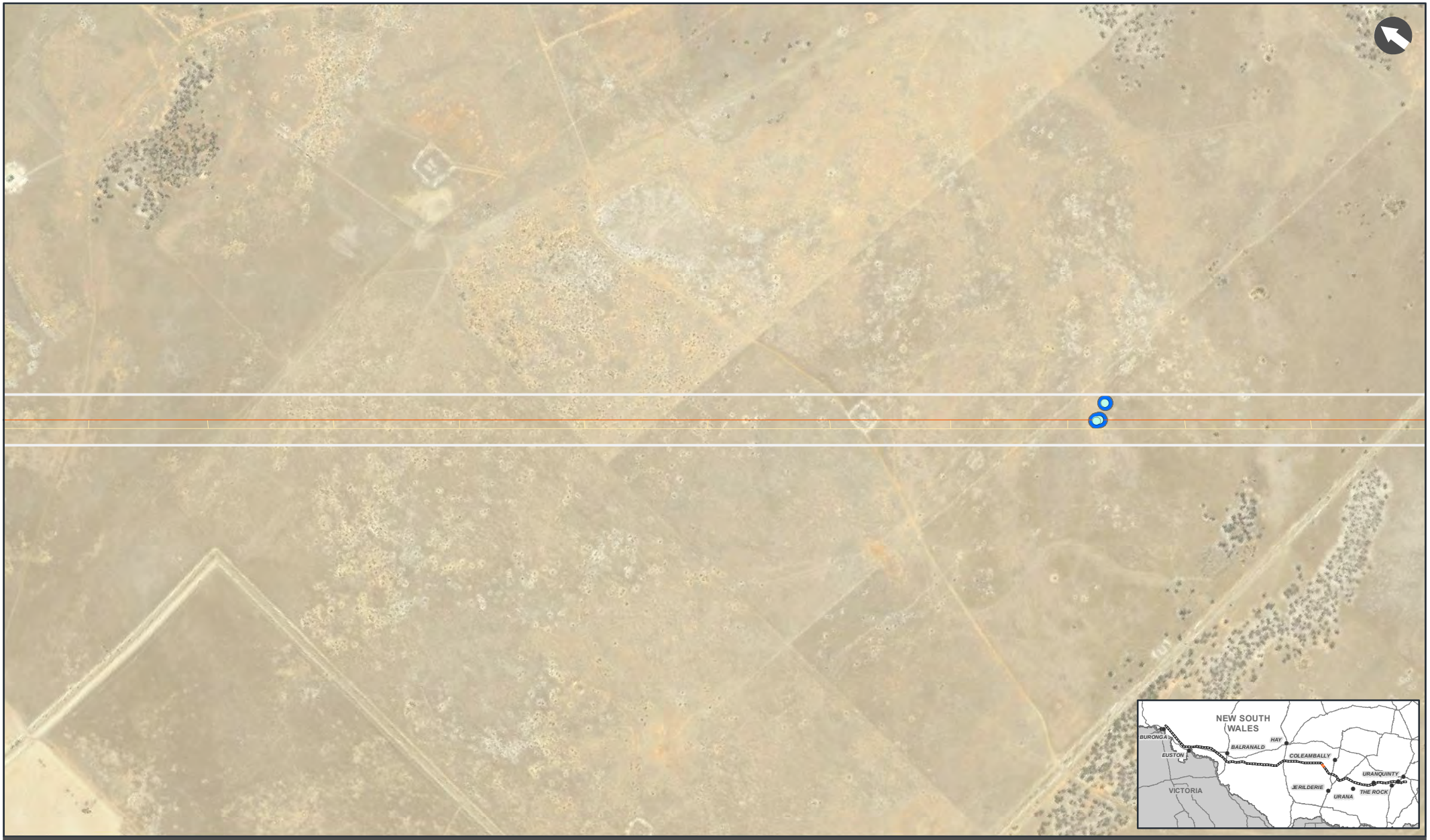
- *Swainsona murrayana*

BDAR - Figure C-7bm

Threatened Flora Species Individual and Species Polygons

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

Threatened Flora Species

- *Swainsona murrayana* (4)

Threatened Flora Species Polygons

- *Swainsona murrayana*
- *Swainsona sericea*

BDAR - Figure C-7bn

Threatened Flora Species Individual and Species Polygons

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-7bo

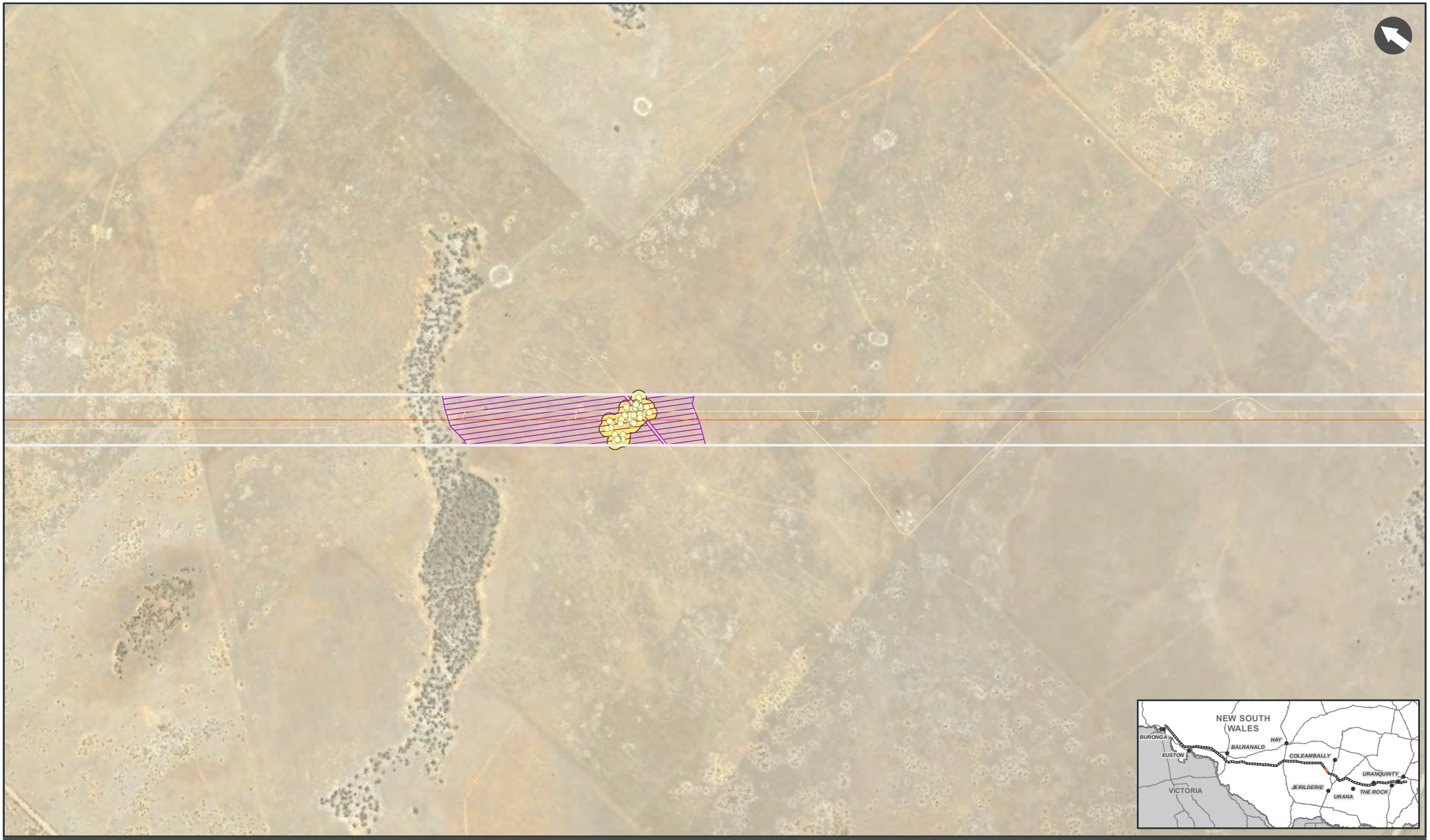
Threatened Flora Species Individual and Species Polygons

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-7bp

Threatened Flora Species Individual and Species Polygons

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

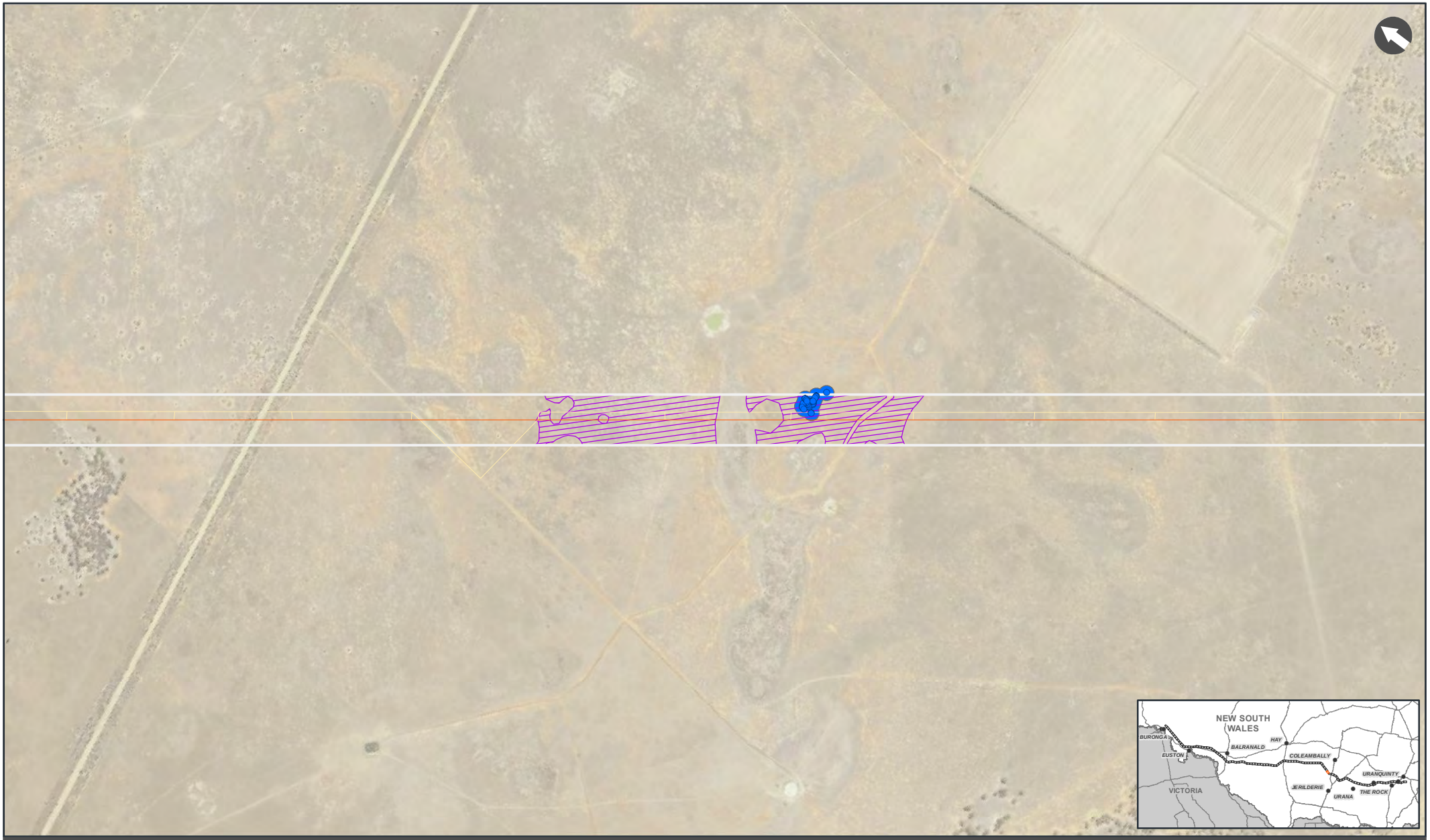
Threatened Flora Species
- *Leptorhynchos orientalis* (69)

Threatened Flora Species Polygons
- *Leptorhynchos orientalis*

Assumed Species Presence Polygon
- *Cullen parvum*

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-7bq

Threatened Flora Species Individual and Species Polygons

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

Threatened Flora Species
- *Swainsona sericea* (106)

Threatened Flora Species Polygons
- *Swainsona sericea*

Assumed Species Presence Polygon
- *Cullen parvum*

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

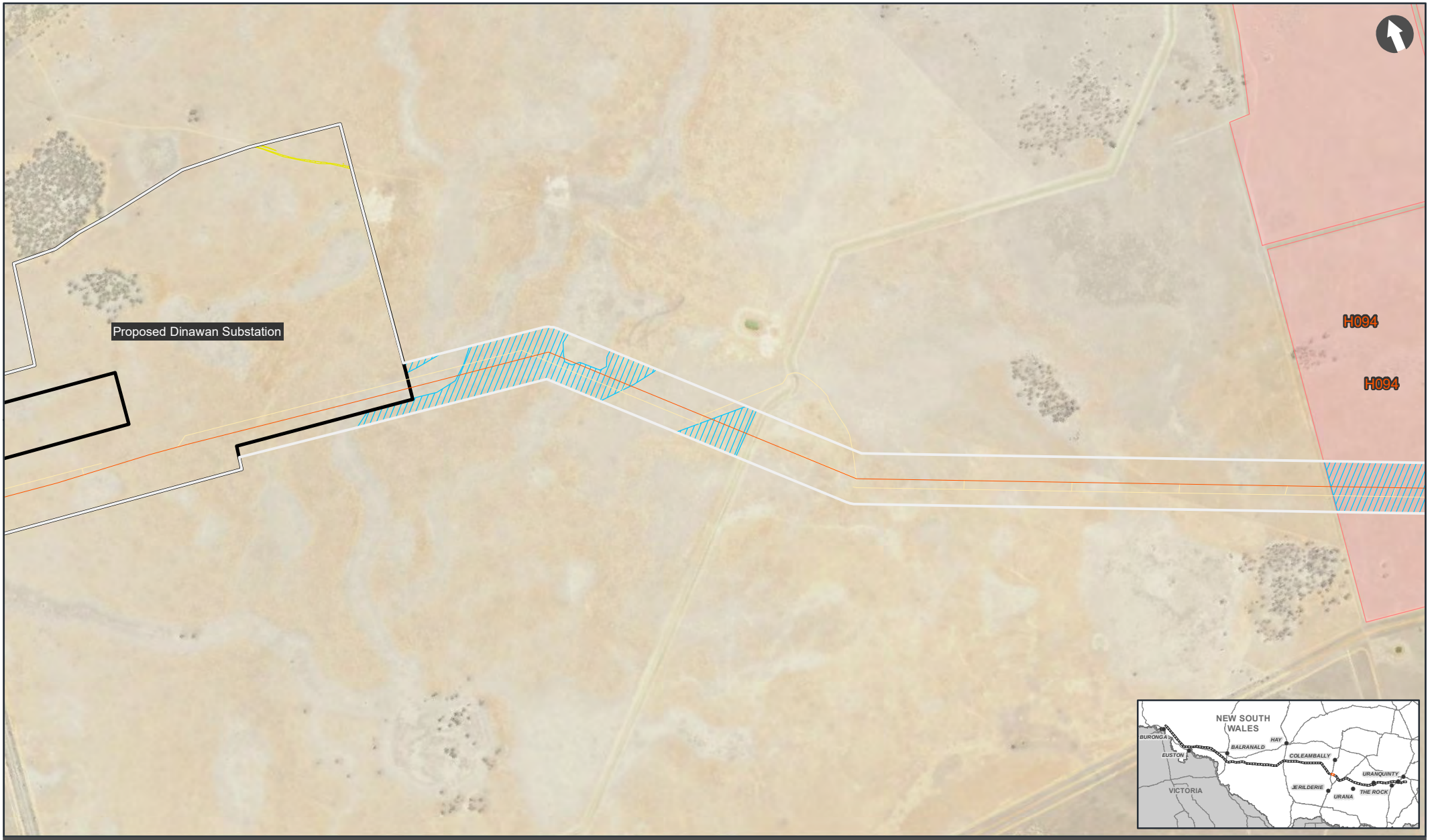
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

BDAR - Figure C-7br

Threatened Flora Species Individual and Species Polygons

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure C-7bs

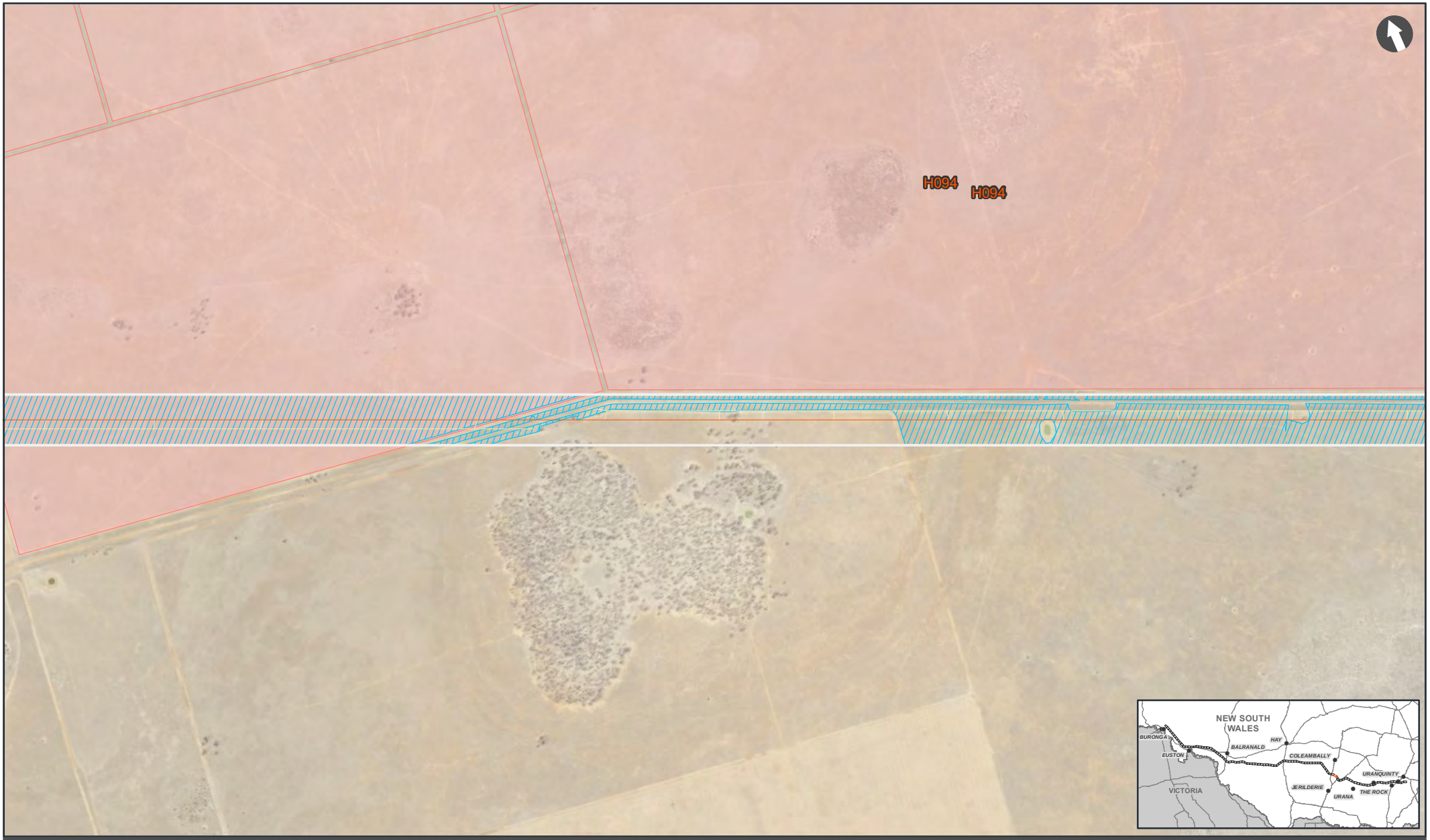
Threatened Flora Species Individual and Species Polygons

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Holdings - No Access
- Waterbody

Assumed Species Presence Polygon
- *Lepidium monoplocoides*
- *Swainsona murrayana*

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure C-7bt

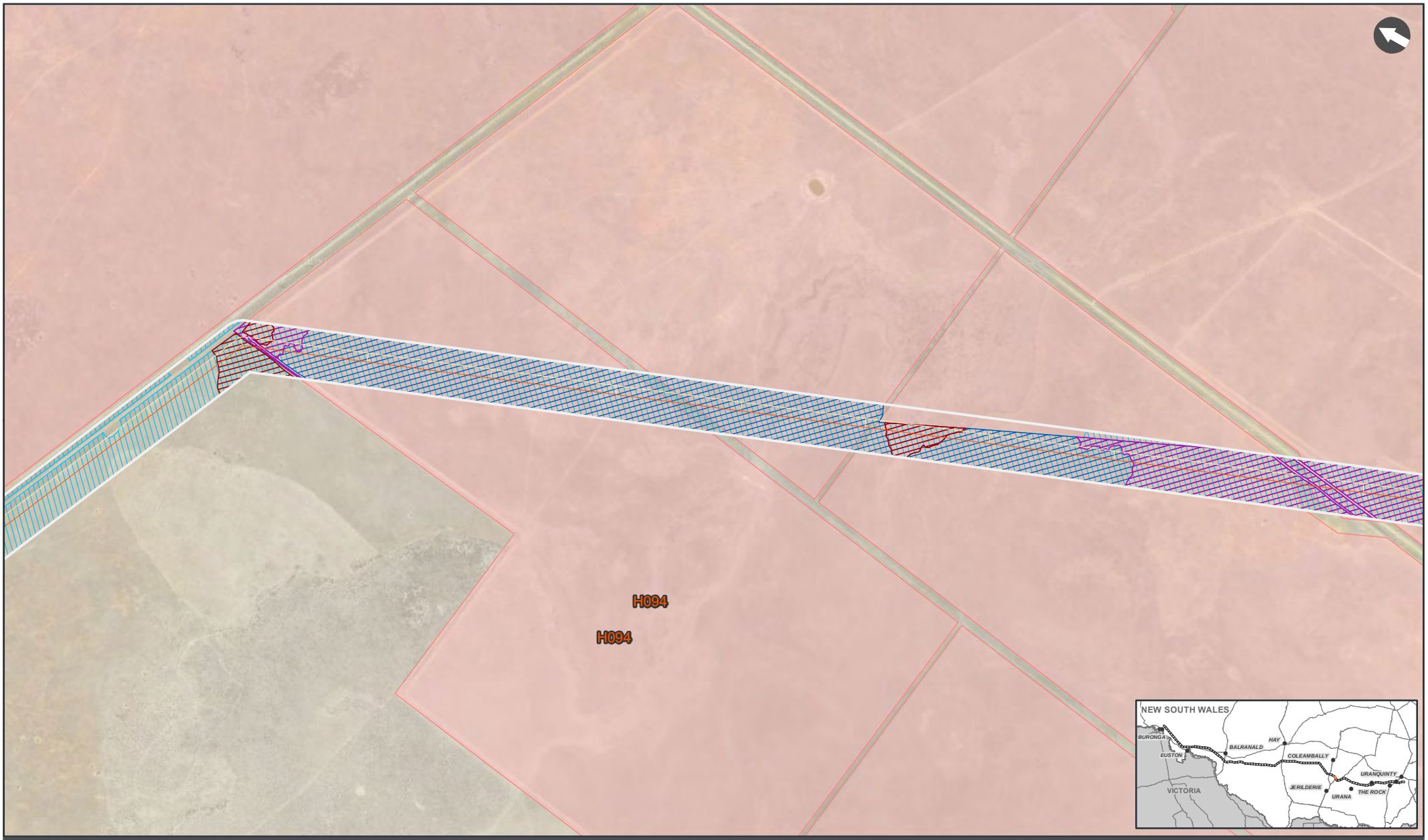
Threatened Flora Species Individual and Species Polygons

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Holdings - No Access
- Waterbody

Assumed Species Presence Polygon
- *Swainsona murrayana*

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-7bu

Threatened Flora Species Individual and Species Polygons

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Holdings - No Access
- Waterbody

Assumed Species Presence Polygon
- *Brachyscome papillosa*
- *Cullen parvum*
- *Leptorhynchos orientalis*
- *Maireana cheelii*
- *Pilularia novae-hollandiae*
- *Swainsona murrayana*
- *Swainsona sericea*

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Holdings - No Access
- Waterbody

Assumed Species Presence Polygon
- *Brachyscome papillosa*
- *Cullen parvum*
- *Leptorhynchos orientalis*
- *Maireana cheelii*
- *Pilularia novae-hollandiae*
- *Swainsona murrayana*
- *Swainsona sericea*

BDAR - Figure C-7bv

Threatened Flora Species Individual and Species Polygons

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-7bw

Threatened Flora Species Individual and Species Polygons

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

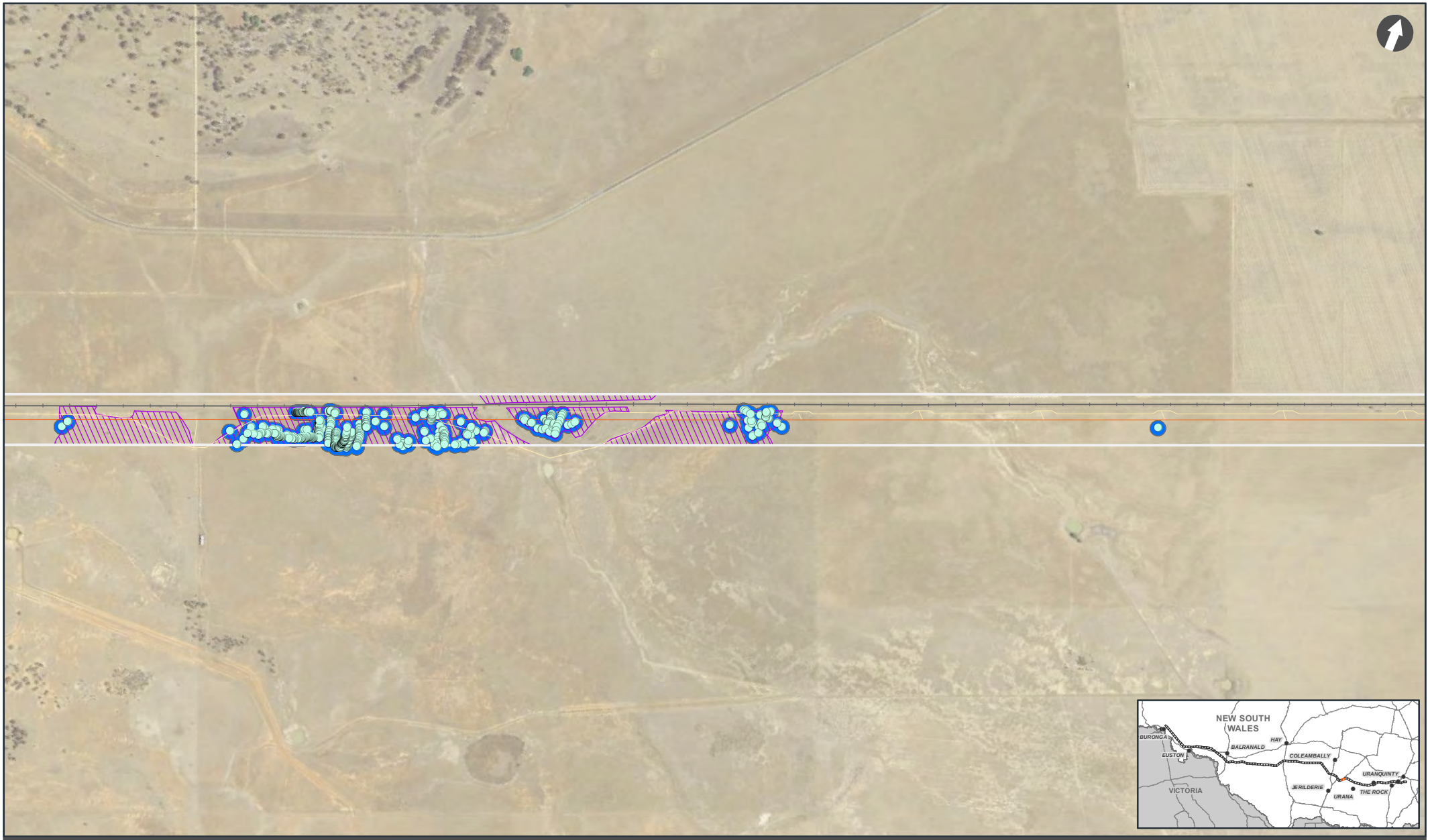
Threatened Flora Species
- *Swainsona murrayana* (87)

Threatened Flora Species Polygons
- *Swainsona murrayana*
- *Swainsona sericea*

Assumed Species Presence Polygon
- *Swainsona sericea*
- *Cullen parvum*
- *Leptorhynchos orientalis*
- *Maireana cheelii*
- *Swainsona murrayana*

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-7bx

Threatened Flora Species Individual and Species Polygons

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

Threatened Flora Species
- *Swainsona murrayana* (558)

Threatened Flora Species Polygons
- *Swainsona murrayana*
- *Swainsona sericea*

Assumed Species Presence Polygon
- *Cullen parvum*

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-7by

Threatened Flora Species Individual and Species Polygons

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

Threatened Flora Species
- *Swainsona murrayana* (733)

Threatened Flora Species Polygons
- *Swainsona murrayana*
- *Swainsona sericea*

Assumed Species Presence Polygon
- *Cullen parvum*

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-7bz

Threatened Flora Species Individual and Species Polygons

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

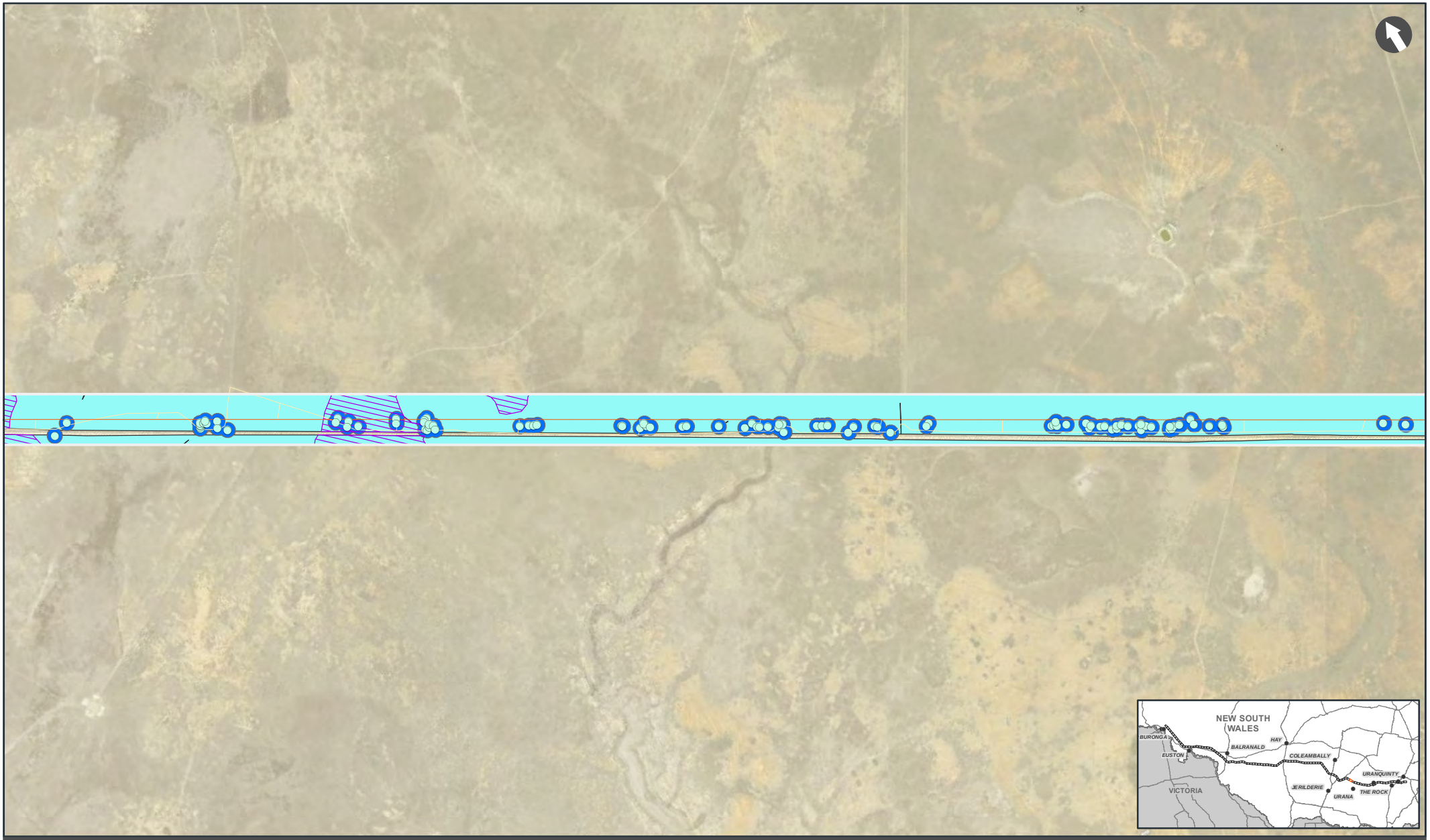
Threatened Flora Species
- *Lepidium monoplocoides* (1)
- *Swainsona murrayana* (223)

Threatened Flora Species Polygons
- *Lepidium monoplocoides*
- *Swainsona murrayana*
- *Swainsona sericea*

Assumed Species Presence Polygon
- *Cullen parvum*

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-7ca

Threatened Flora Species Individual and Species Polygons

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

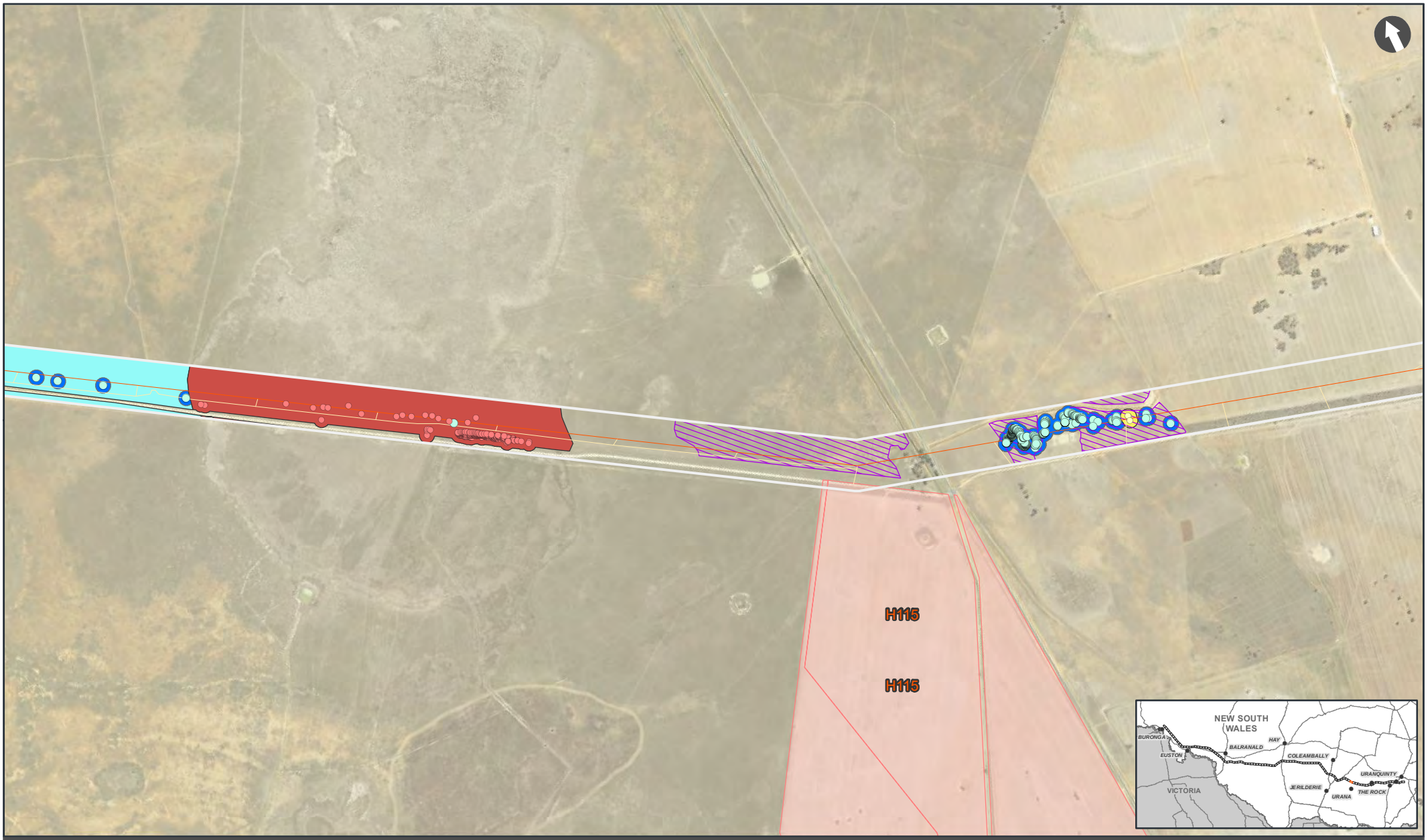
Threatened Flora Species
- *Swainsona murrayana* (96)

Threatened Flora Species Polygons
- *Swainsona murrayana*
- *Swainsona sericea*

Assumed Species Presence Polygon
- *Cullen parvum*

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-7cb

Threatened Flora Species Individual and Species Polygons

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Holdings - No Access
- Waterbody

Threatened Flora Species
- *Brachyscome papillosa* (452)
- *Leptorhynchos orientalis* (3)
- *Swainsona murrayana* (393)
- *Swainsona sericea* (1)

Threatened Flora Species Polygons
- *Brachyscome papillosa*
- *Leptorhynchos orientalis*
- *Swainsona murrayana*
- *Swainsona sericea*

Assumed Species Presence Polygon
- *Cullen parvum*

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-7cc

Threatened Flora Species Individual and Species Polygons

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

BDAR - Figure C-7cd

Threatened Flora Species Individual and Species Polygons

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\03_AppendixC\PS117658_BDAR_C007_FloraSpeciesIndividualAndPolygons_r1v9.mxd

Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure C-7ce

Threatened Flora Species Individual and Species Polygons

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

Assumed Species Presence Polygon

- *Cullen parvum*

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

Assumed Species Presence Polygon
- *Cullen parvum*

BDAR - Figure C-7cf

Threatened Flora Species Individual and Species Polygons

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\03_AppendixC\PS117658_BDAR_C007_FloraSpeciesIndividualAndPolygons_r1v9.mxd

Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

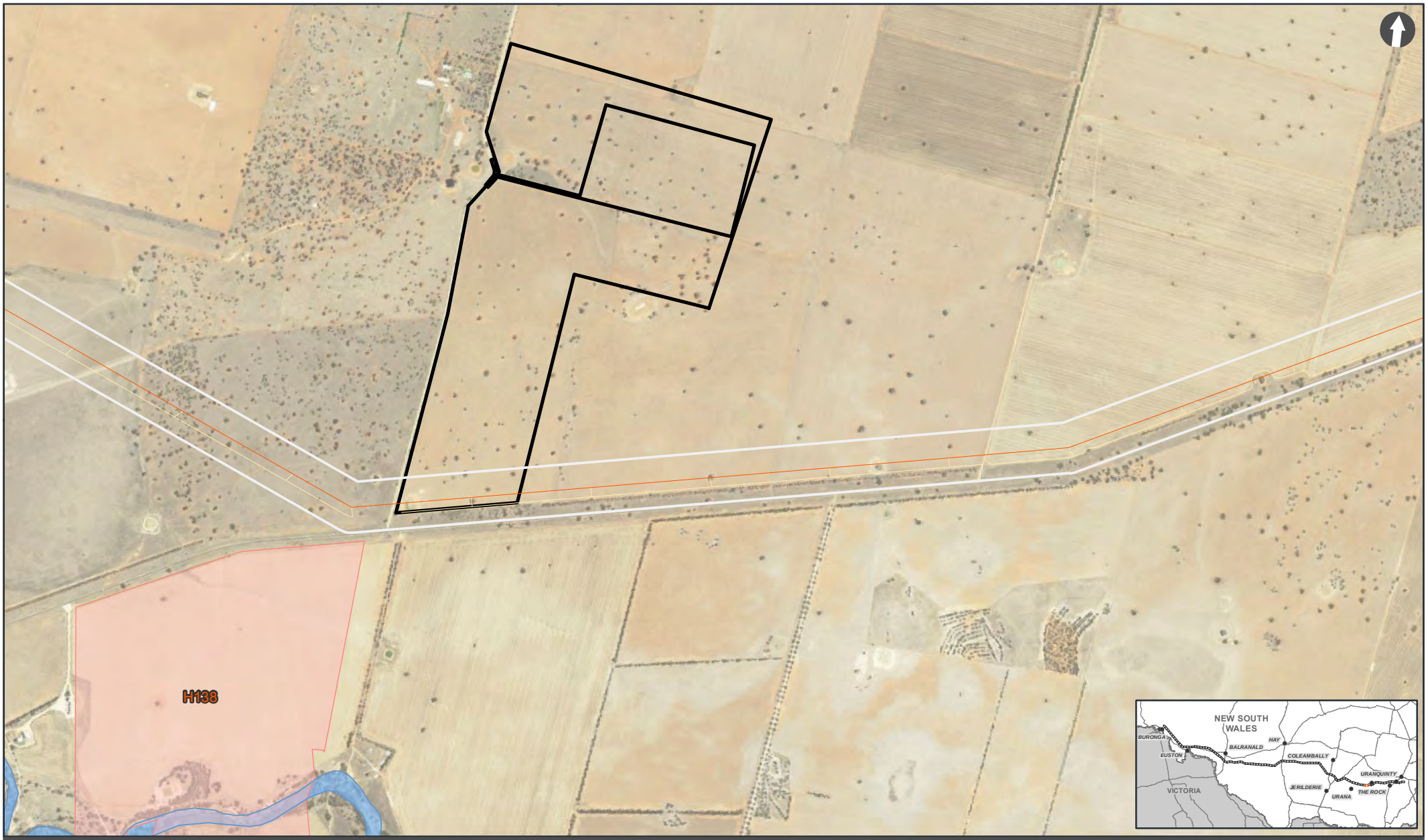
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

BDAR - Figure C-7cg

Threatened Flora Species Individual and Species Polygons

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Holdings - No Access
- Waterbody

BDAR - Figure C-7ch

Threatened Flora Species Individual and Species Polygons

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

Assumed Species Presence Polygon
- *Cullen parvum*

BDAR - Figure C-7ci

Threatened Flora Species Individual and Species Polygons

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\03_AppendixC\PS117658_BDAR_C007_FloraSpeciesIndividualAndPolygons_r1v9.mxd

Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

Assumed Species Presence Polygon
- *Cullen parvum*

BDAR - Figure C-7cj

Threatened Flora Species Individual and Species Polygons

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\03_AppendixC\PS117658_BDAR_C007_FloraSpeciesIndividualAndPolygons_r1v9.mxd

Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Holdings - No Access
- Waterbody

BDAR - Figure C-7ck

Threatened Flora Species Individual and Species Polygons

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\03_AppendixC\PS117658_BDAR_C007_FloraSpeciesIndividualAndPolygons_r1v9.mxd

Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

BDAR - Figure C-7cm

Threatened Flora Species Individual and Species Polygons

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\03_AppendixC\PS117658_BDAR_C007_FloraSpeciesIndividualAndPolygons_r1v9.mxd

Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-7cn

Threatened Flora Species Individual and Species Polygons

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Holdings - No Access
- Waterbody

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Holdings - No Access
- Waterbody

Assumed Species Presence Polygon
- *Cullen parvum*

BDAR - Figure C-7co

Threatened Flora Species Individual and Species Polygons

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\03_AppendixC\PS117658_BDAR_C007_FloraSpeciesIndividualAndPolygons_r1v9.mxd

Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-7cp

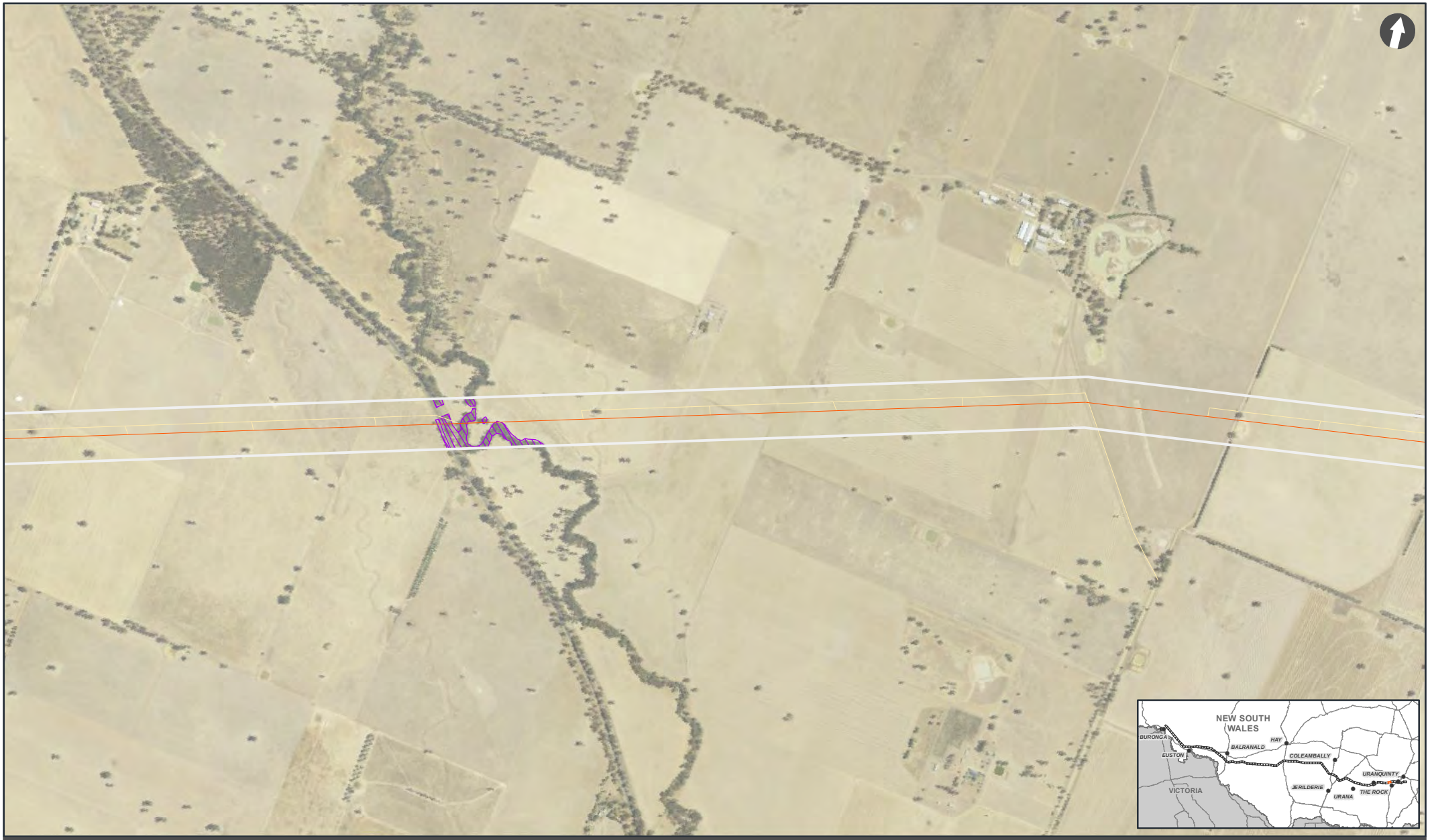
Threatened Flora Species Individual and Species Polygons

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

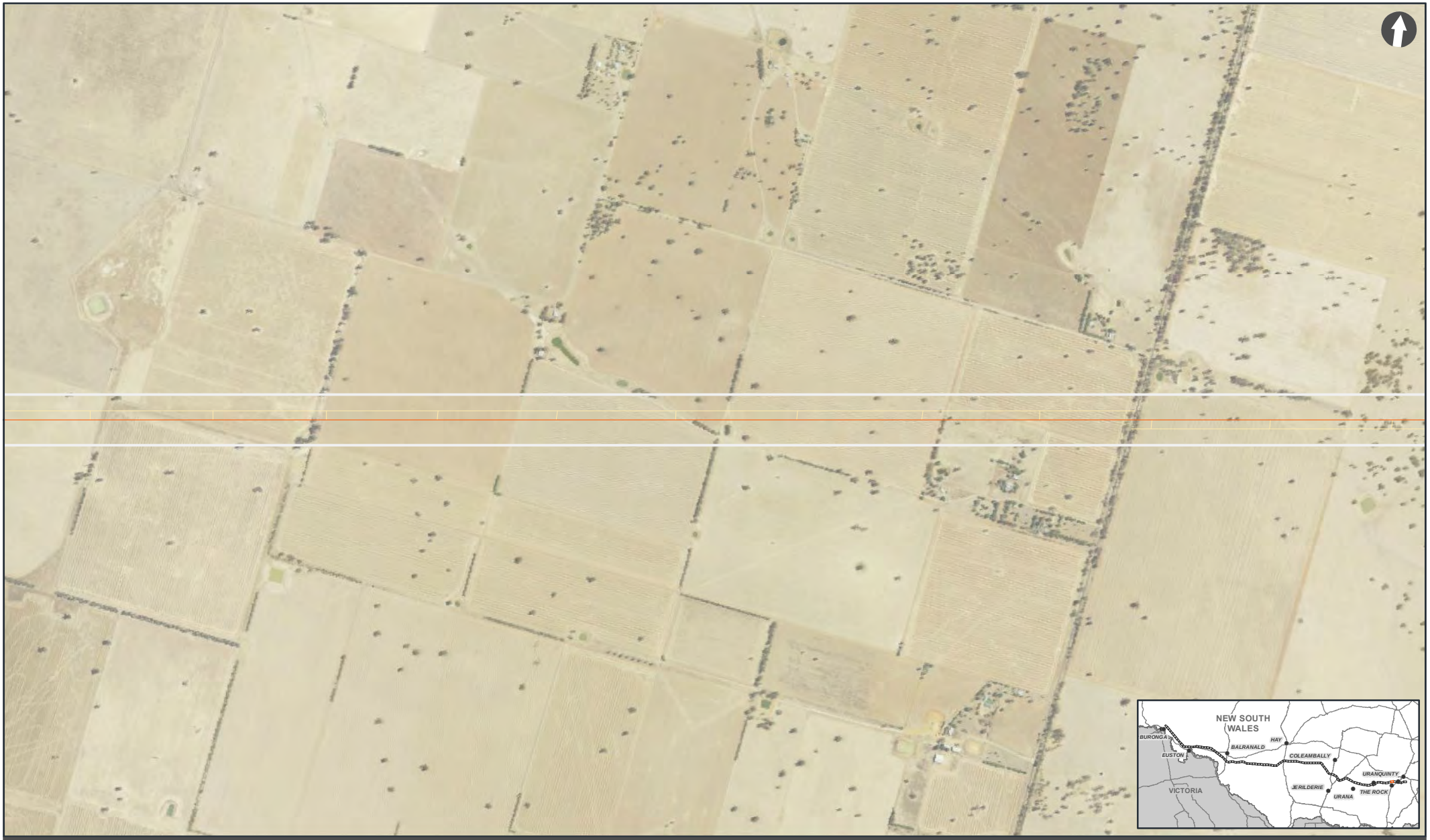
Assumed Species Presence Polygon
- *Cullen parvum*

BDAR - Figure C-7cq

Threatened Flora Species Individual and Species Polygons

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

BDAR - Figure C-7cr

Threatened Flora Species Individual and Species Polygons

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-7cs

Threatened Flora Species Individual and Species Polygons

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\03_AppendixC\PS117658_BDAR_C007_FloraSpeciesIndividualAndPolygons_r1v9.mxd

Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

Assumed Species Presence Polygon
- *Cullen parvum*

BDAR - Figure C-7ct

Threatened Flora Species Individual and Species Polygons

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\03_AppendixC\PS117658_BDAR_C007_FloraSpeciesIndividualAndPolygons_r1v9.mxd

Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

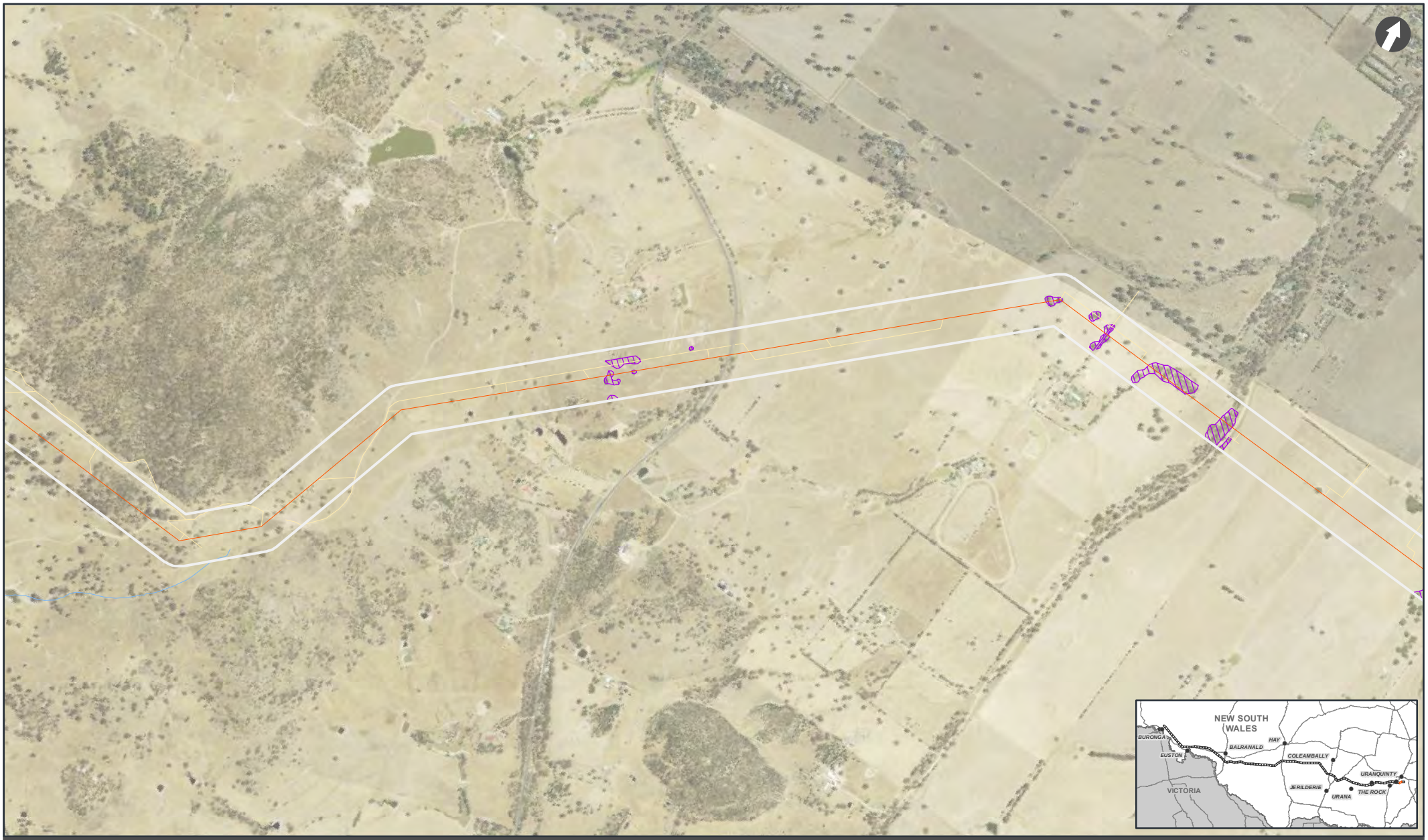
Assumed Species Presence Polygon
- *Cullen parvum*

BDAR - Figure C-7cu

Threatened Flora Species Individual and Species Polygons

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

Assumed Species Presence Polygon

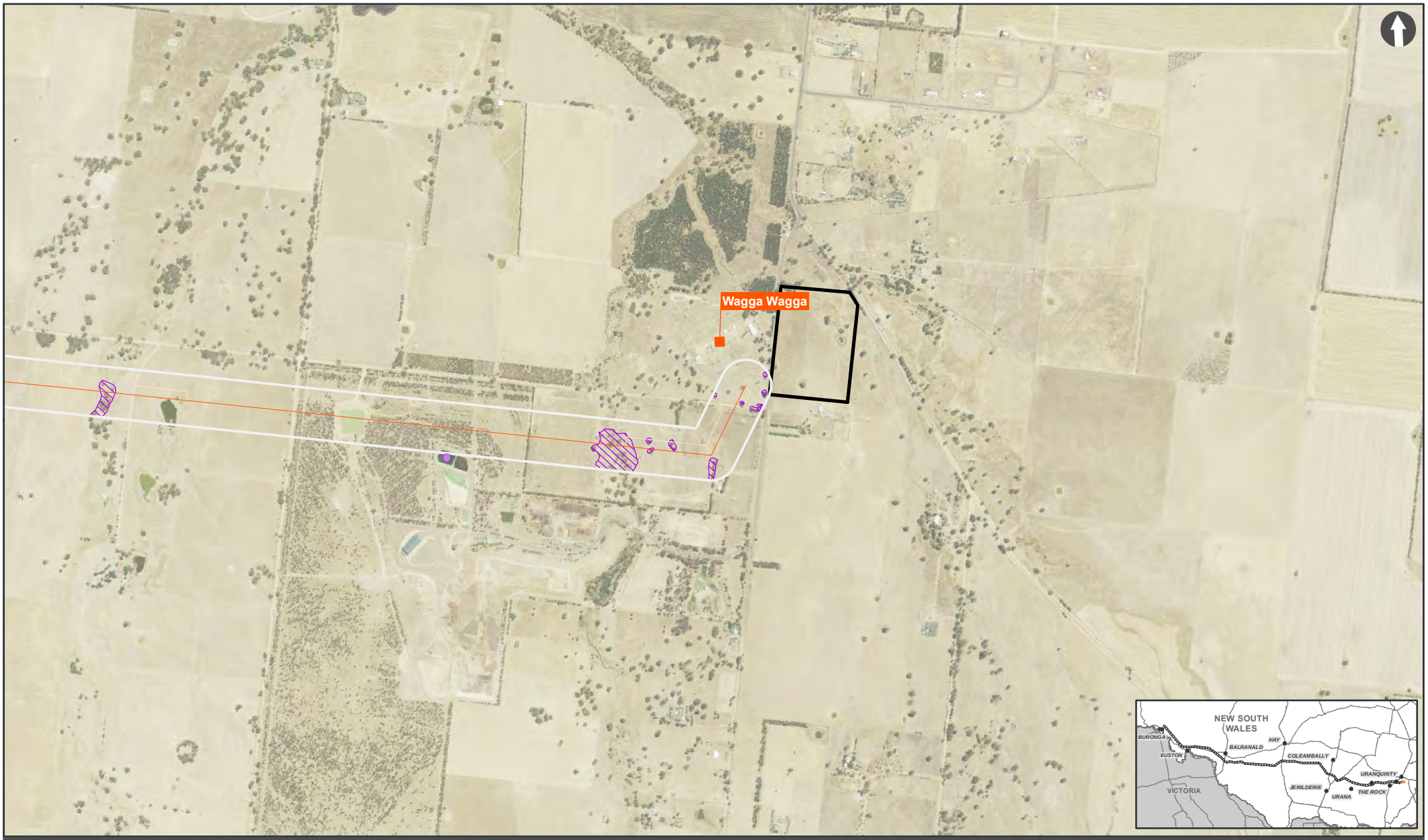
- *Cullen parvum*

BDAR - Figure C-7CV

Threatened Flora Species Individual and Species Polygons

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Biodiversity Study Area
- Built Up Areas
- Waterbody

Assumed Species Presence Polygon

- *Cullen parvum*

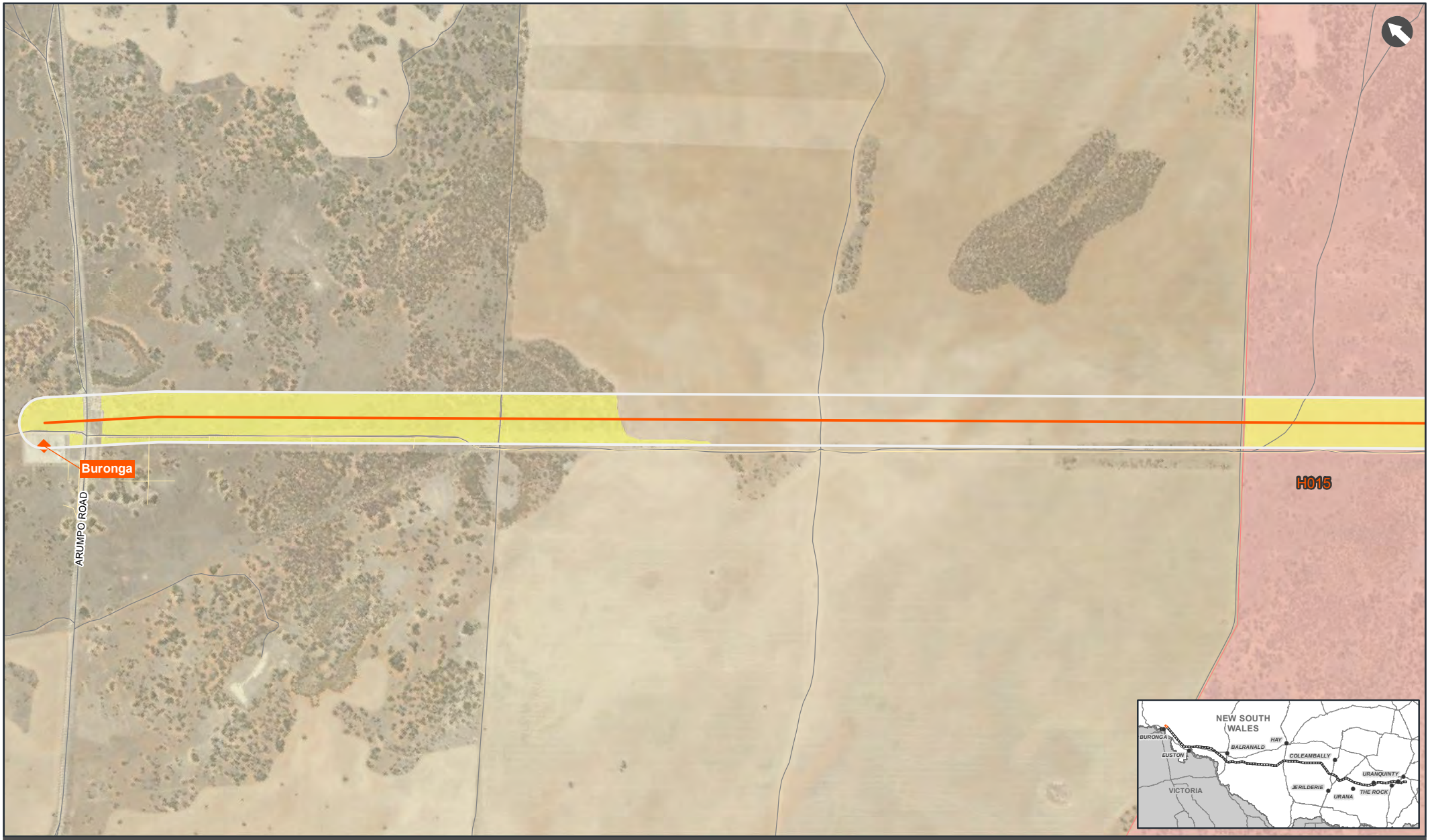
BDAR - Figure C-7CW

Threatened Flora Species Individual and Species Polygons

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Source: NSWSS, ESRI, Transgrid, WSP

APPENDIX C-8
Threatened fauna species individual and polygon maps



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Holdings - No Access
- Biodiversity Study Area

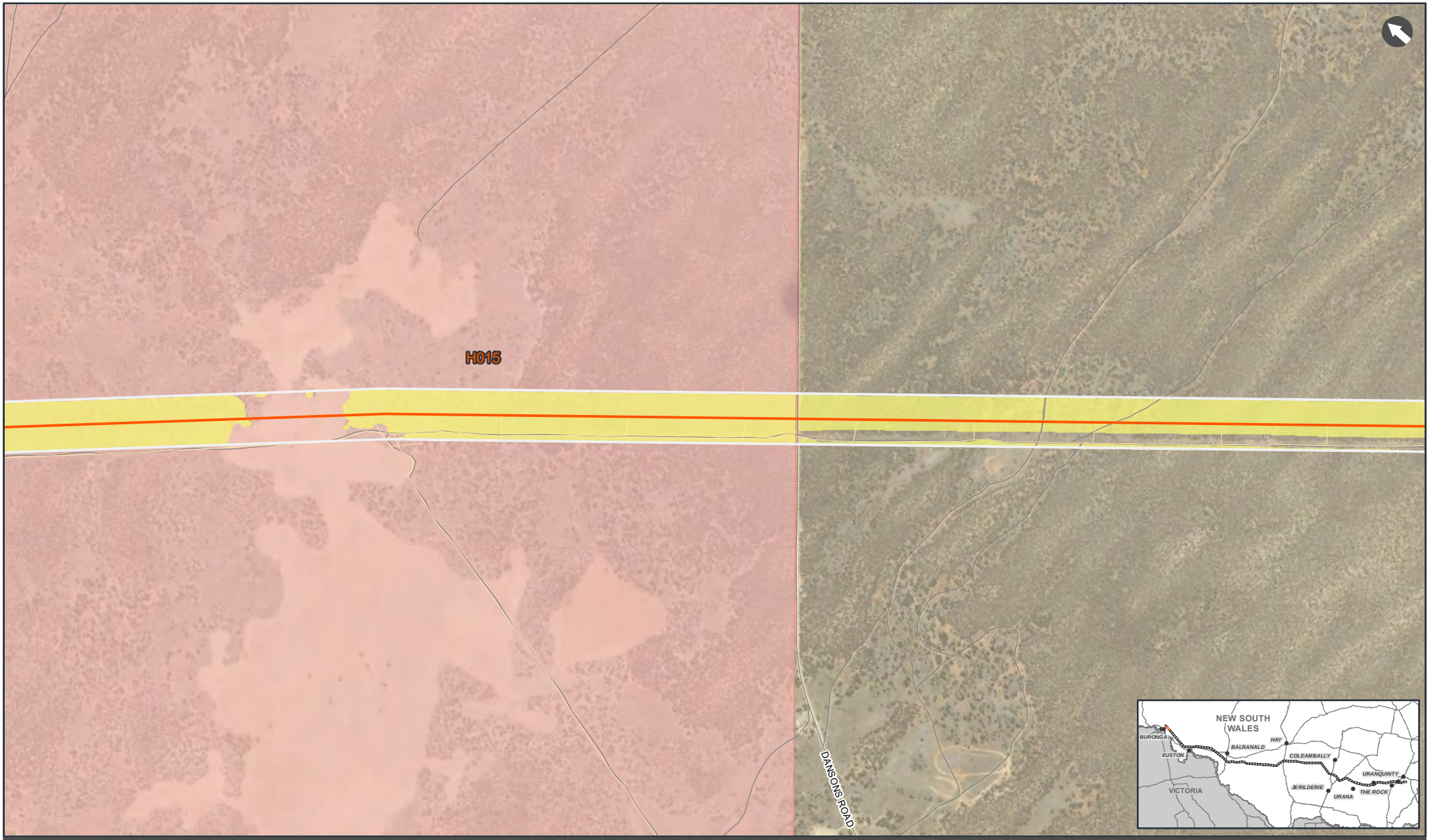
Fauna Stratification
- Arid woodland/shrublands

BDAR - Figure C-8a

Threatened Fauna Species Indivual and Polygon Maps

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\03_AppendixC\PS117658_BDAR_C008_ThreatenedFaunaSpeciesIndividualAndPolygon_r1v18.mxd

Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Holdings - No Access
- Biodiversity Study Area

Fauna Stratification
- Arid woodland/shrublands

BDAR - Figure C-8b
Threatened Fauna Species Indivual and Polygon Maps

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\03_AppendixC\PS117658_BDAR_C008_ThreatenedFaunaSpeciesIndividualAndPolygon_r1v18.mxd

Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-8c

Threatened Fauna Species Indivual and Polygon Maps

Project Components

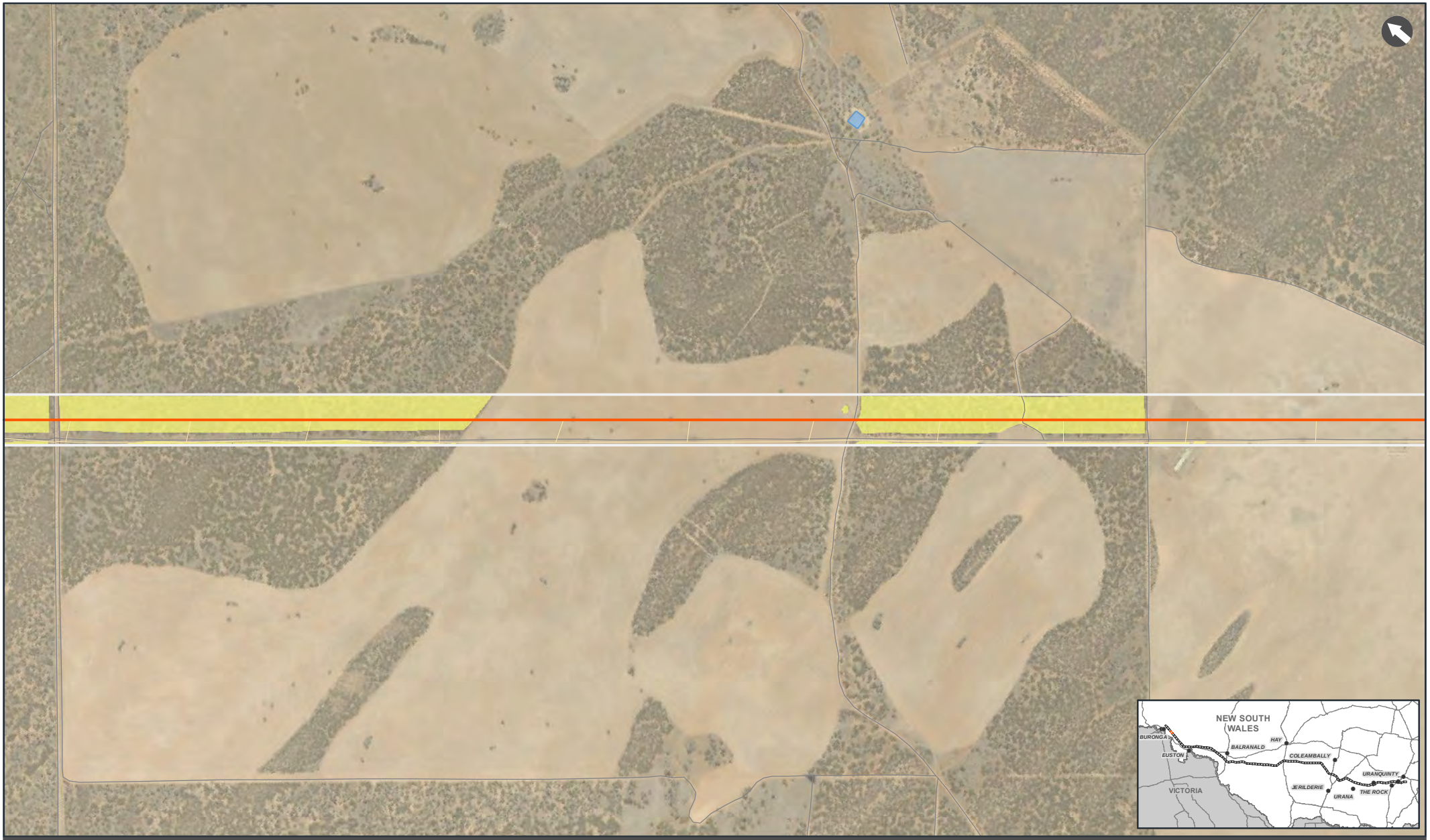
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Fauna Stratification

- Arid woodland/shrublands

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\03_AppendixC\PS117658_BDAR_C008_ThreatenedFaunaSpeciesIndividualAndPolygon_r1v18.mxd

Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

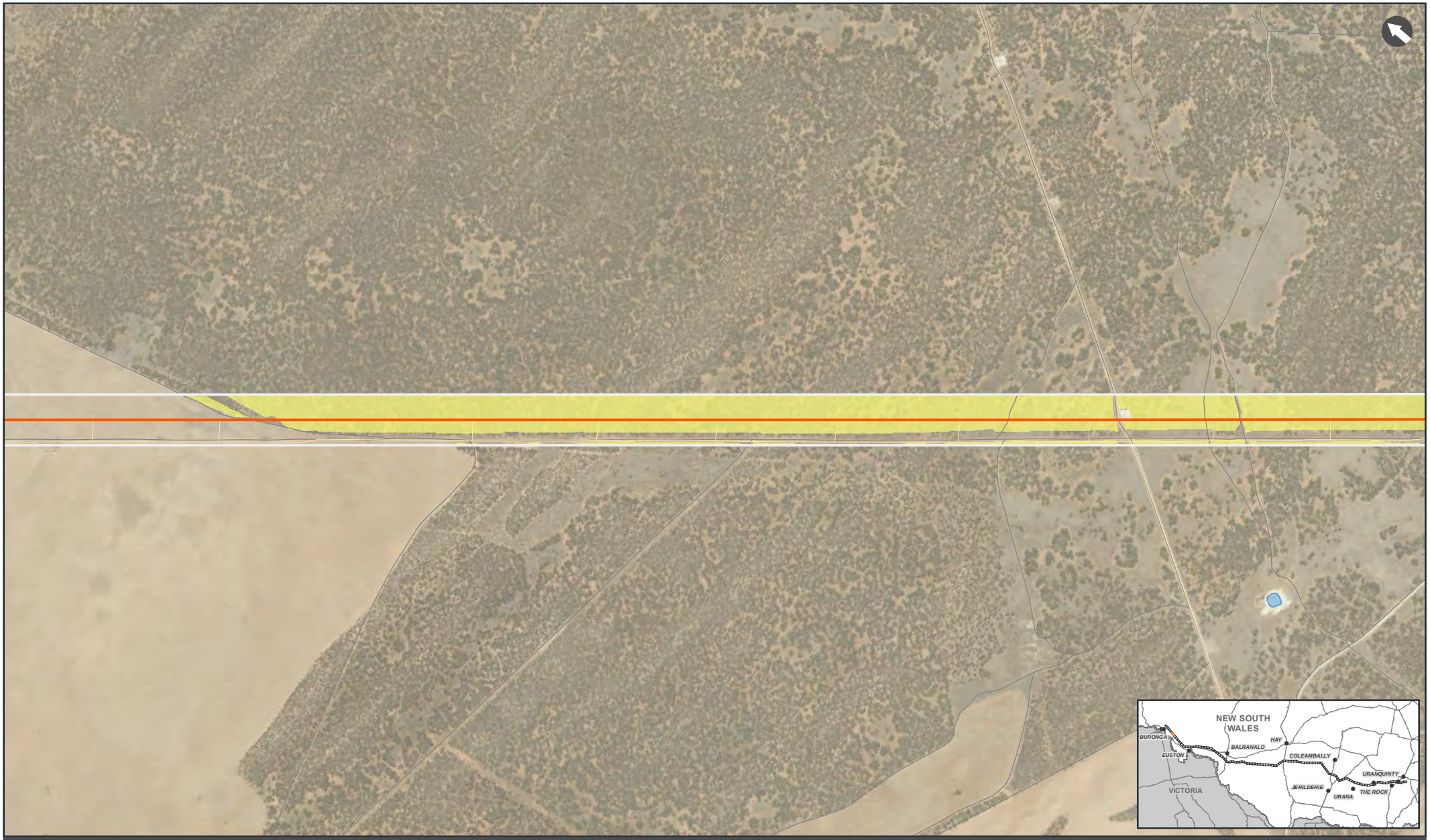
Fauna Stratification
- Arid woodland/shrublands

BDAR - Figure C-8d

Threatened Fauna Species Indivual and Polygon Maps

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\03_AppendixC\PS117658_BDAR_C008_ThreatenedFaunaSpeciesIndividualAndPolygon_r1v18.mxd

Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

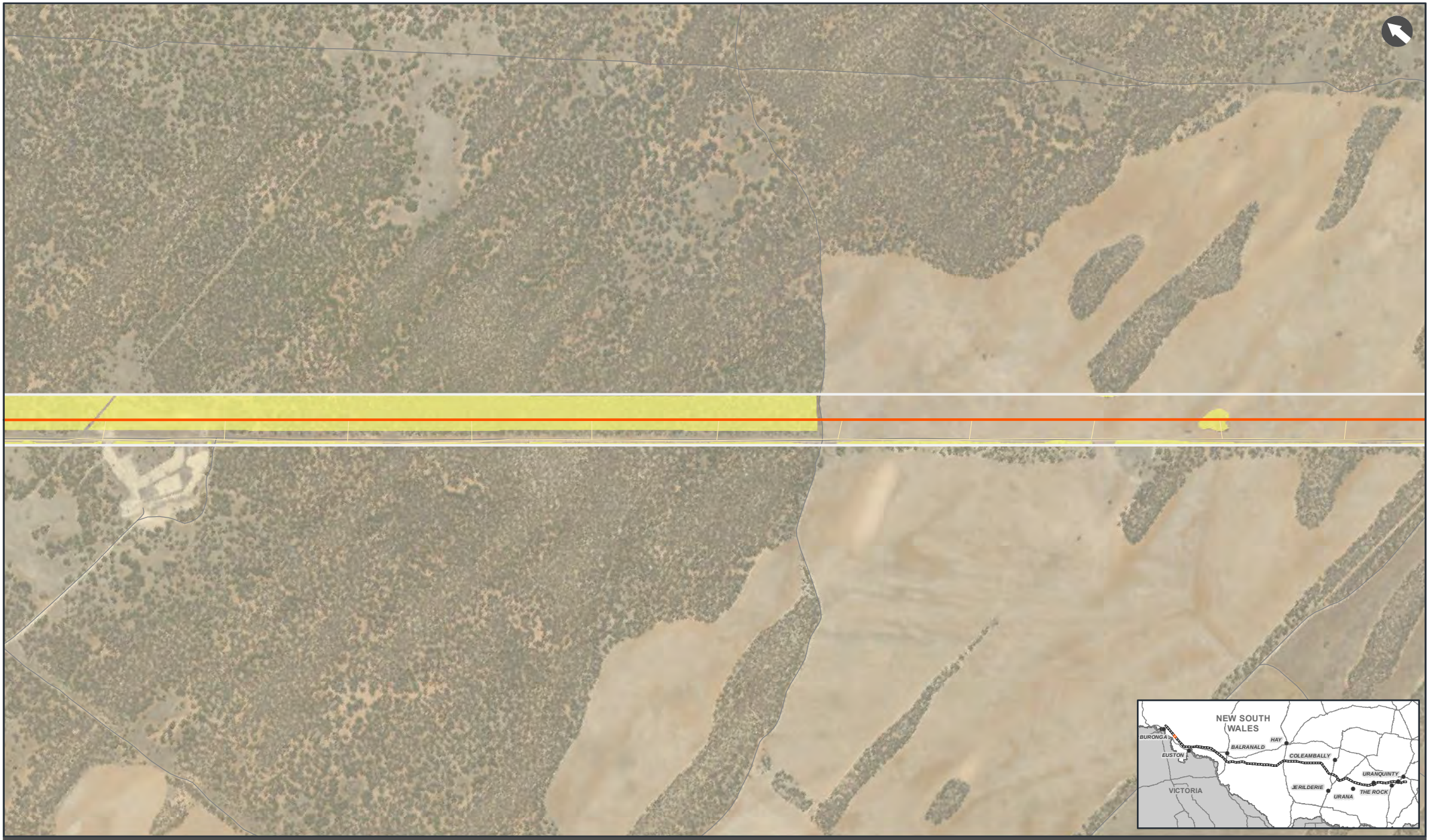
Fauna Stratification
- Arid woodland/shrublands

BDAR - Figure C-8e

Threatened Fauna Species Indivual and Polygon Maps

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\03_AppendixC\PS117658_BDAR_C008_ThreatenedFaunaSpeciesIndividualAndPolygon_r1v18.mxd

Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-8f

Threatened Fauna Species Indivual and Polygon Maps

Project Components

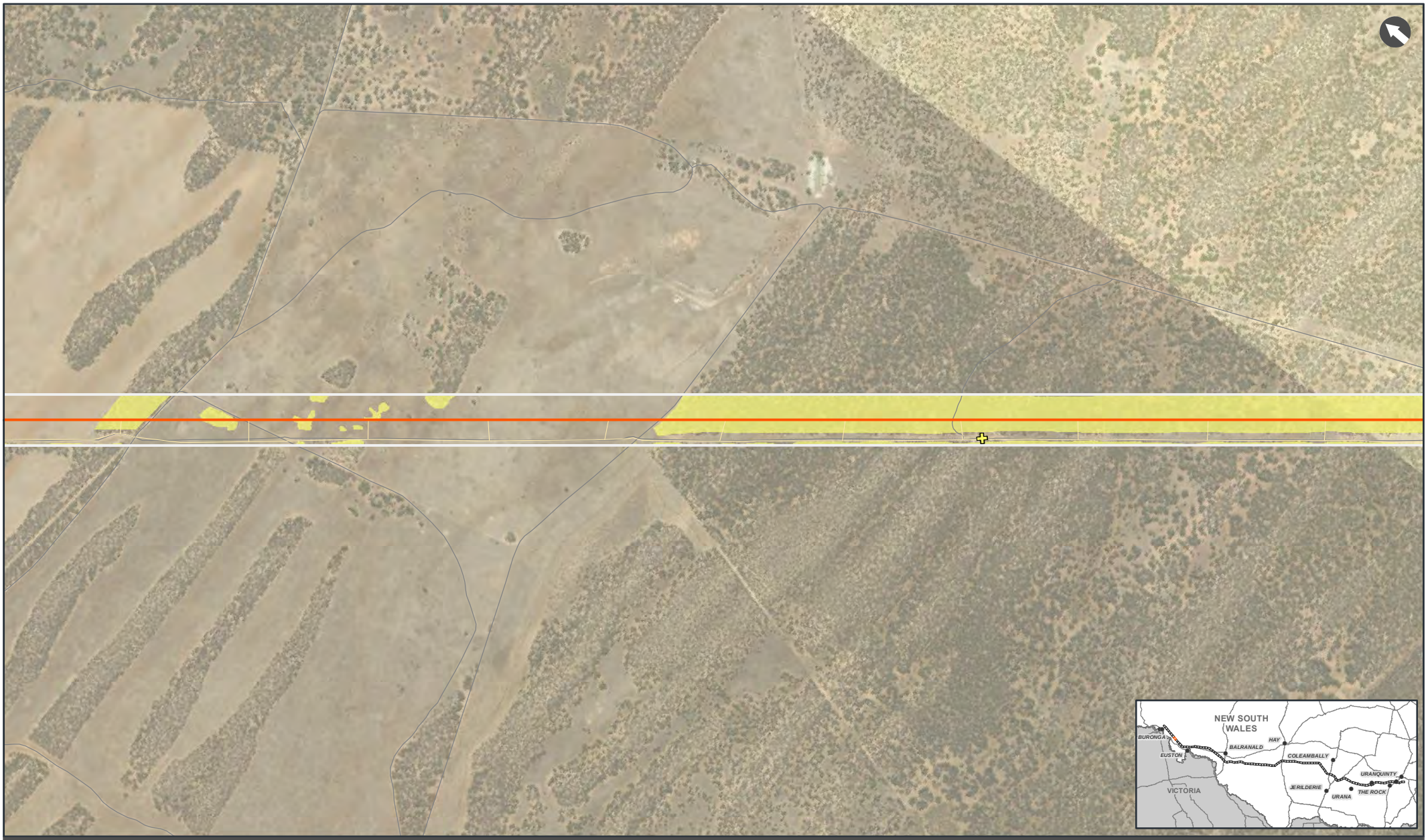
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Fauna Stratification

- Arid woodland/shrublands

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\03_AppendixC\PS117658_BDAR_C008_ThreatenedFaunaSpeciesIndividualAndPolygon_r1v18.mxd

Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-8g

Threatened Fauna Species Indivual and Polygon Maps

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Fauna Species

- Chestnut Quail-thrush - Cinclosoma castanotum

Fauna Stratification

- Arid woodland/shrublands

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\03_AppendixC\PS117658_BDAR_C008_ThreatenedFaunaSpeciesIndividualAndPolygon_r1v18.mxd

Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Fauna Stratification
- Arid woodland/shrublands

BDAR - Figure C-8h

Threatened Fauna Species Indivual and Polygon Maps

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\03_AppendixC\PS117658_BDAR_C008_ThreatenedFaunaSpeciesIndividualAndPolygon_r1v18.mxd

Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-8i

Threatened Fauna Species Indivual and Polygon Maps

Project Components

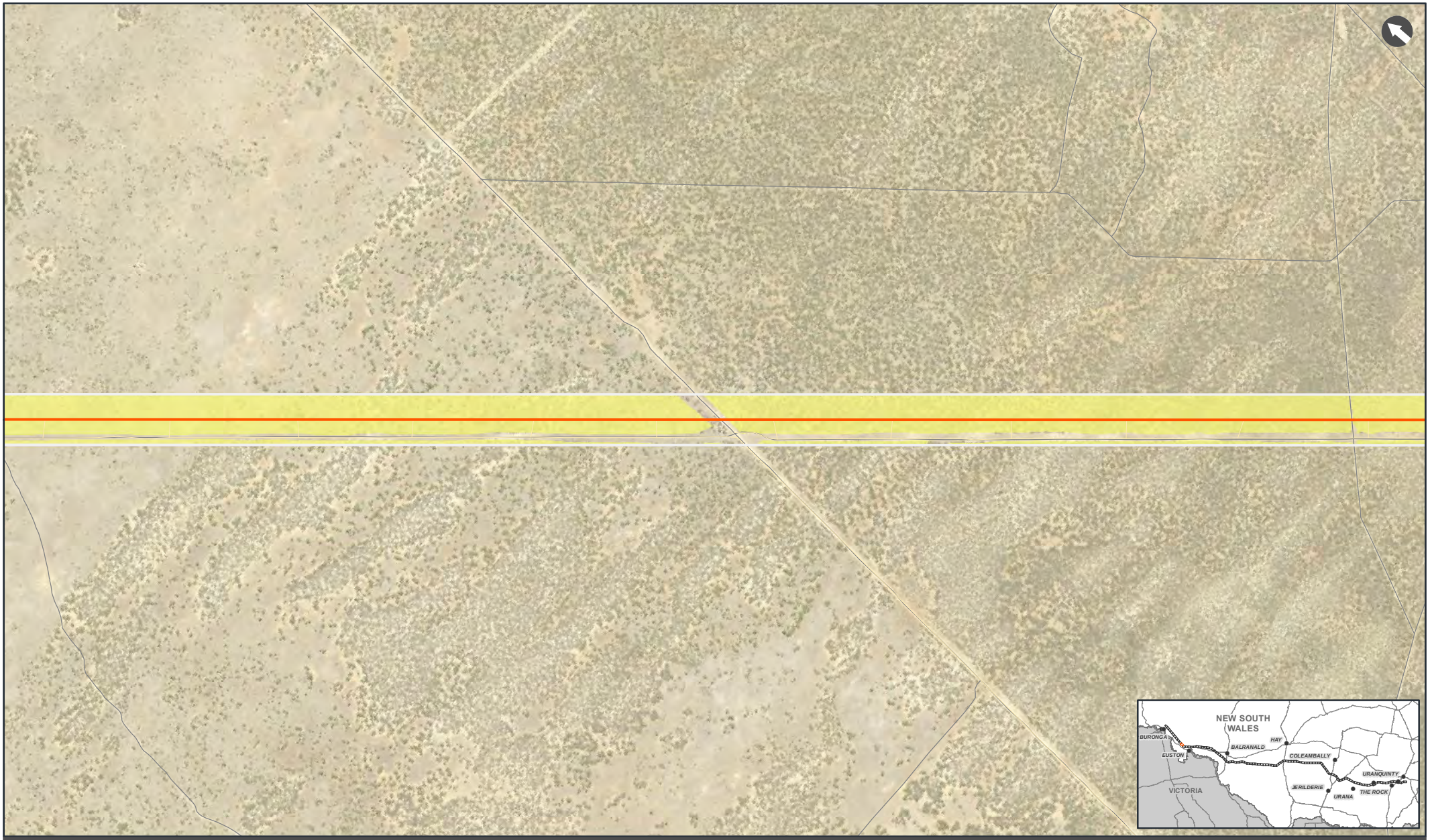
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Fauna Stratification

- Arid woodland/shrublands

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Fauna Stratification

- Arid woodland/shrublands

BDAR - Figure C-8j

Threatened Fauna Species Indivual and Polygon Maps

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\03_AppendixC\PS117658_BDAR_C008_ThreatenedFaunaSpeciesIndividualAndPolygon_r1v18.mxd

Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-8k

Threatened Fauna Species Indivual and Polygon Maps

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Fauna Species
- Regent Parrot - Polytelis anthopeplus

Fauna Stratification
- Arid woodland/shrublands

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-8l

Threatened Fauna Species Indivual and Polygon Maps

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Fauna Species
- Mallee Worm-lizard - Aprasia

Fauna Stratification
- Arid woodland/shrublands

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-8m

Threatened Fauna Species Indivual and Polygon Maps

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Fauna Species
- Bolam's Mouse - Pseudomys bolami
- Regent Parrot - Polytelis anthopeplus

Fauna Stratification
- Arid woodland/shrublands

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Fauna Species
- Regent Parrot - Polytelis anthopeplus
- South-east Long-eared Bat - Nyctophilus corbeni

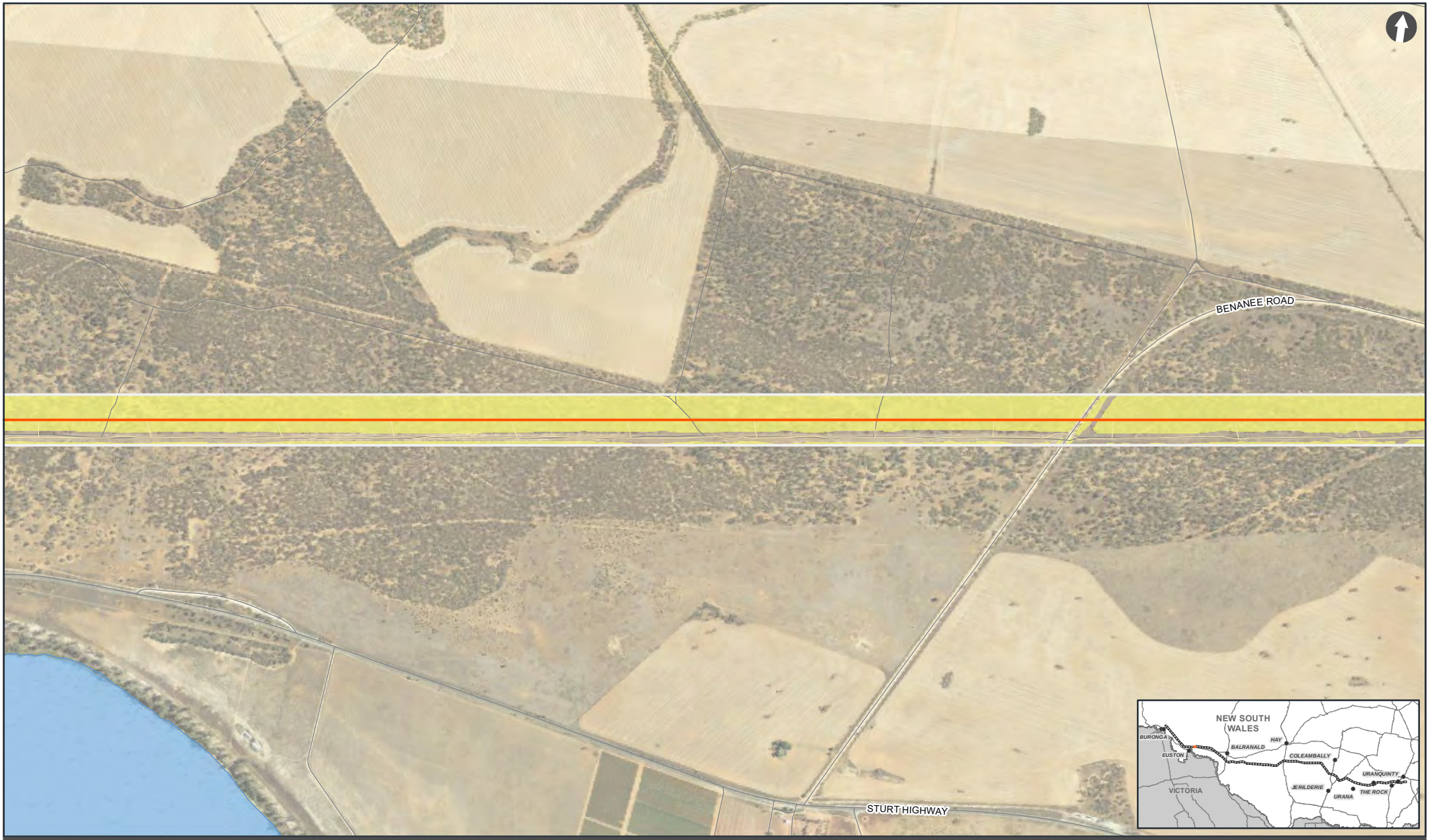
Fauna Stratification
- Arid woodland/shrublands

BDAR - Figure C-8n

Threatened Fauna Species Indivual and Polygon Maps

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Fauna Stratification

- Arid woodland/shrublands

BDAR - Figure C-8o

Threatened Fauna Species Indivual and Polygon Maps

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Fauna Stratification

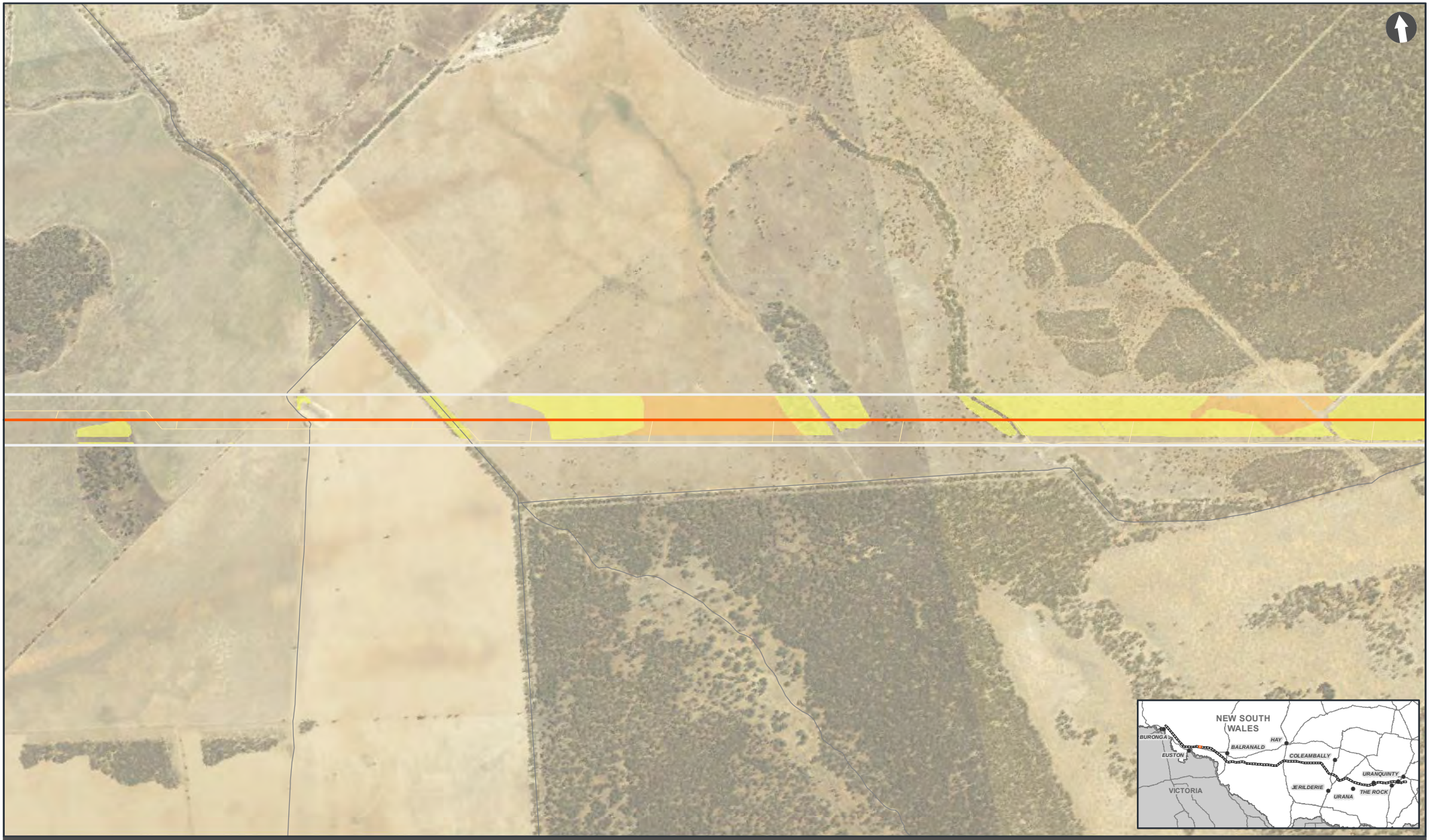
- Arid woodland/shrublands

BDAR - Figure C-8p

Threatened Fauna Species Indivual and Polygon Maps

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

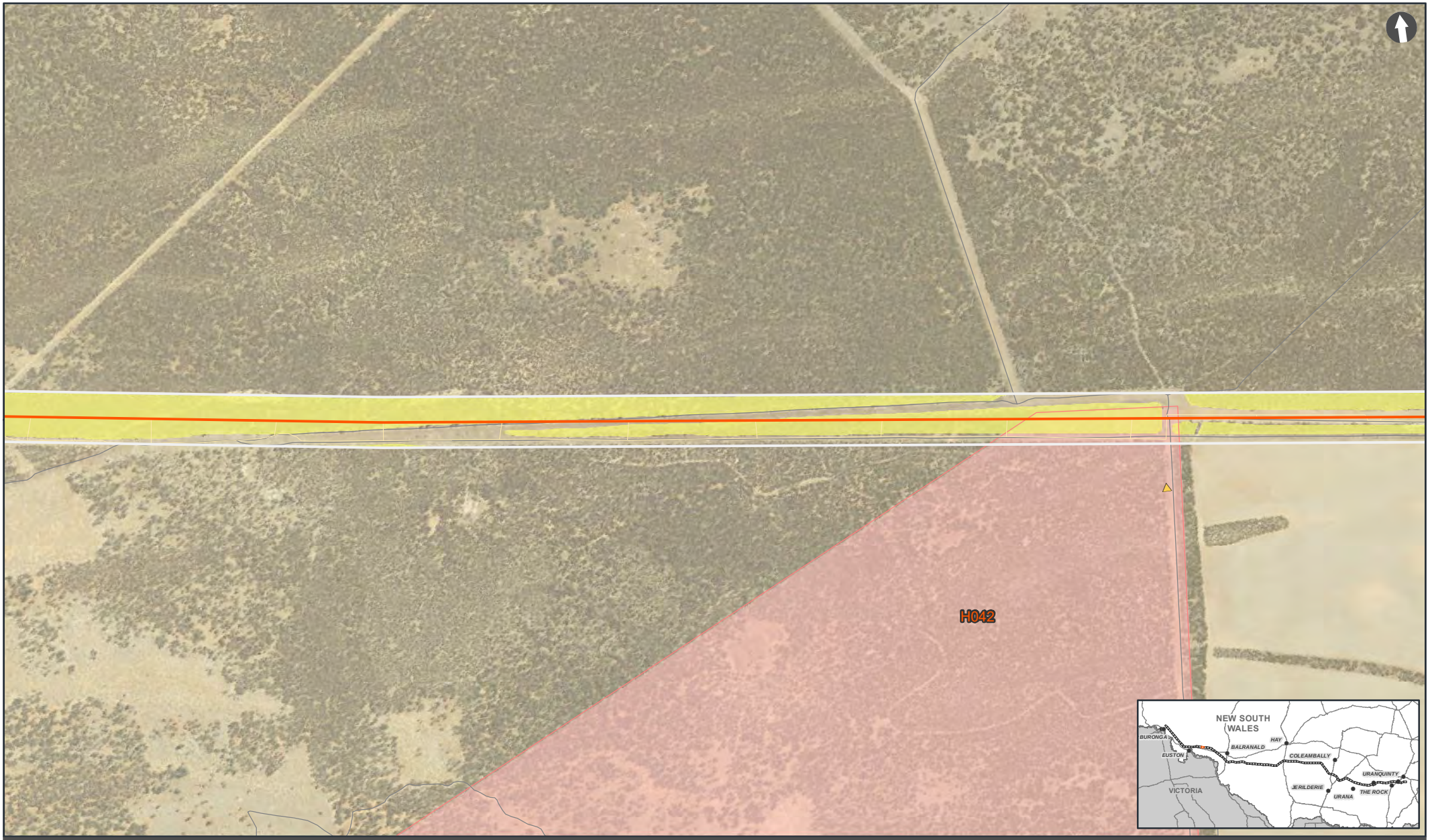
Fauna Stratification
- Arid woodland/shrublands
- Chenopod shrublands

BDAR - Figure C-8q

Threatened Fauna Species Indivual and Polygon Maps

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-8r

Threatened Fauna Species Indivual and Polygon Maps

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Holdings - No Access
- Biodiversity Study Area

Threatened Fauna Species
- Regent Parrot - Polytelis anthopeplus

Fauna Stratification
- Arid woodland/shrublands

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Fauna Species
- Purple-crowned Lorikeet - Glossopsitta porphyrocephala
- Regent Parrot - Polytelis anthopeplus

Fauna Stratification
- Arid woodland/shrublands
- Wetlands

BDAR - Figure C-8s

Threatened Fauna Species Indivual and Polygon Maps

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Fauna Species
- Chestnut Quail-thrush - Cinclosoma castanotum
- Gilbert's Whistler - Pachycephala inornata
- Purple-crowned Lorikeet - Glossopsitta porphyrocephala

Fauna Stratification
- Arid woodland/shrublands

BDAR - Figure C-8t

Threatened Fauna Species Indivual and Polygon Maps

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Fauna Species
- Major Mitchell's Cockatoo - Lophochroa leadbeateri
- South-east Long-eared Bat - Nyctophilus corbeni

Fauna Stratification
- Arid woodland/shrublands
- Chenopod shrublands

BDAR - Figure C-8u

Threatened Fauna Species Indivual and Polygon Maps

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

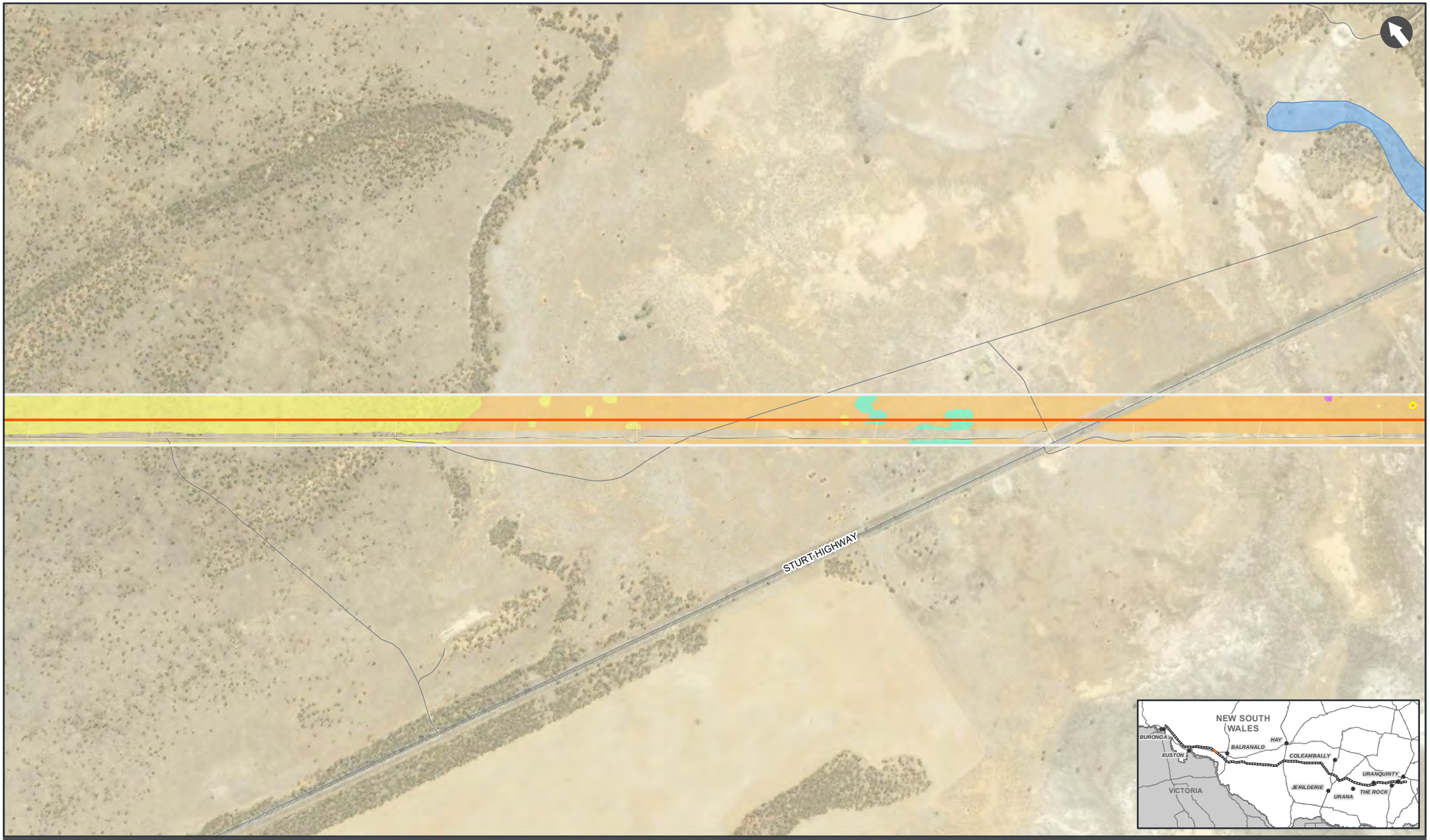
Fauna Stratification
- Arid woodland/shrublands
- Chenopod shrublands

BDAR - Figure C-8v

Threatened Fauna Species Indivual and Polygon Maps

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-8w

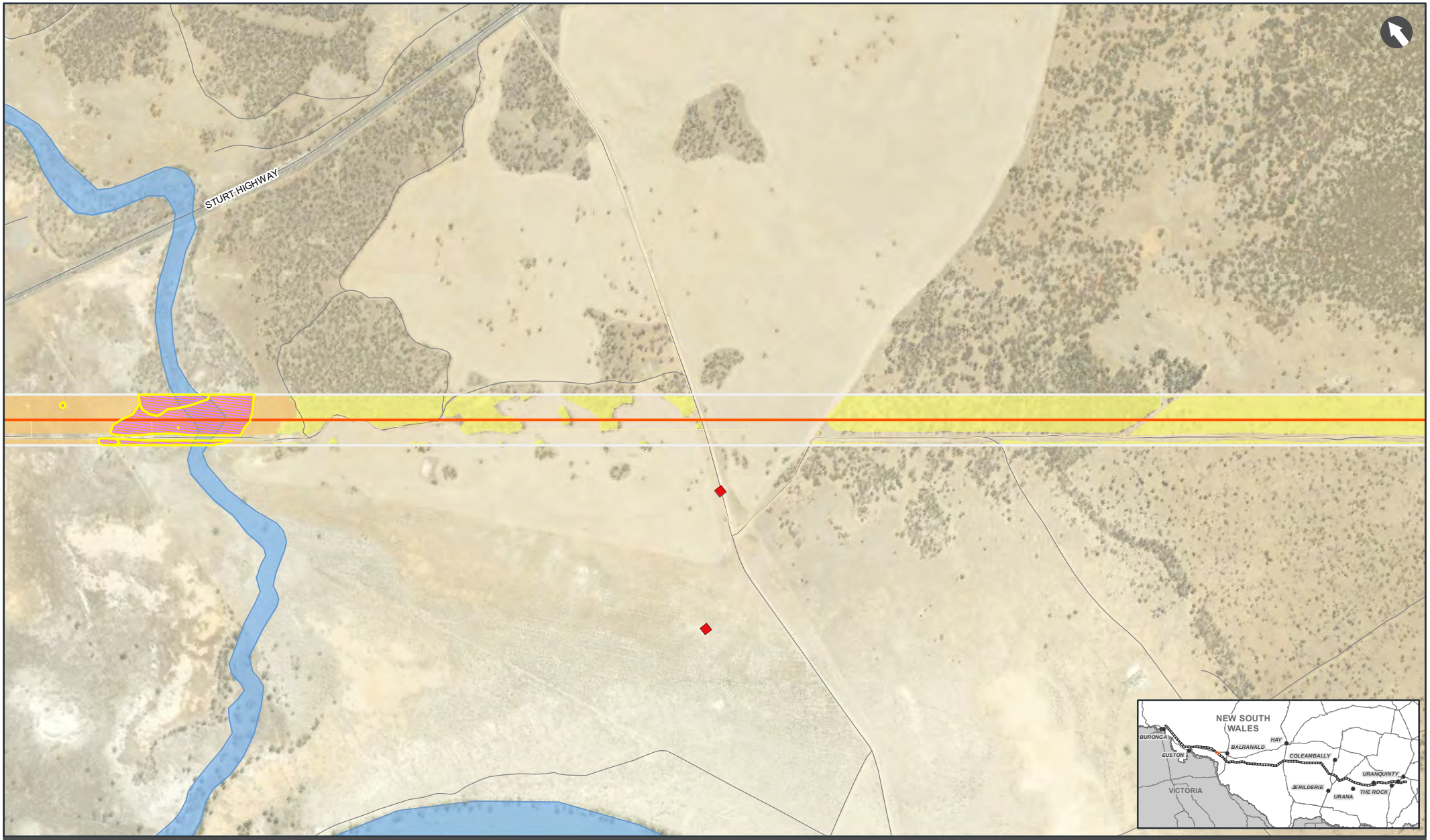
Threatened Fauna Species Indivual and Polygon Maps

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Major Mitchell's Cockatoo Potential Breeding Habitat
- Regent Parrot Potential Breeding Habitat

Fauna Stratification
- Arid woodland/shrublands
- Chenopod shrublands
- Riverine
- Wetlands

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Major Mitchell's Cockatoo Potential Breeding Habitat
- Regent Parrot Potential Breeding Habitat

Threatened Fauna Species
- White-fronted Chat - Epthianura albifrons

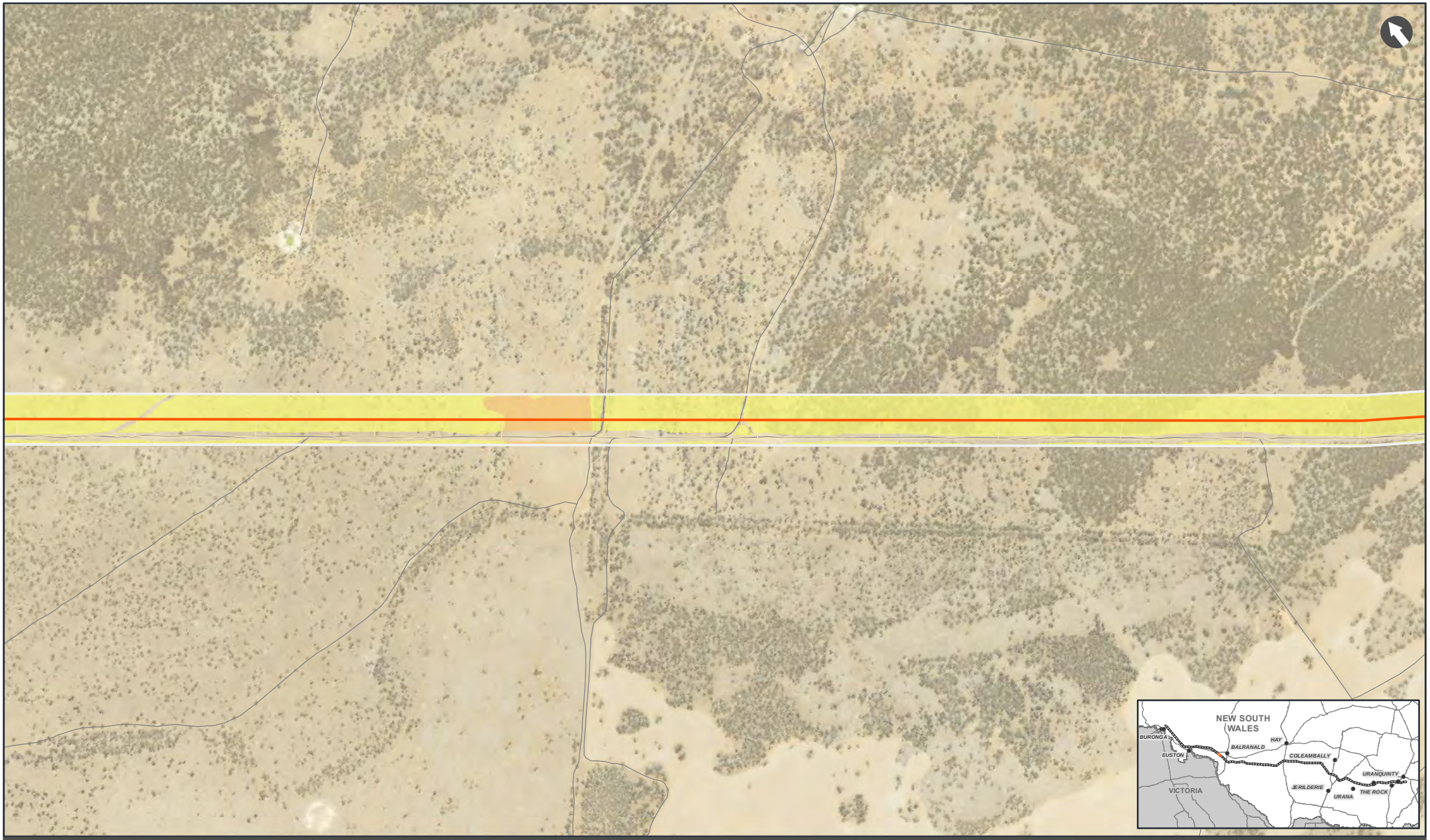
Fauna Stratification
- Arid woodland/shrublands
- Chenopod shrublands
- Riverine

BDAR - Figure C-8x

Threatened Fauna Species Indivual and Polygon Maps

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

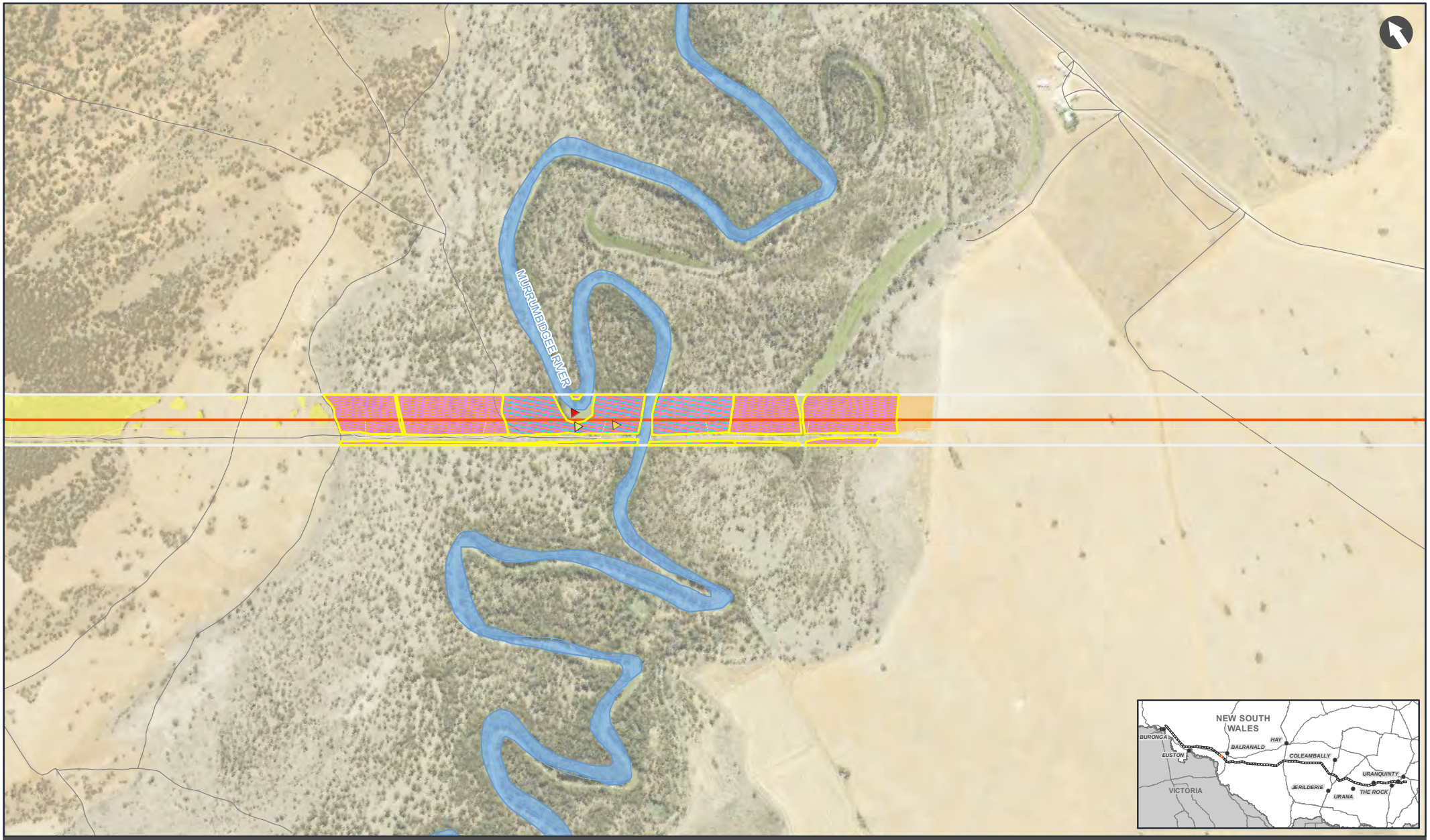
Fauna Stratification
- Arid woodland/shrublands
- Chenopod shrublands

BDAR - Figure C-8y

Threatened Fauna Species Indivual and Polygon Maps

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-8z

Threatened Fauna Species Indivual and Polygon Maps

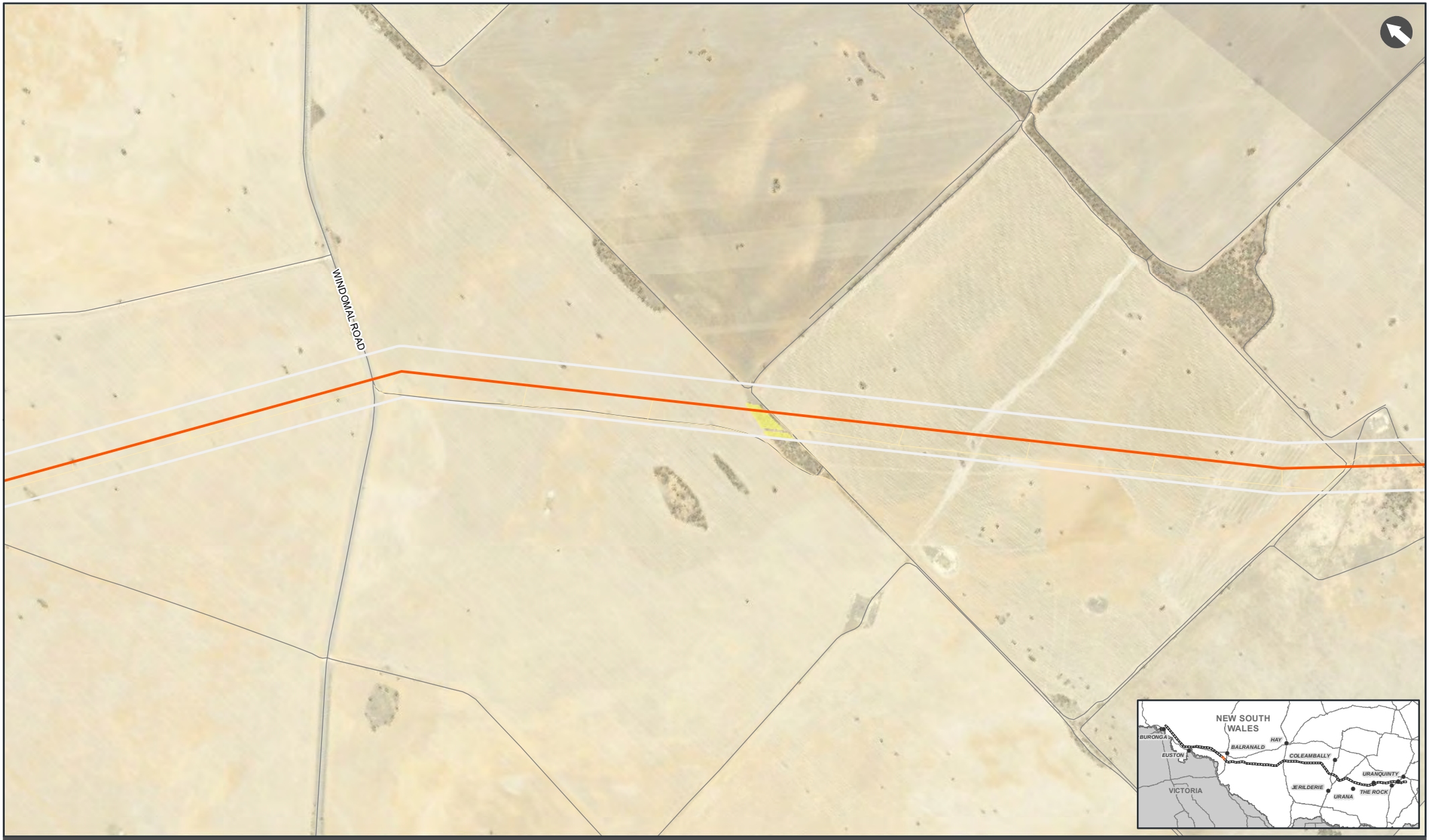
Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Major Mitchell's Cockatoo Potential Breeding Habitat
- Regent Parrot Potential Breeding Habitat
- Southern Myotis Habitat

Threatened Fauna Species
- Rainbow Bee-eater - Merops ornatus
- Regent Parrot - Polytelis anthopeplus
- Southern Myotis - Myotis macropus

Fauna Stratification
- Arid woodland/shrublands
- Chenopod shrublands
- Riverine

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-8aa

Threatened Fauna Species Indivual and Polygon Maps

Project Components

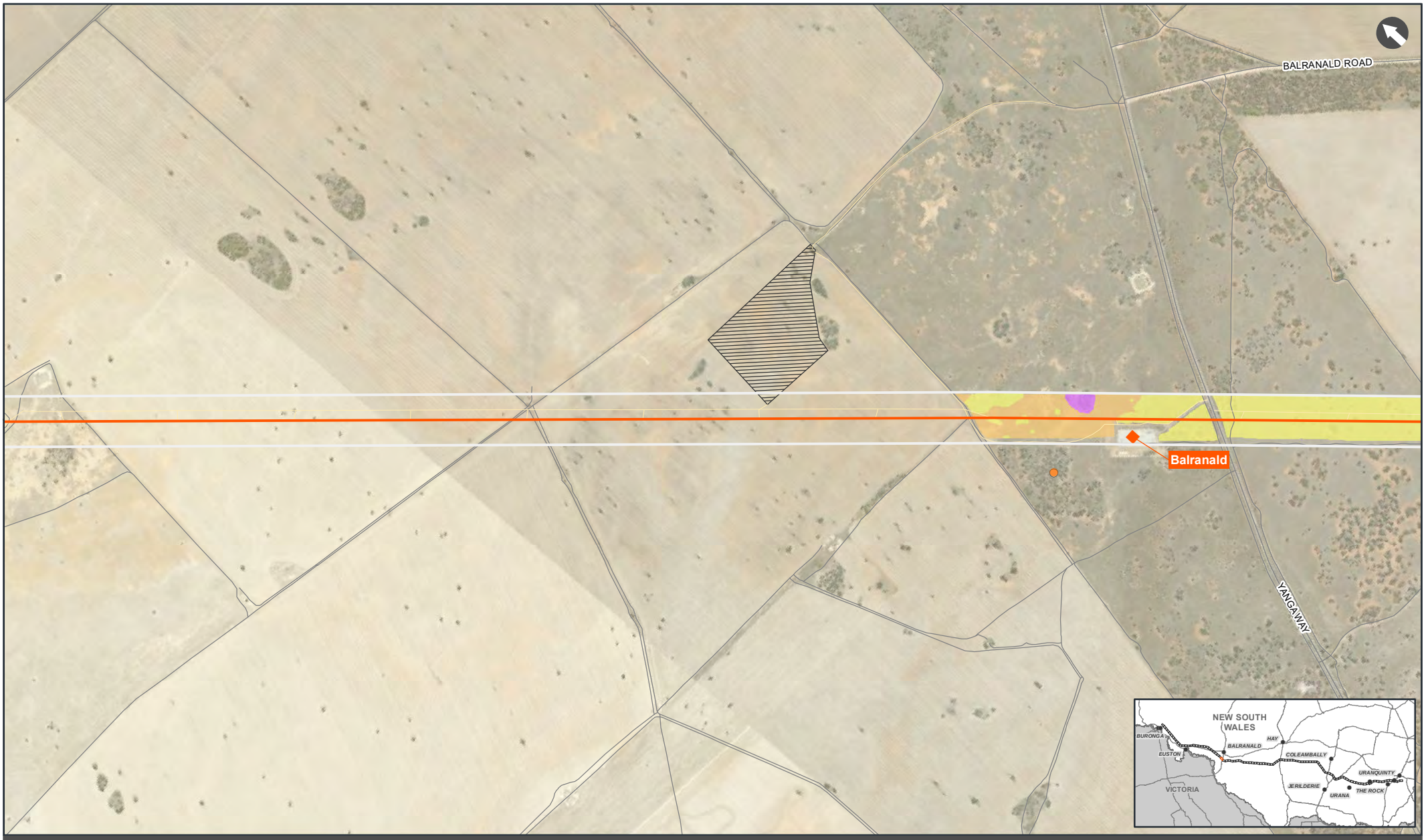
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Fauna Stratification

- Arid woodland/shrublands

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Fauna Species
- Major Mitchell's Cockatoo - Lophochroa leadbeateri

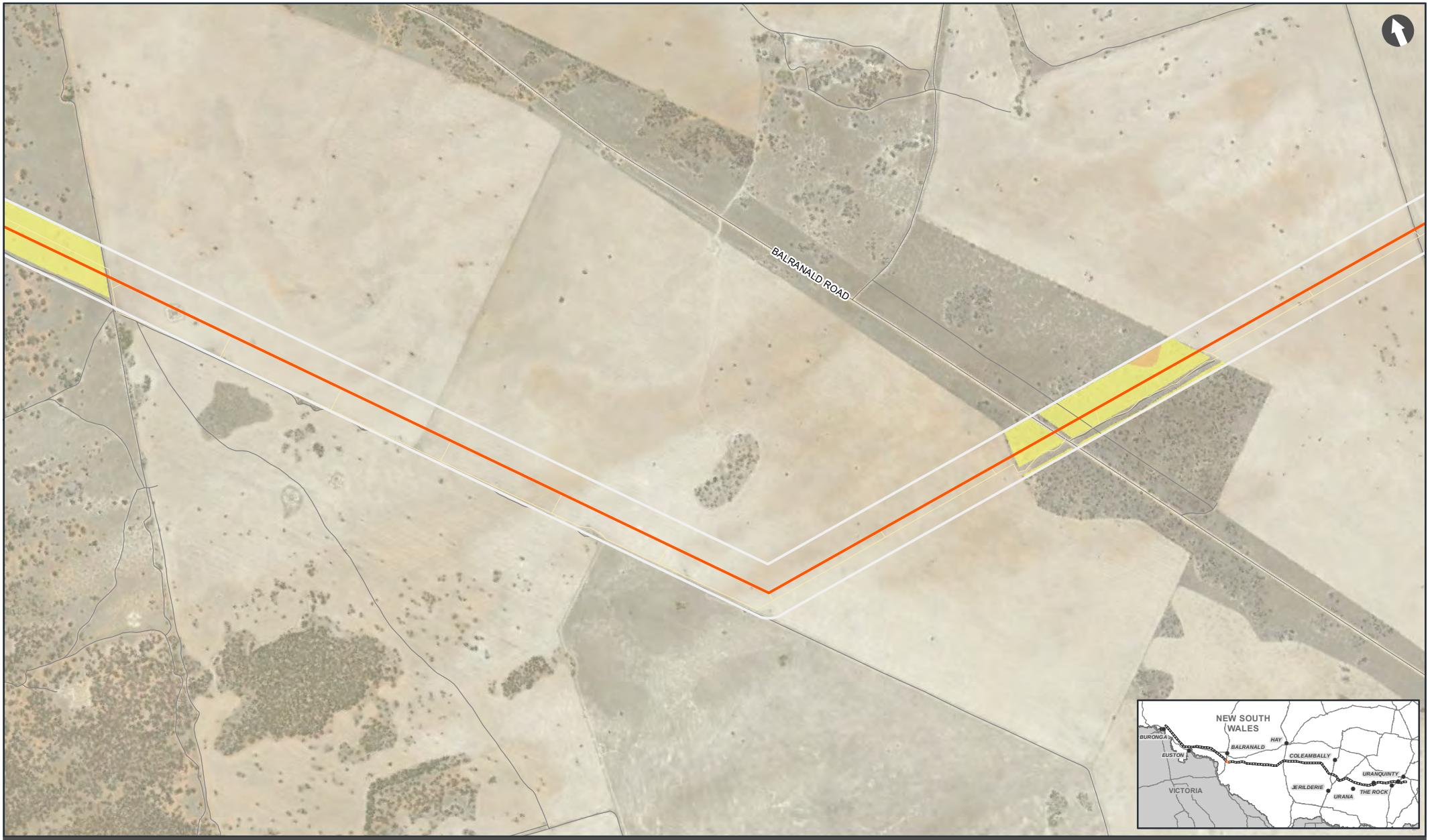
Fauna Stratification
- Arid woodland/shrublands
- Chenopod shrublands
- Riverine

BDAR - Figure C-8ab

Threatened Fauna Species Indivual and Polygon Maps

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

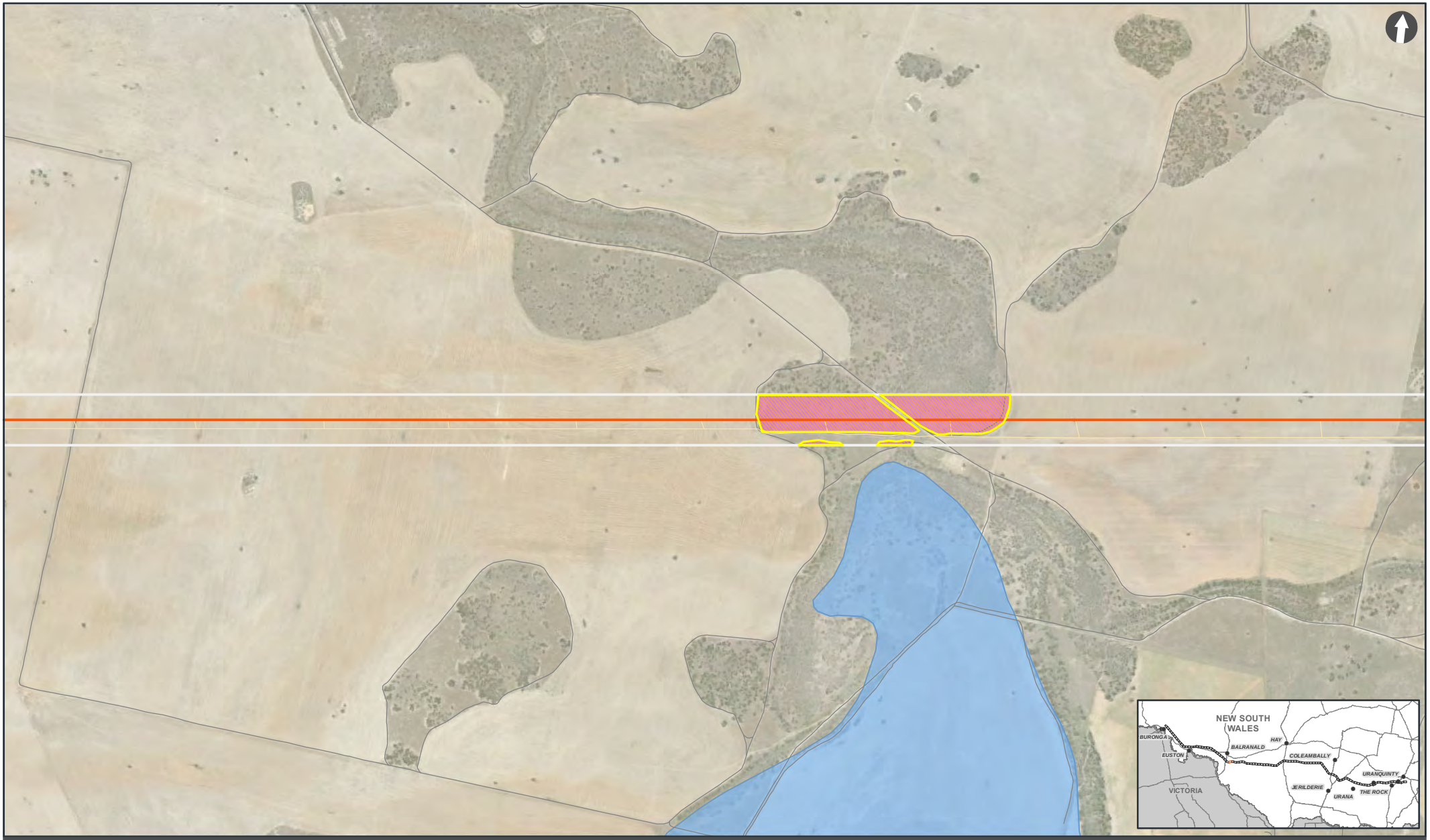
Fauna Stratification
- Arid woodland/shrublands
- Chenopod shrublands

BDAR - Figure C-8ac

Threatened Fauna Species Indivual and Polygon Maps

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Source: NSWSS, ESRI, Transgrid, WSP



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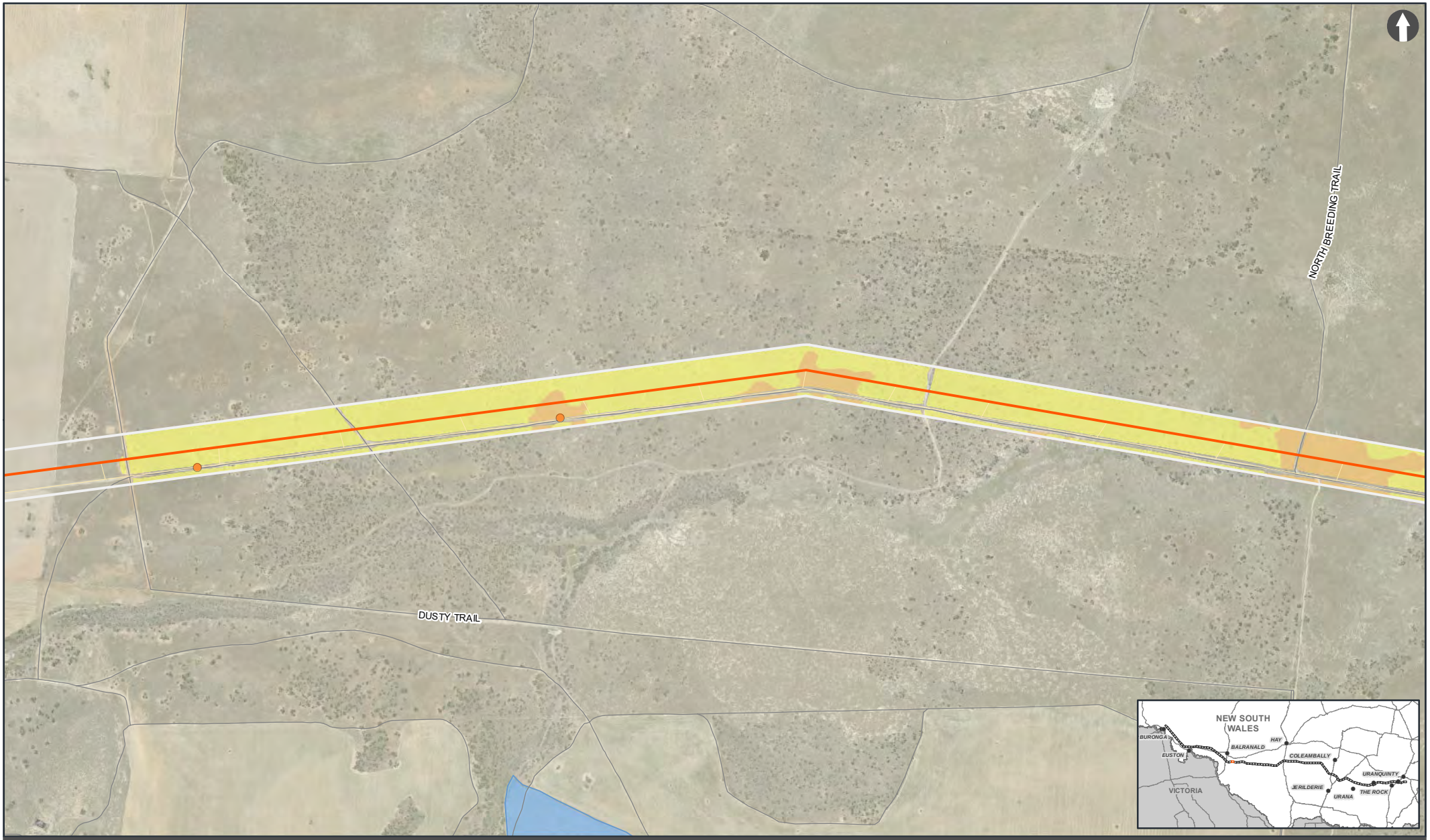
Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Major Mitchell's Cockatoo Potential Breeding Habitat
- Regent Parrot Potential Breeding Habitat

Fauna Stratification
- Riverine

BDAR - Figure C-8ad
Threatened Fauna Species Indivual and Polygon Maps

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-8ae

Threatened Fauna Species Indivual and Polygon Maps

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Fauna Species
- Major Mitchell's Cockatoo - Lophochroa leadbeateri

Fauna Stratification
- Arid woodland/shrublands
- Chenopod shrublands
- Grasslands

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Fauna Stratification

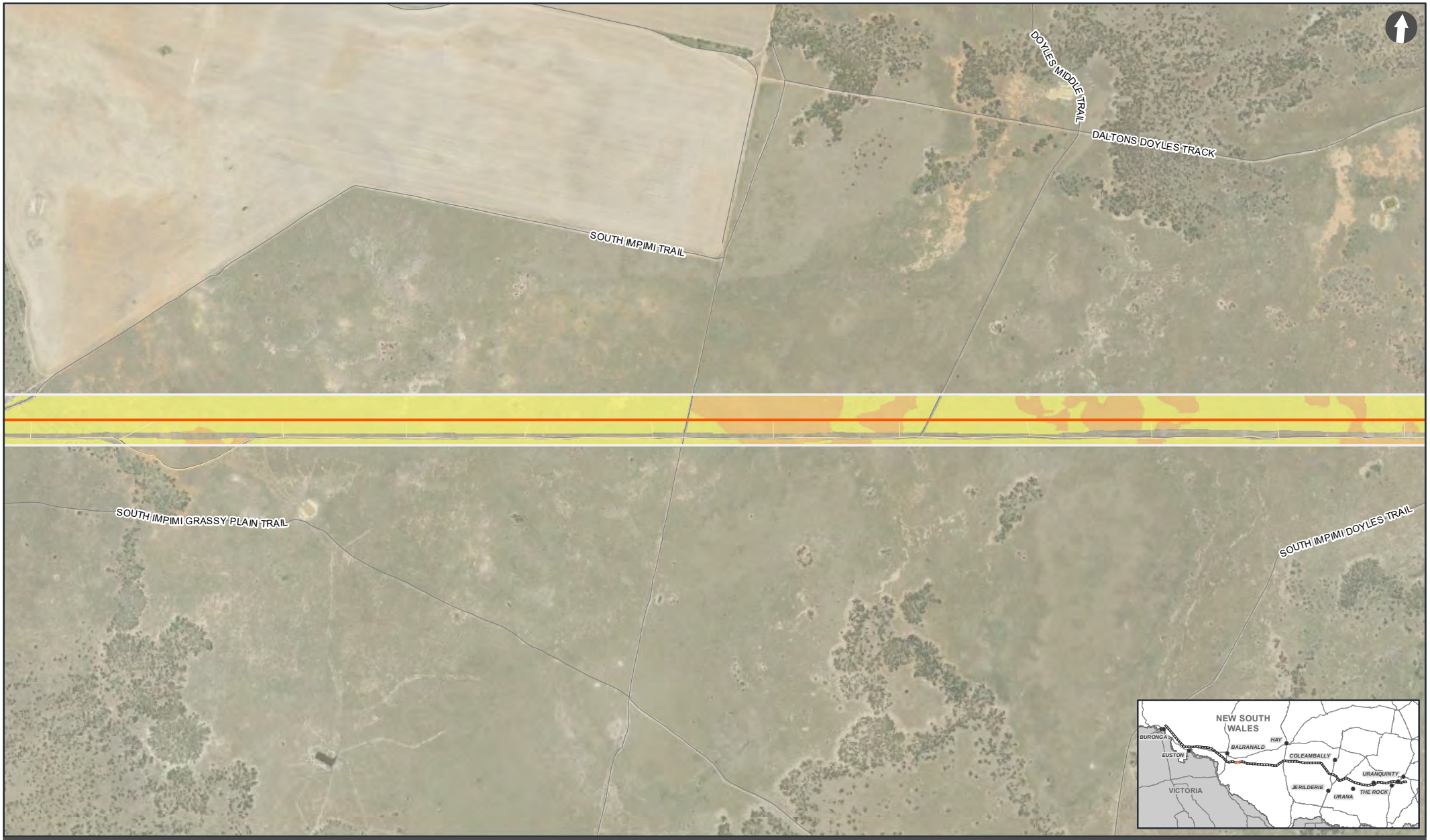
- Arid woodland/shrublands
- Chenopod shrublands
- Riverine
- Wetlands

BDAR - Figure C-8af

Threatened Fauna Species Indivual and Polygon Maps

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-8ag

Threatened Fauna Species Indivual and Polygon Maps

Project Components

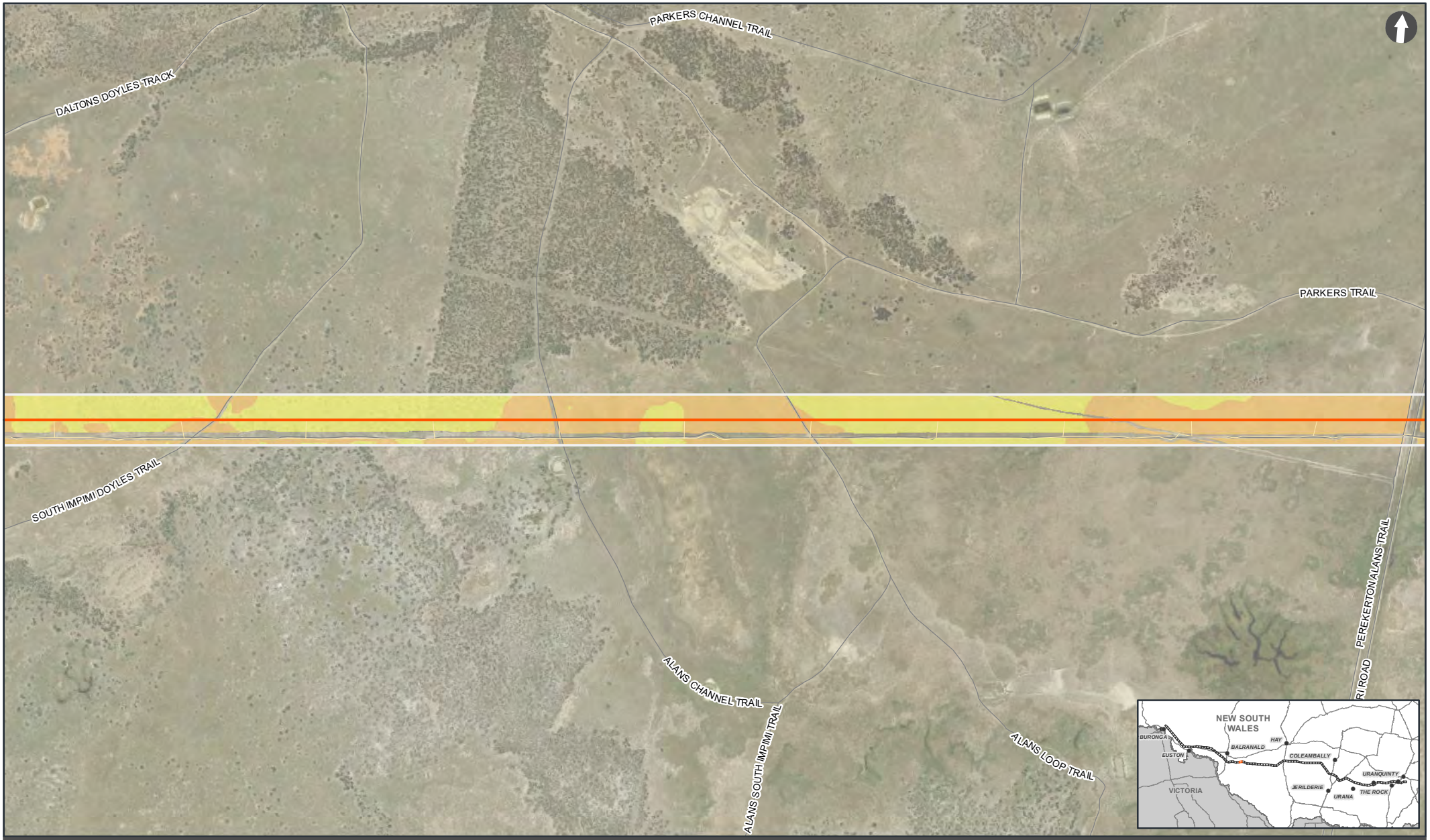
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Fauna Stratification

- Arid woodland/shrublands
- Chenopod shrublands

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Fauna Stratification

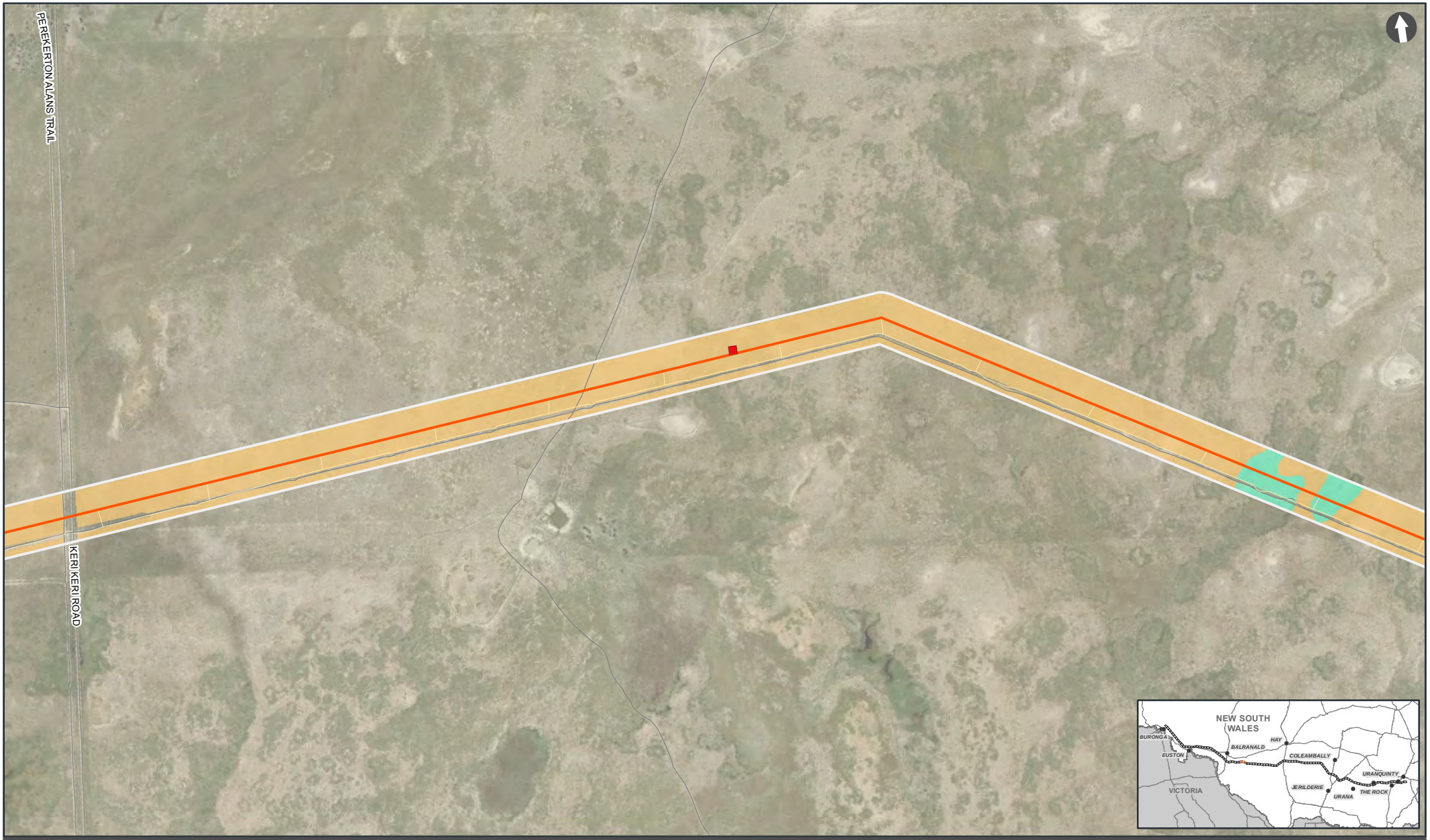
- Arid woodland/shrublands
- Chenopod shrublands

BDAR - Figure C-8ah

Threatened Fauna Species Indivual and Polygon Maps

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-8ai

Threatened Fauna Species Indivual and Polygon Maps

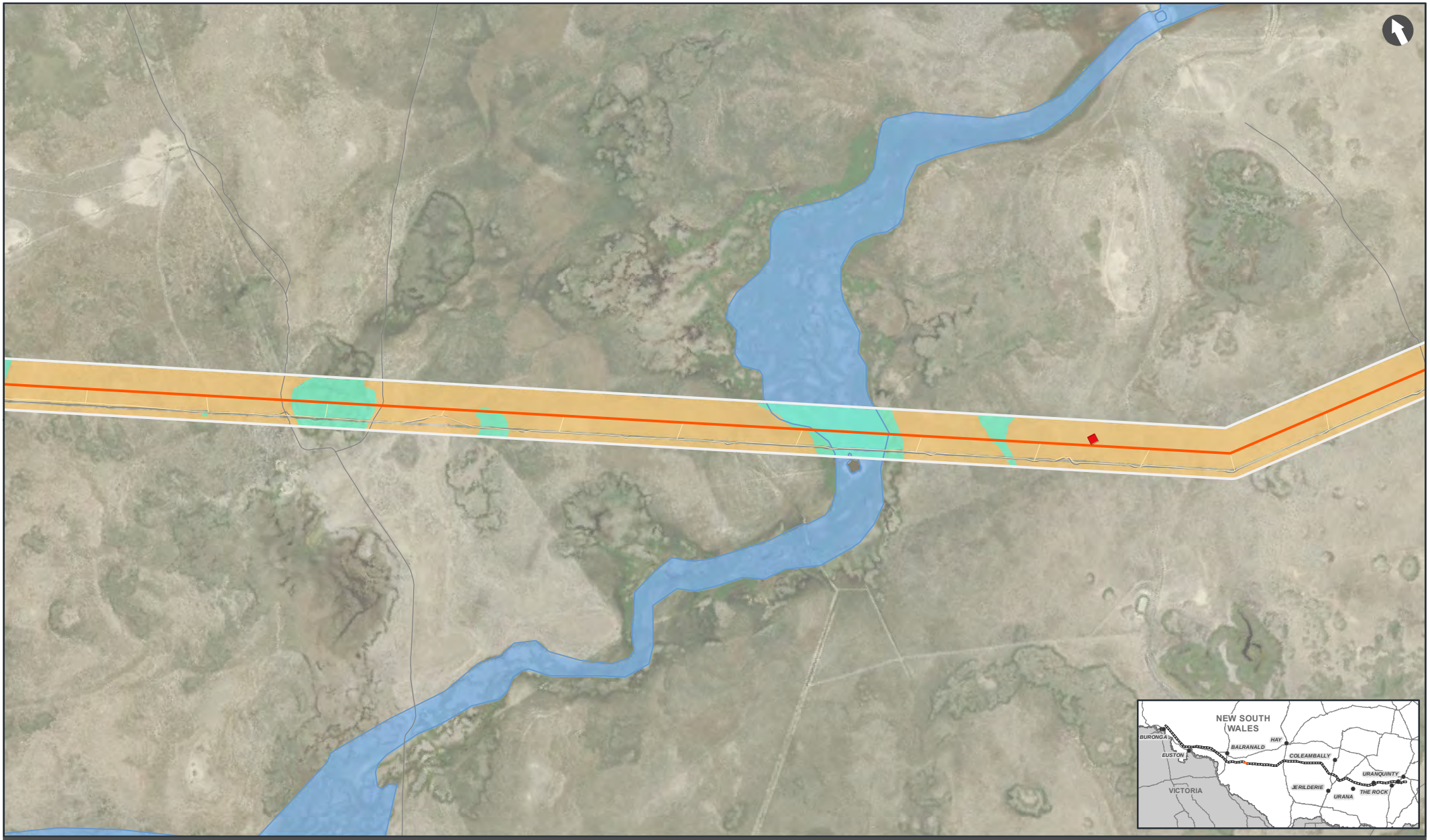
Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Fauna Species
- White-fronted Chat - Epthianura albifrons

Fauna Stratification
- Chenopod shrublands
- Wetlands

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Fauna Species
- White-fronted Chat - Epthianura albifrons

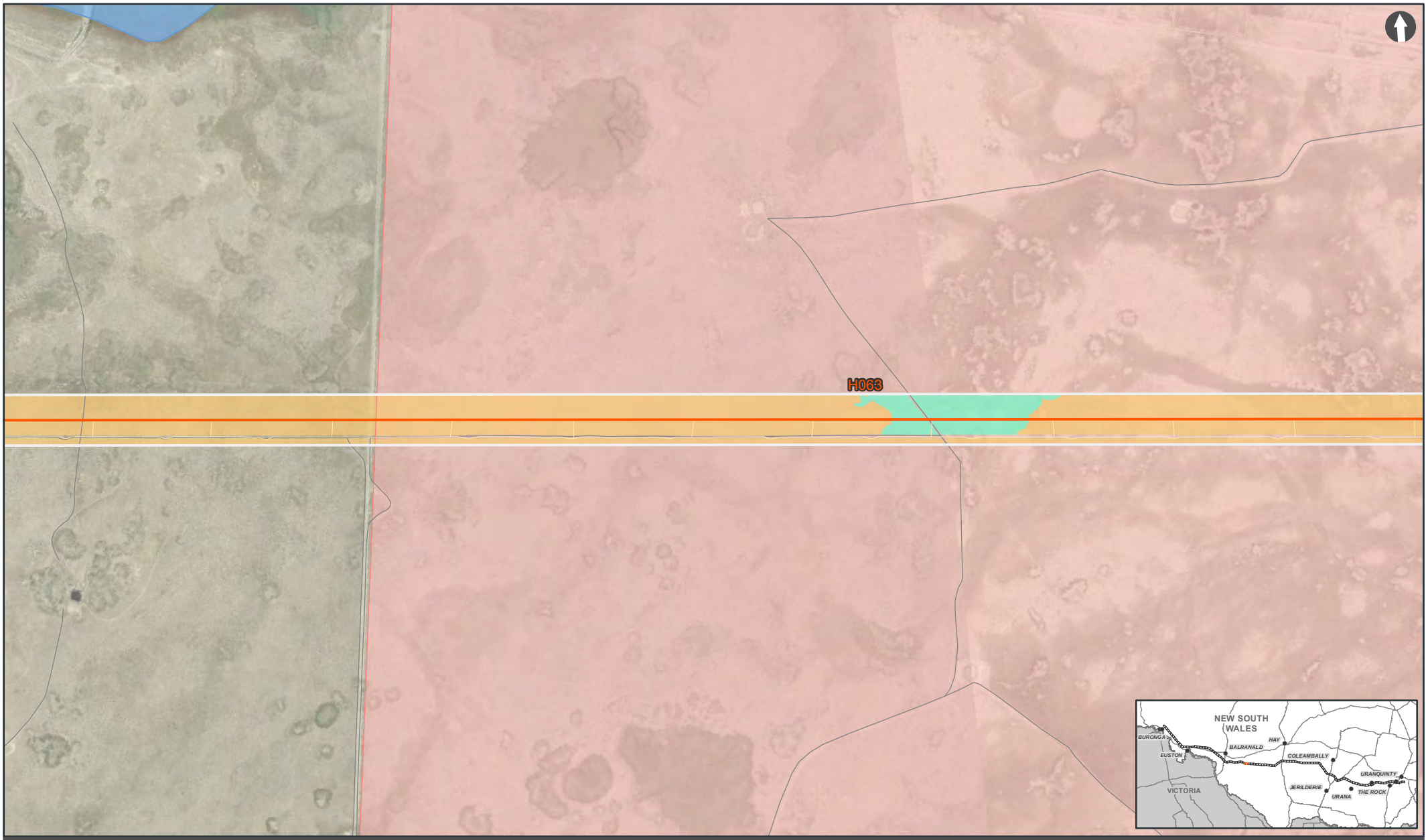
Fauna Stratification
- Chenopod shrublands
- Wetlands

BDAR - Figure C-8aj

Threatened Fauna Species Indivual and Polygon Maps

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Holdings - No Access
- Biodiversity Study Area

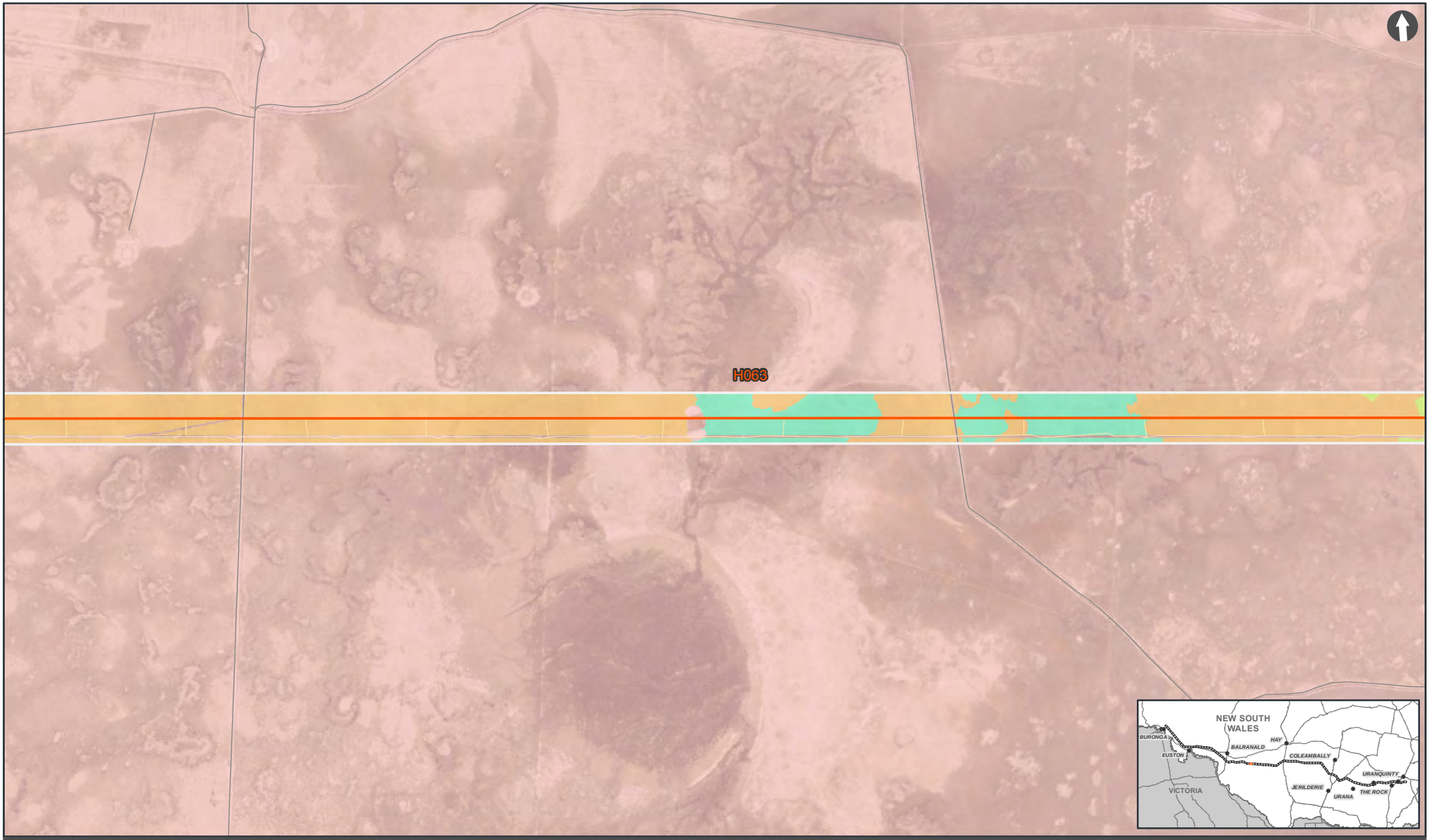
Fauna Stratification
- Chenopod shrublands
- Wetlands

BDAR - Figure C-8ak

Threatened Fauna Species Indivual and Polygon Maps

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Holdings - No Access
- Biodiversity Study Area

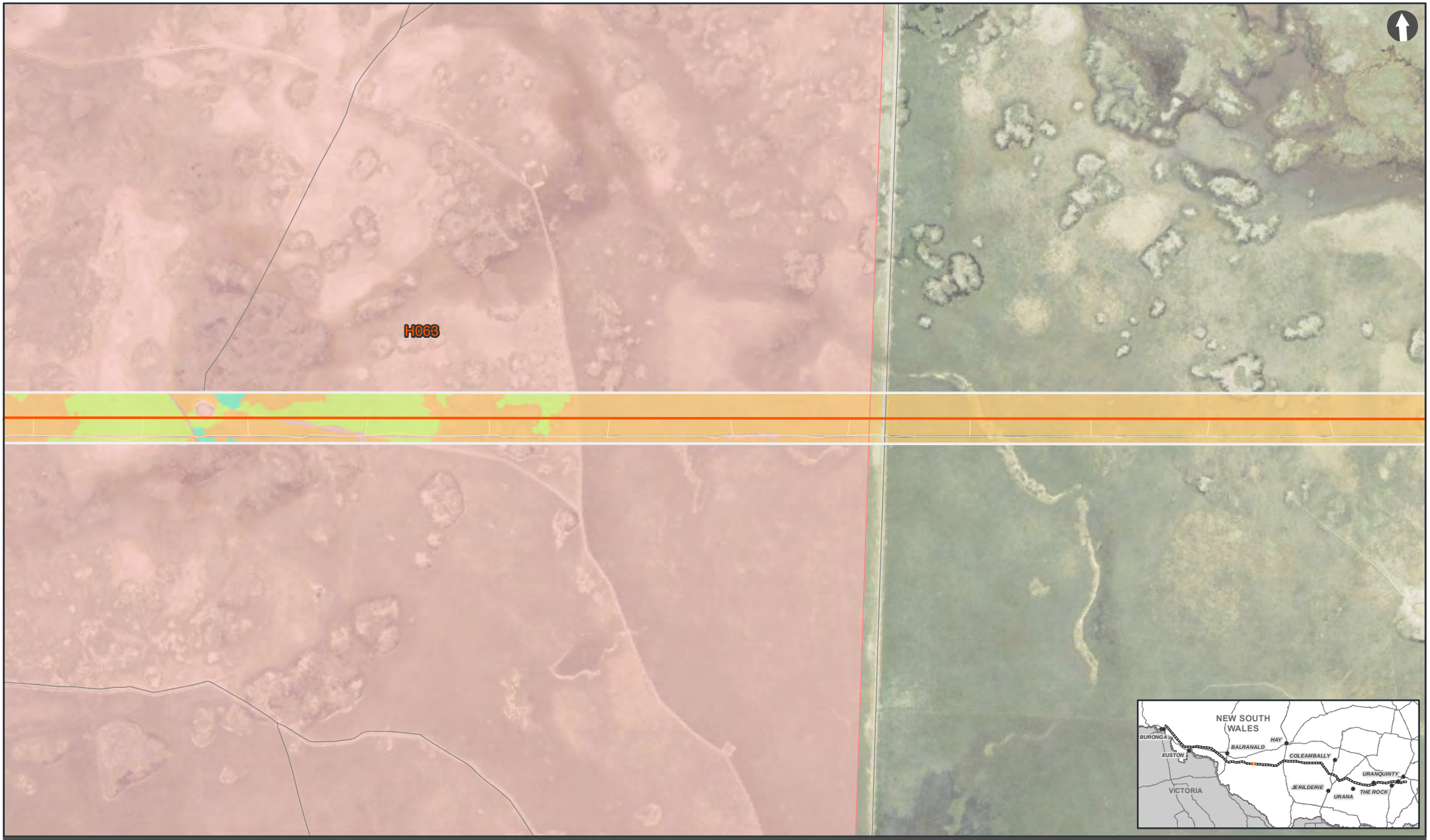
Fauna Stratification
- Chenopod shrublands
- Grasslands
- Wetlands

BDAR - Figure C-8al

Threatened Fauna Species Indivual and Polygon Maps

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Holdings - No Access
- Biodiversity Study Area

Fauna Stratification
- Chenopod shrublands
- Grasslands
- Wetlands

BDAR - Figure C-8am

Threatened Fauna Species Indivual and Polygon Maps

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-8an

Threatened Fauna Species Indivual and Polygon Maps

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Fauna Stratification

- Chenopod shrublands

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Fauna Stratification
- Chenopod shrublands
- Wetlands

BDAR - Figure C-8ao

Threatened Fauna Species Indivual and Polygon Maps

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Fauna Stratification

- Chenopod shrublands

BDAR - Figure C-8ap

Threatened Fauna Species Indivual and Polygon Maps

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Holdings - No Access
- Biodiversity Study Area

Threatened Fauna Species
- White-fronted Chat - Epthianura albifrons

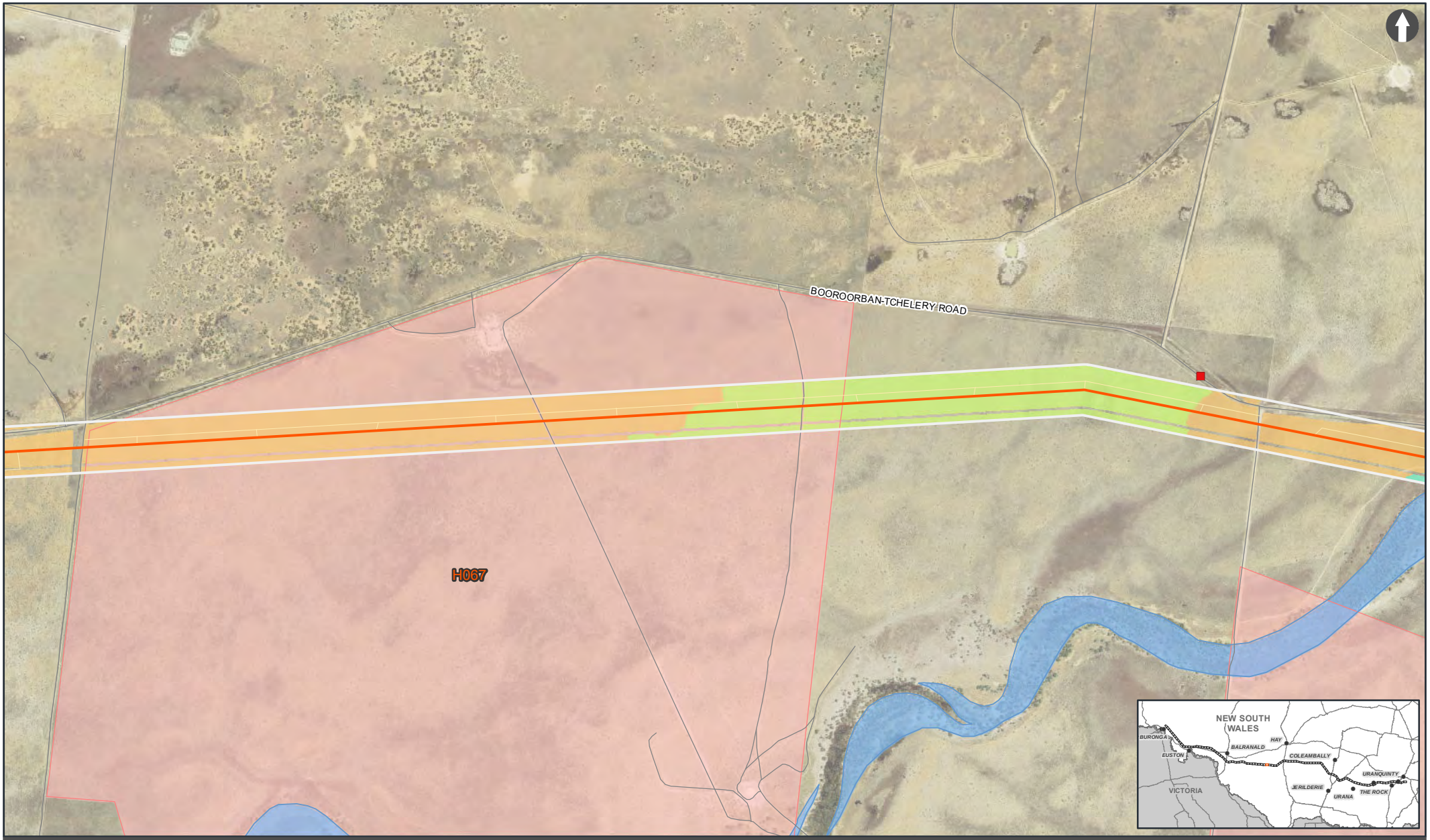
Fauna Stratification
- Arid woodland/shrublands
- Chenopod shrublands
- Riverine
- Wetlands

BDAR - Figure C-8aq

Threatened Fauna Species Indivual and Polygon Maps

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Holdings - No Access
- Biodiversity Study Area

Threatened Fauna Species
- White-fronted Chat - Epthianura albifrons

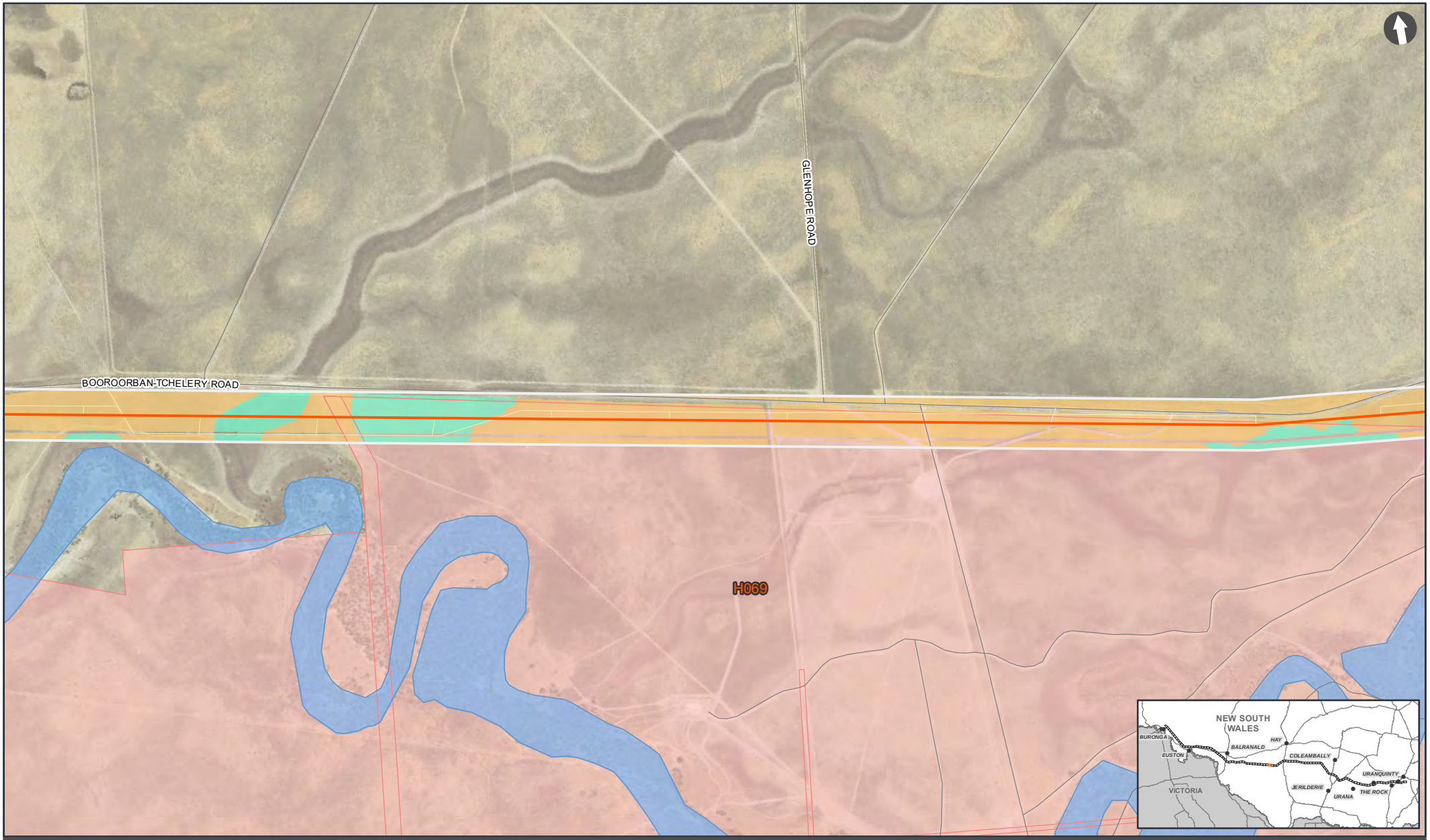
Fauna Stratification
- Chenopod shrublands
- Grasslands
- Wetlands

BDAR - Figure C-8ar

Threatened Fauna Species Indivual and Polygon Maps

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure C-8as

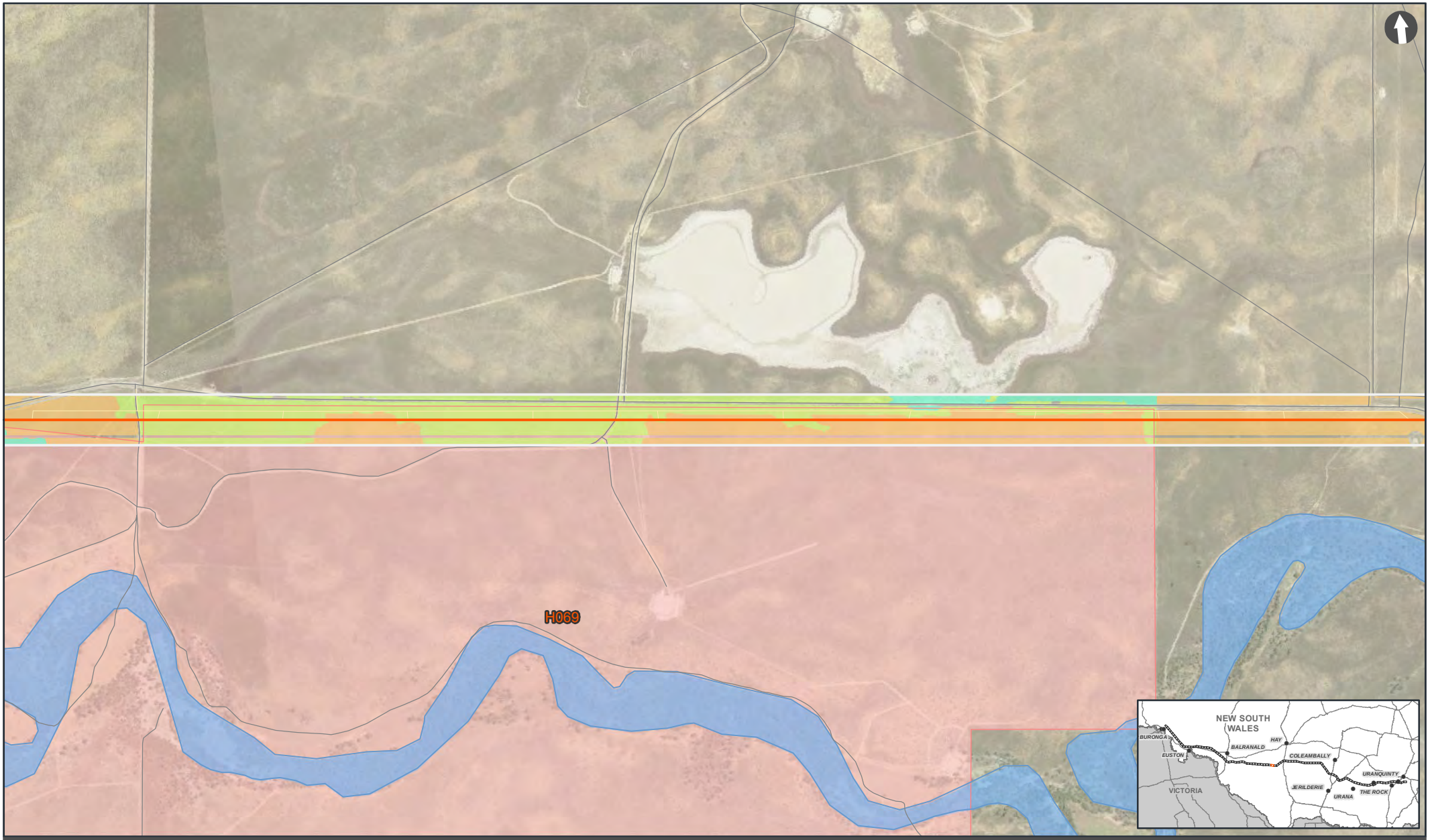
Threatened Fauna Species Indivual and Polygon Maps

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Holdings - No Access
- Biodiversity Study Area

Fauna Stratification
- Chenopod shrublands
- Wetlands

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Source: NSWSS, ESRI, Transgrid, WSP



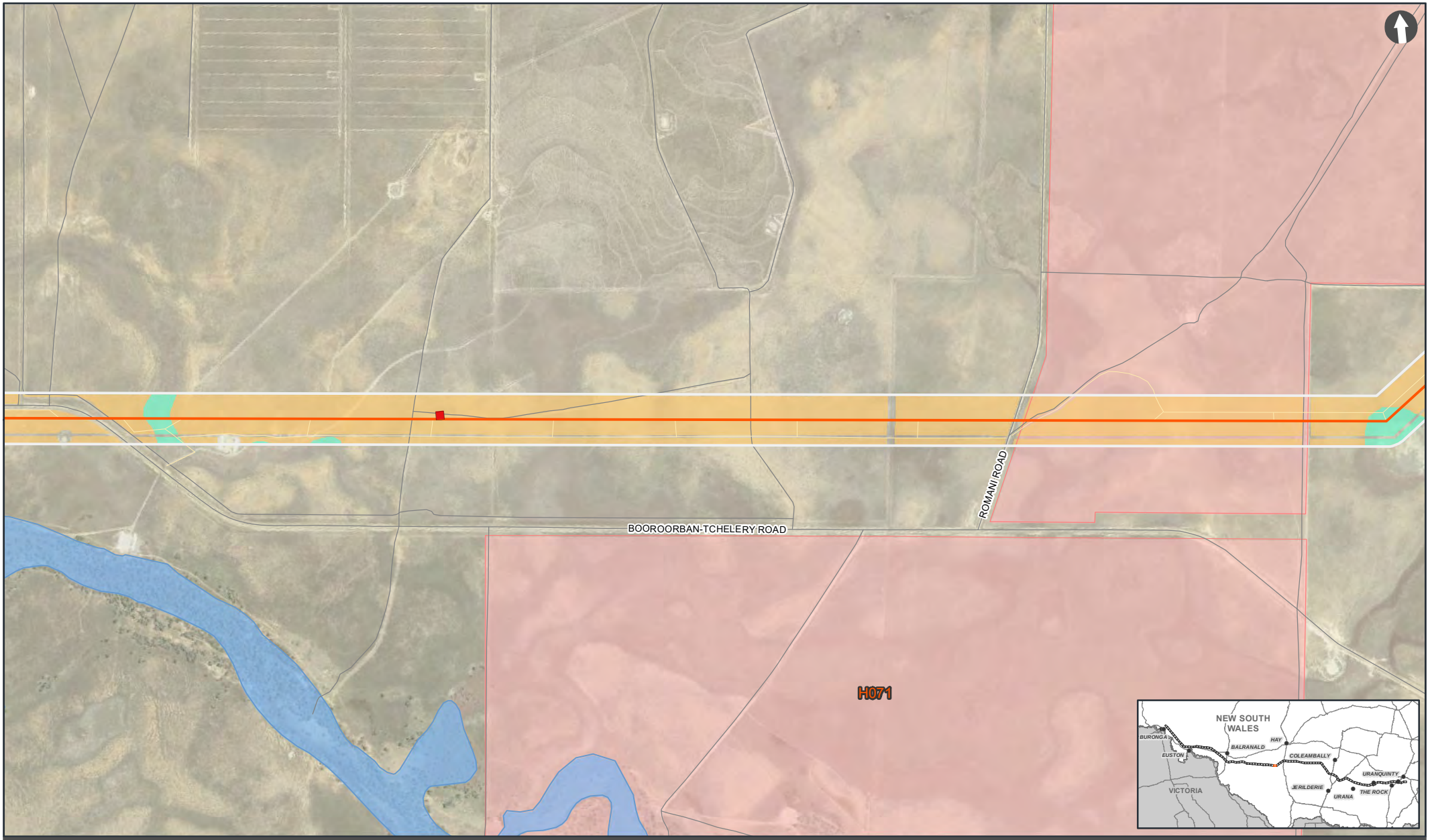
Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Holdings - No Access
- Biodiversity Study Area

Fauna Stratification
- Chenopod shrublands
- Grasslands
- Wetlands

BDAR - Figure C-8at
Threatened Fauna Species Indivual and Polygon Maps

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-8au

Threatened Fauna Species Indivual and Polygon Maps

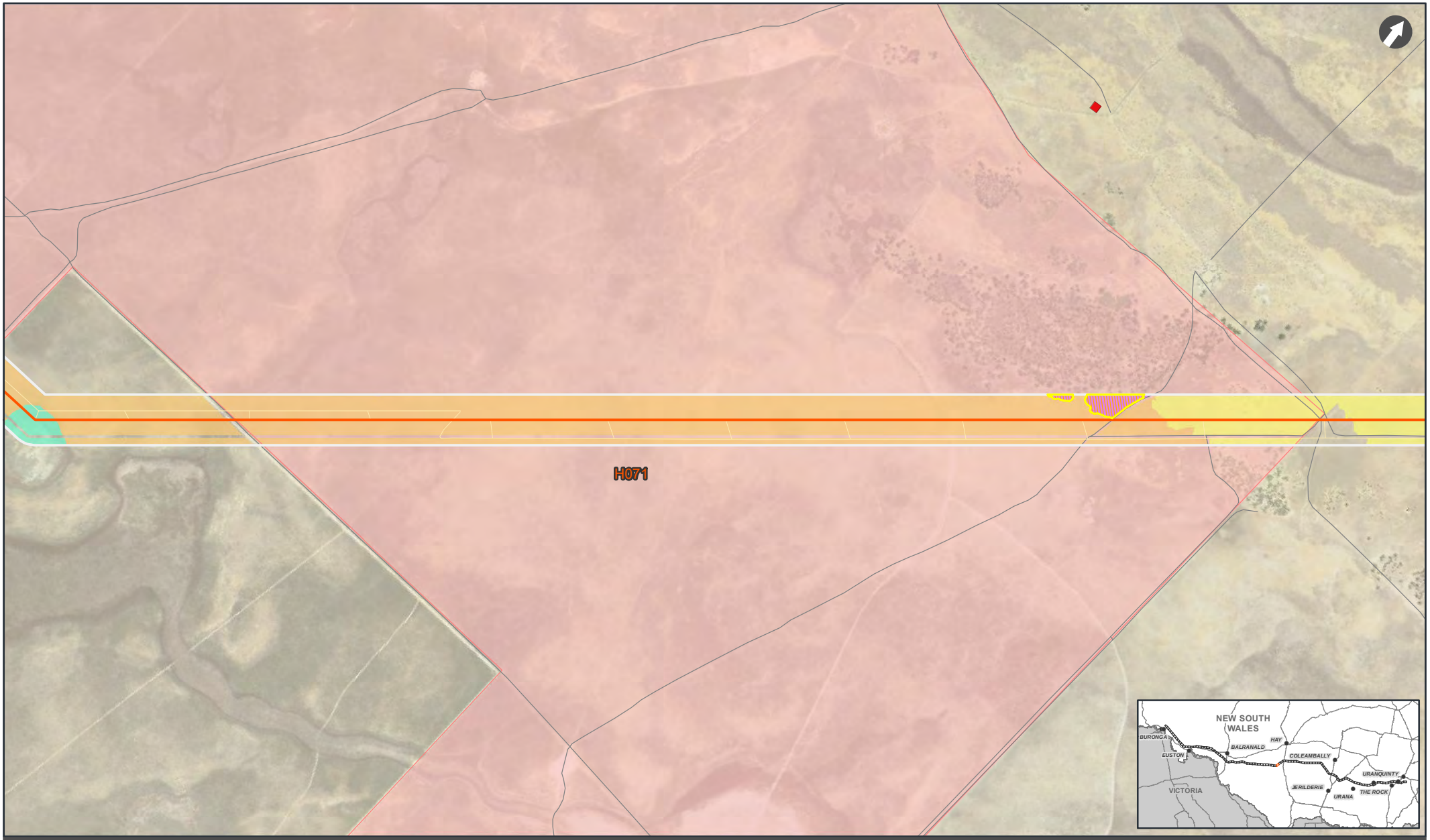
Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Holdings - No Access
- Biodiversity Study Area

Threatened Fauna Species
- White-fronted Chat - Epthianura albifrons

Fauna Stratification
- Chenopod shrublands
- Wetlands

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Holdings - No Access
- Biodiversity Study Area
- Major Mitchell's Cockatoo Potential Breeding Habitat
- Regent Parrot Potential Breeding Habitat

Threatened Fauna Species
- White-fronted Chat - Epthianura albifrons

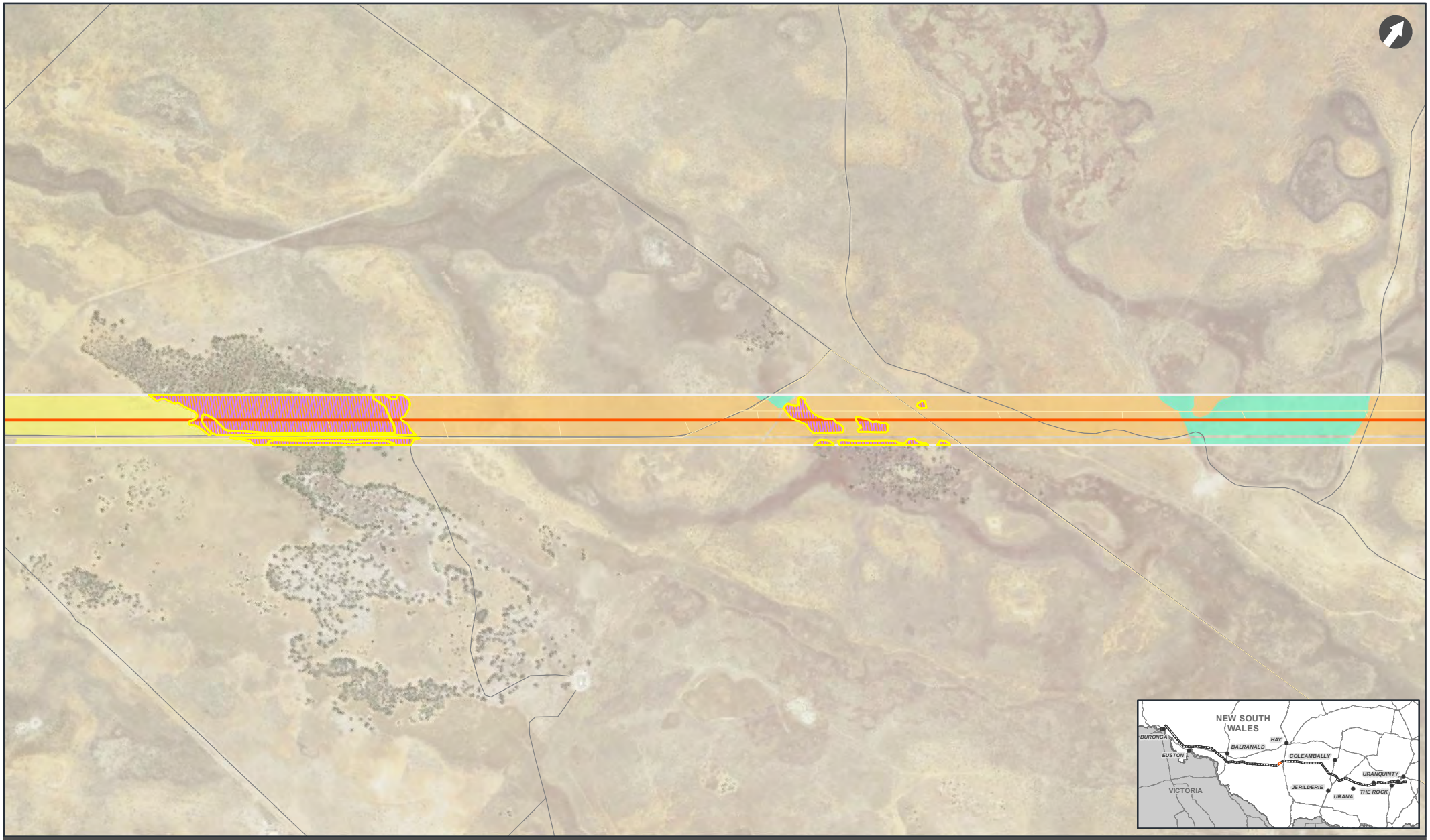
Fauna Stratification
- Arid woodland/shrublands
- Chenopod shrublands
- Riverine
- Wetlands

BDAR - Figure C-8av

Threatened Fauna Species Indivual and Polygon Maps

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Major Mitchell's Cockatoo Potential Breeding Habitat
- Regent Parrot Potential Breeding Habitat

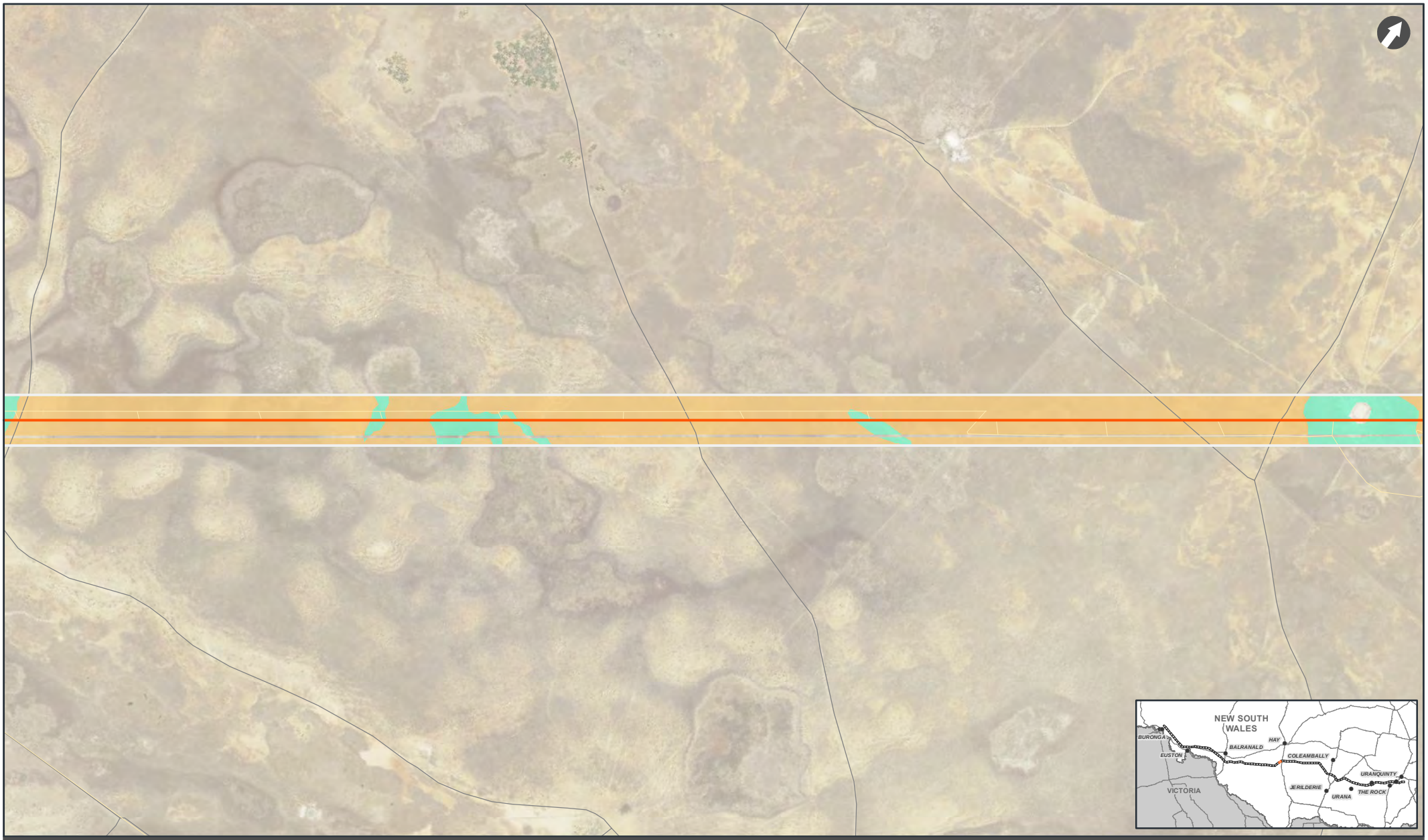
Fauna Stratification
- Arid woodland/shrublands
- Chenopod shrublands
- Riverine
- Wetlands

BDAR - Figure C-8aw

Threatened Fauna Species Indivual and Polygon Maps

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-8ax

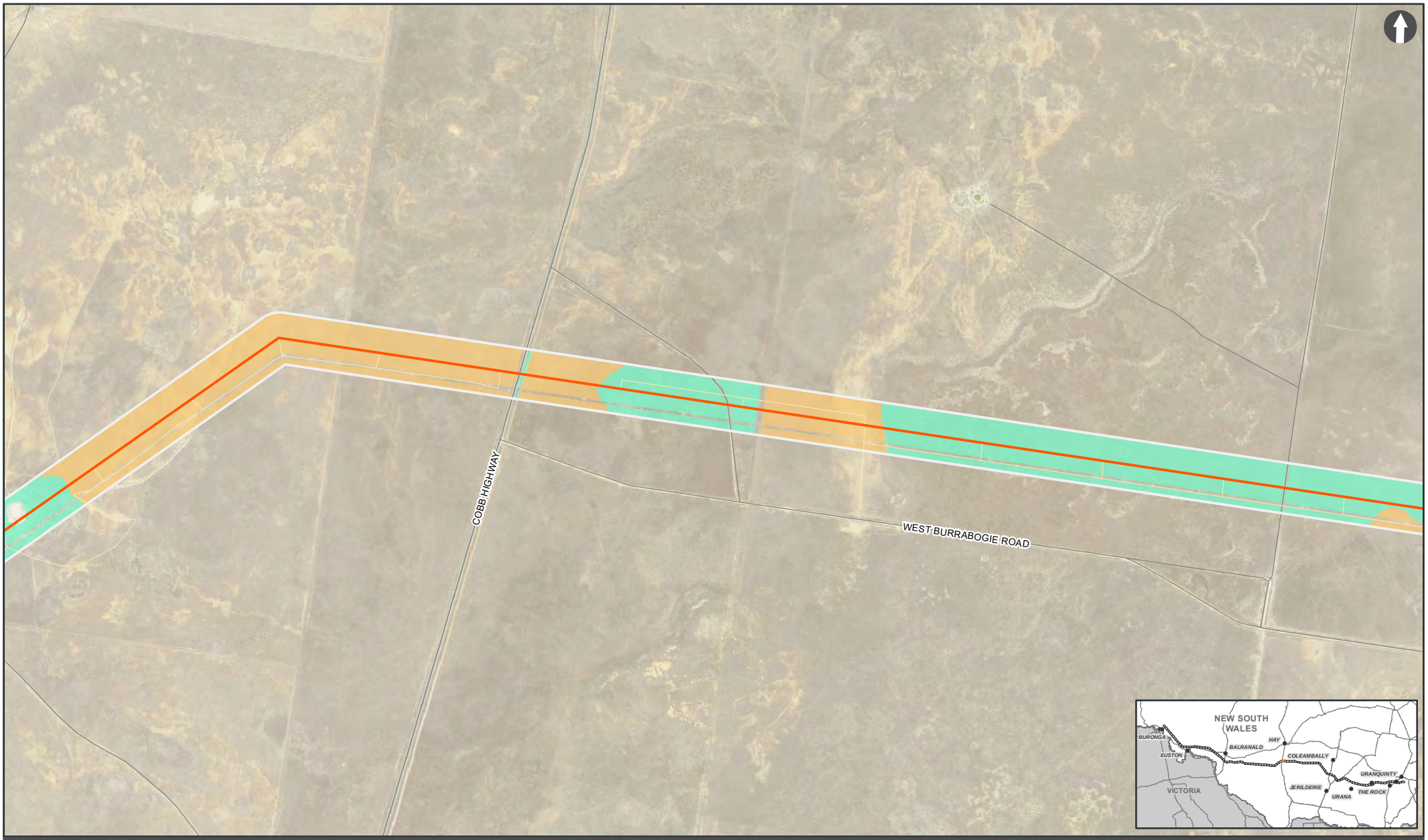
Threatened Fauna Species Indivual and Polygon Maps

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Fauna Stratification
- Chenopod shrublands
- Wetlands

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-8ay

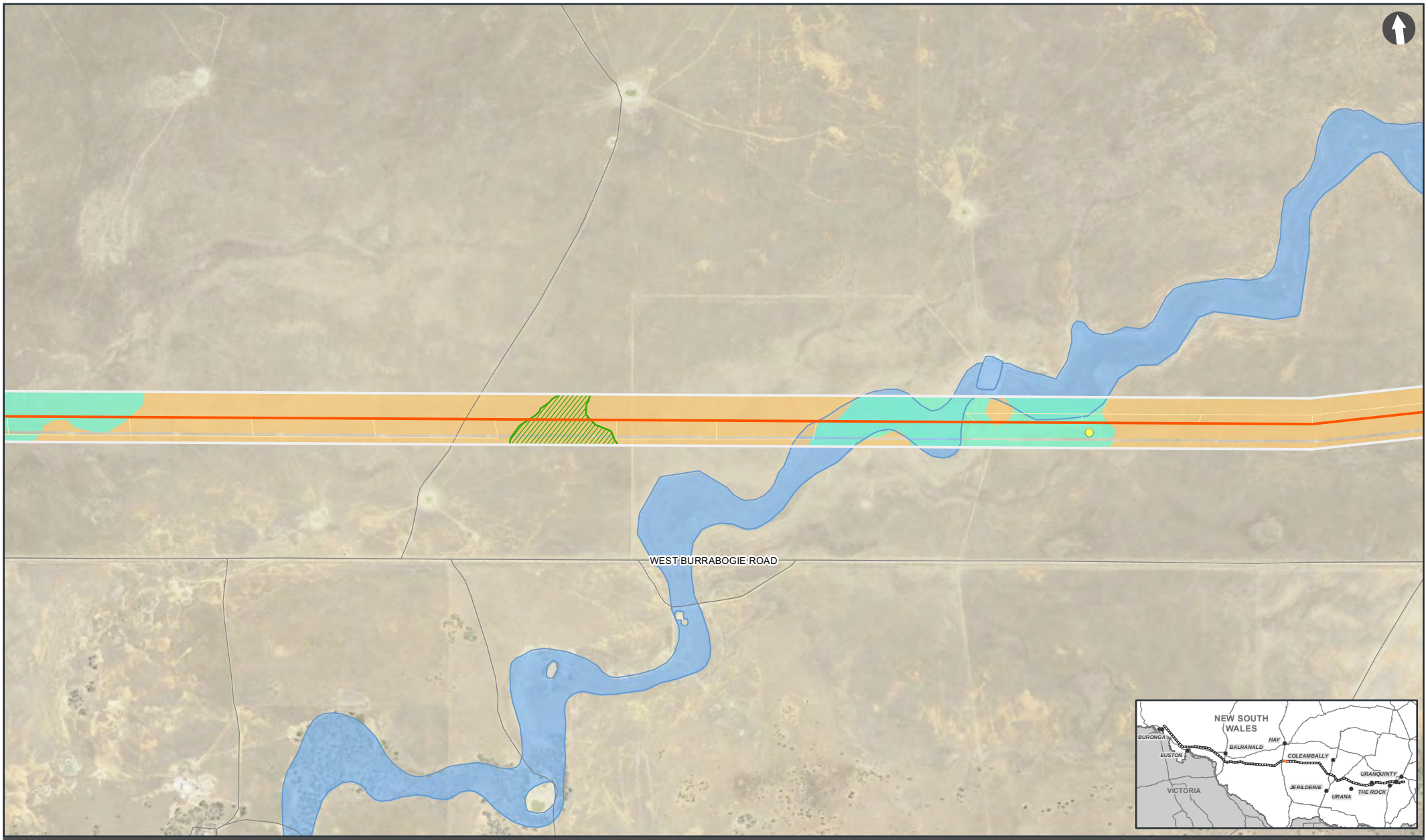
Threatened Fauna Species Indivual and Polygon Maps

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Fauna Stratification
- Chenopod shrublands
- Wetlands

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Plains Wanderer Important Habitat

Threatened Fauna Species
- Little Eagle - Hieraaetus morphnoides

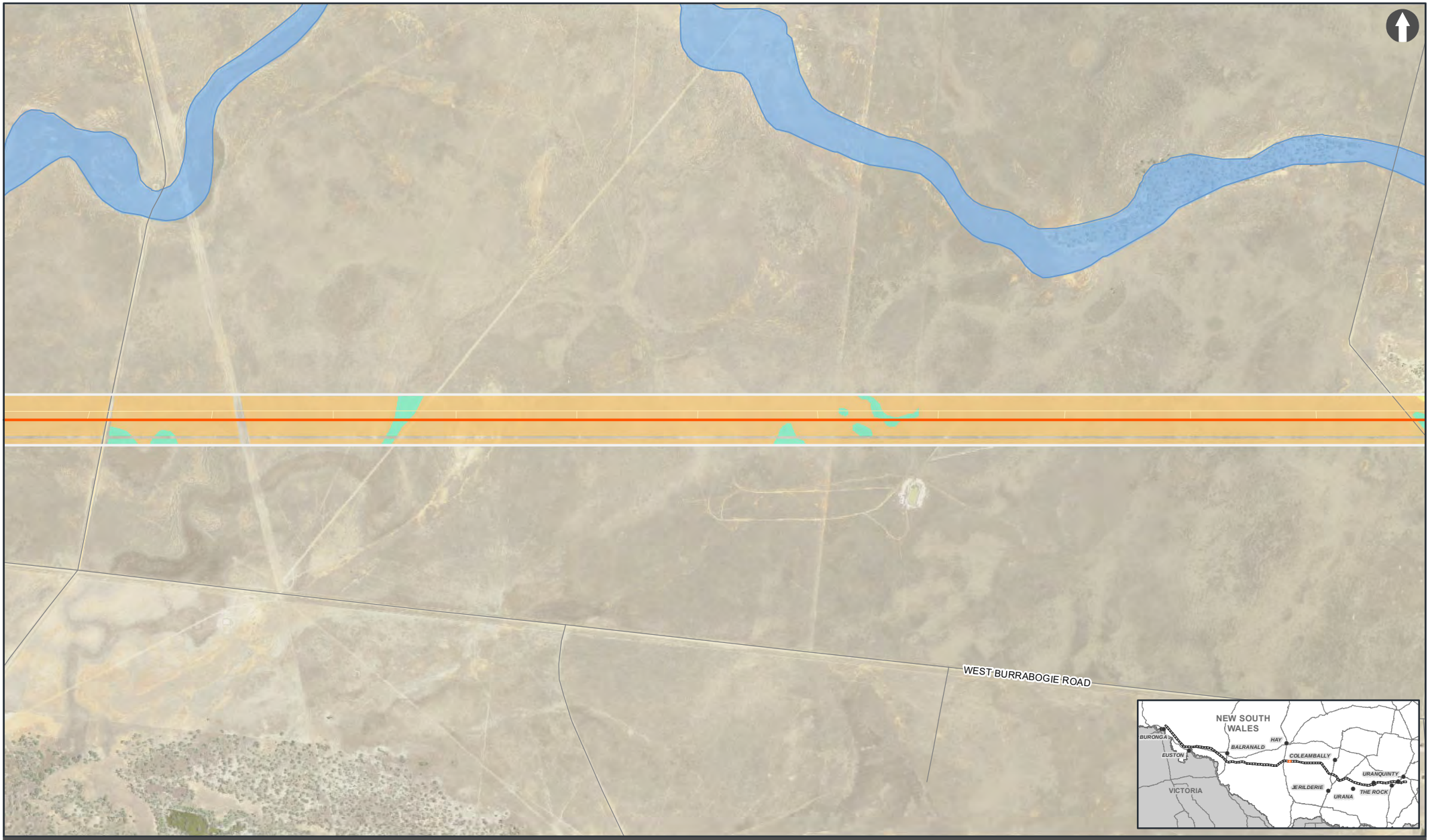
Fauna Stratification
- Chenopod shrublands
- Wetlands

BDAR - Figure C-8az

Threatened Fauna Species Indivual and Polygon Maps

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

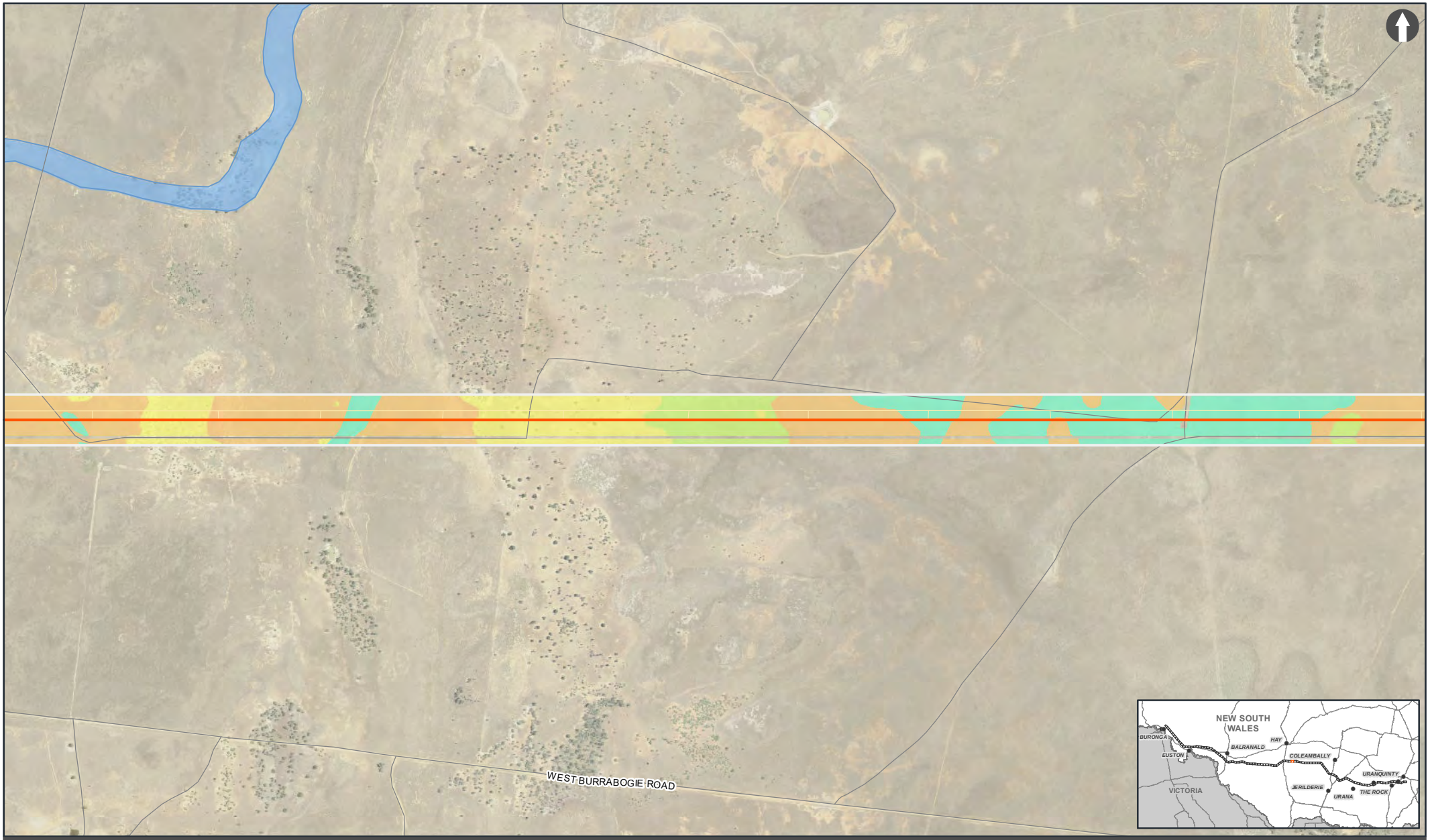
Fauna Stratification
- Arid woodland/shrublands
- Chenopod shrublands
- Wetlands

BDAR - Figure C-8ba

Threatened Fauna Species Indivual and Polygon Maps

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Fauna Stratification

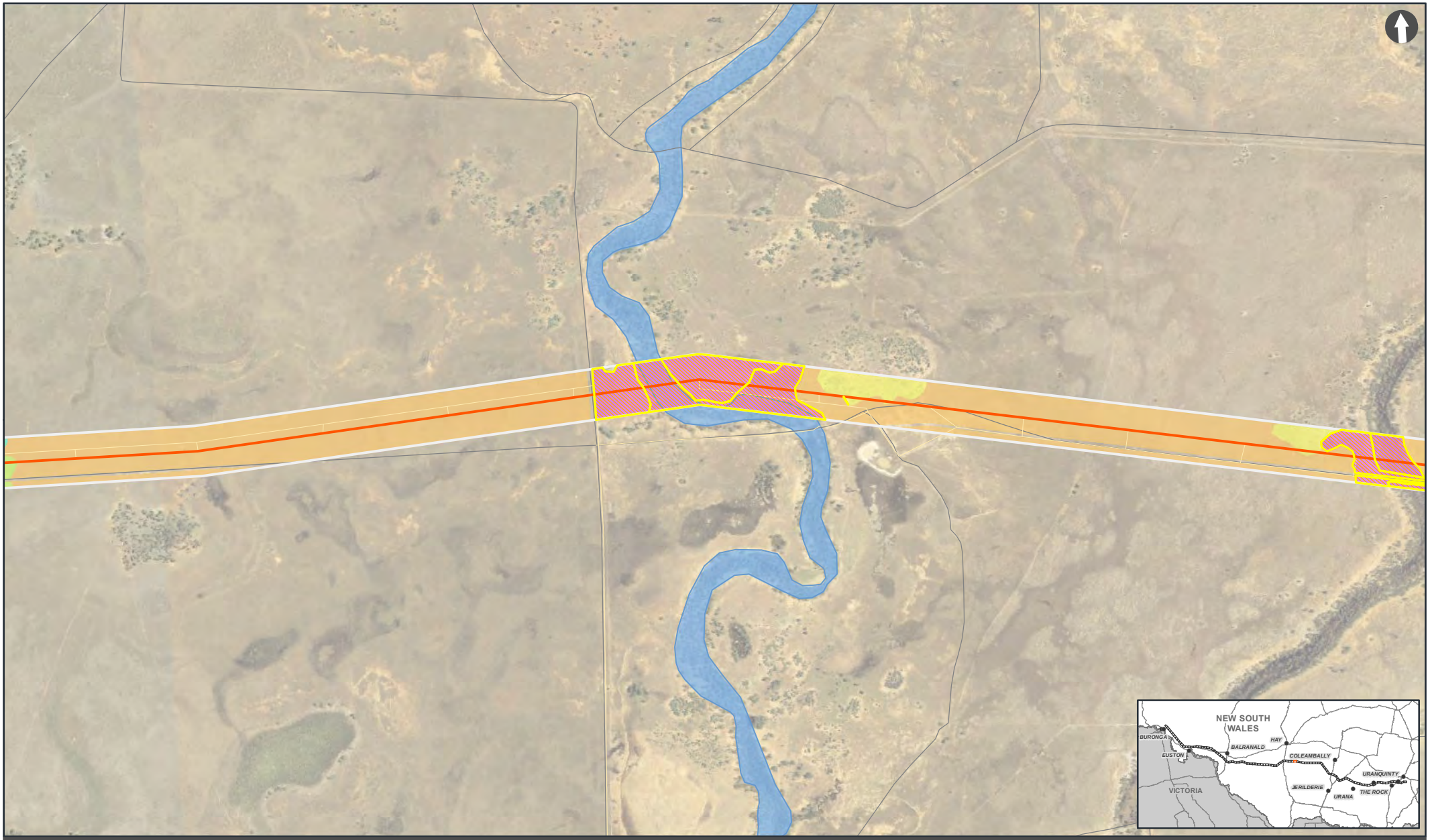
- Arid woodland/shrublands
- Chenopod shrublands
- Grasslands
- Wetlands

BDAR - Figure C-8bb

Threatened Fauna Species Indivual and Polygon Maps

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-8bc

Threatened Fauna Species Indivual and Polygon Maps

Project Components

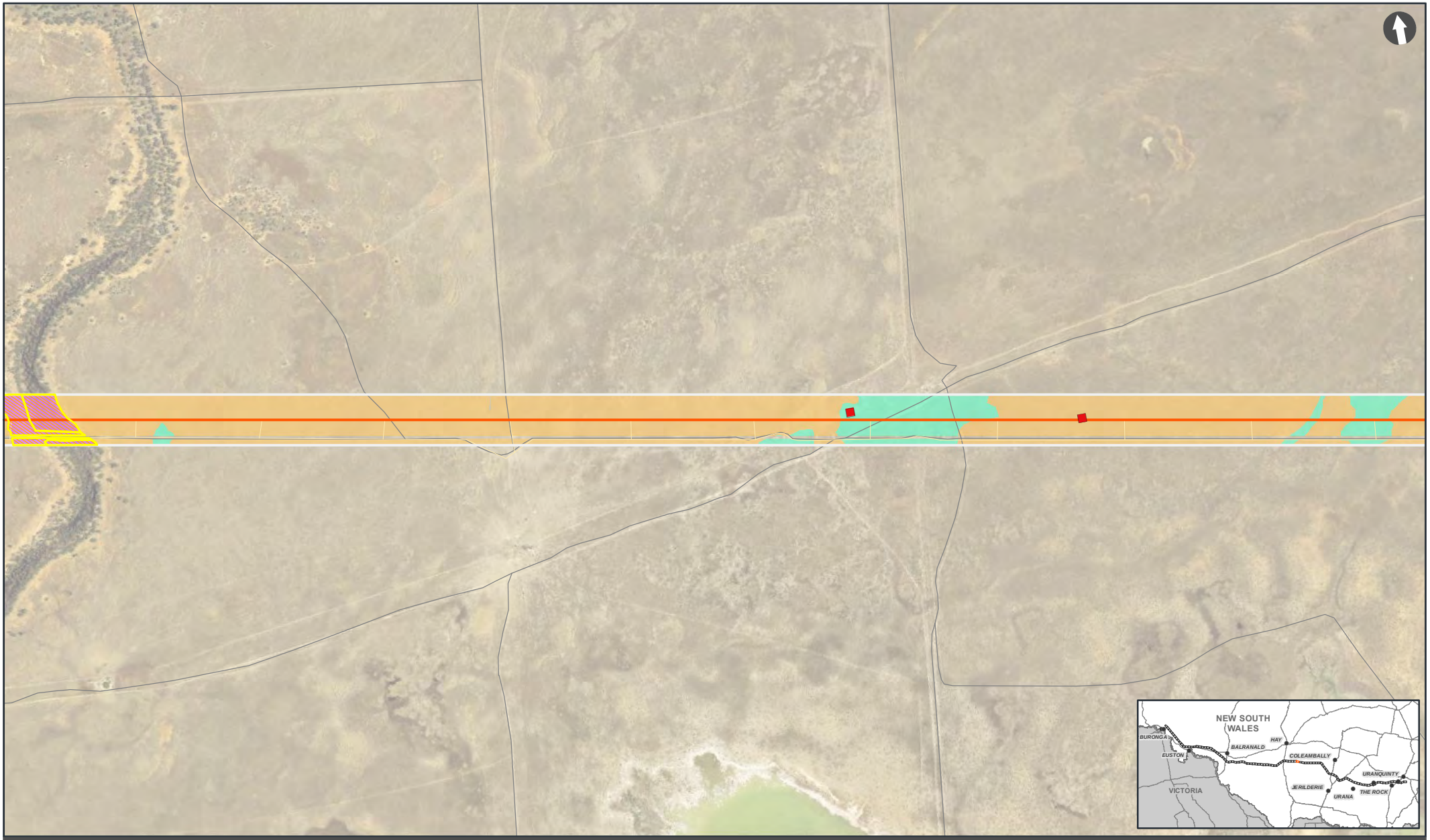
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Major Mitchell's Cockatoo Potential Breeding Habitat
- Regent Parrot Potential Breeding Habitat

Fauna Stratification

- Arid woodland/shrublands
- Chenopod shrublands
- Grasslands
- Riverine
- Wetlands

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-8bd

Threatened Fauna Species Indivual and Polygon Maps

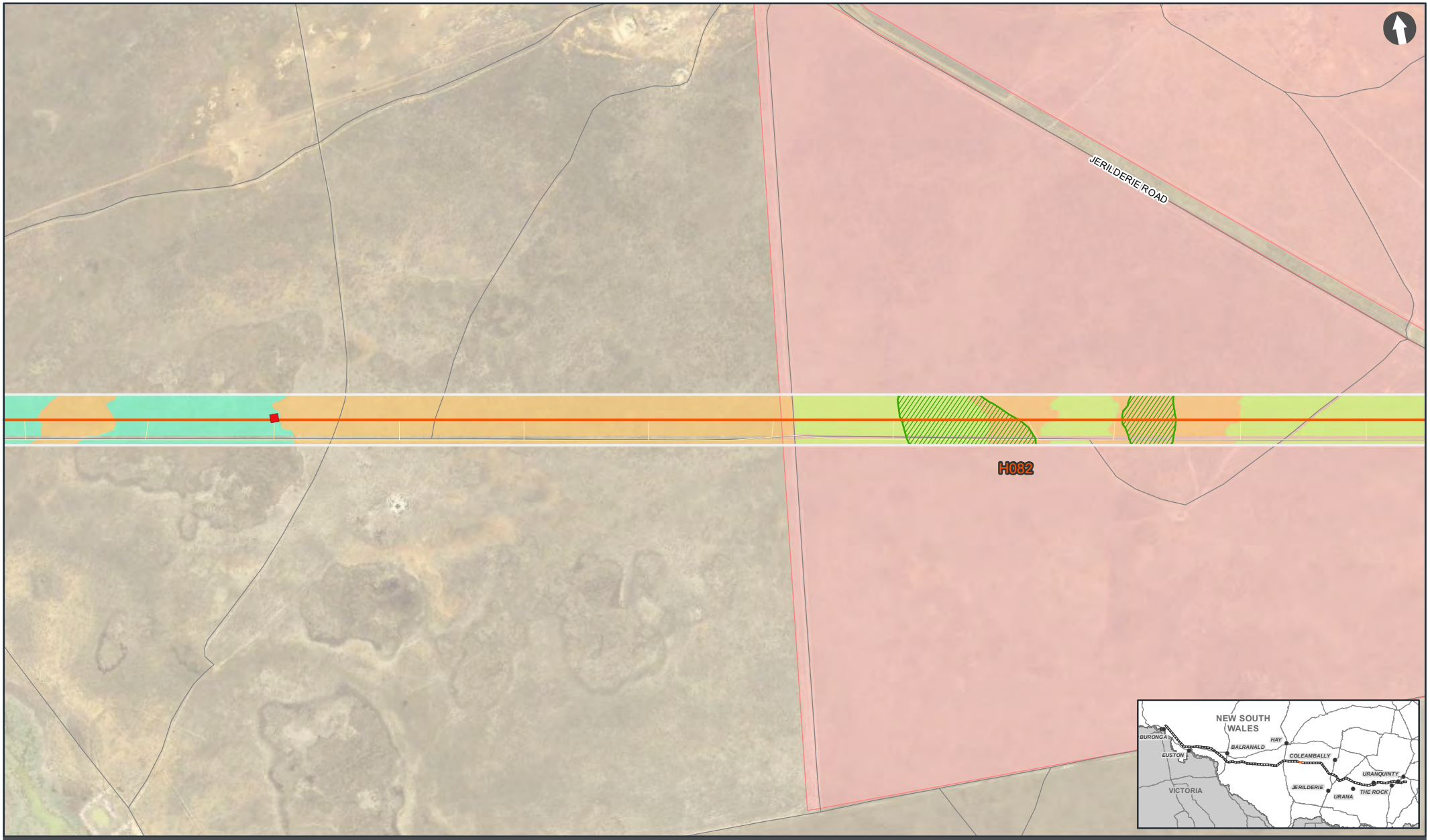
Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Major Mitchell's Cockatoo Potential Breeding Habitat
- Regent Parrot Potential Breeding Habitat

Threatened Fauna Species
- White-fronted Chat - Epthianura albifrons

Fauna Stratification
- Chenopod shrublands
- Riverine
- Wetlands

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-8be

Threatened Fauna Species Indivual and Polygon Maps

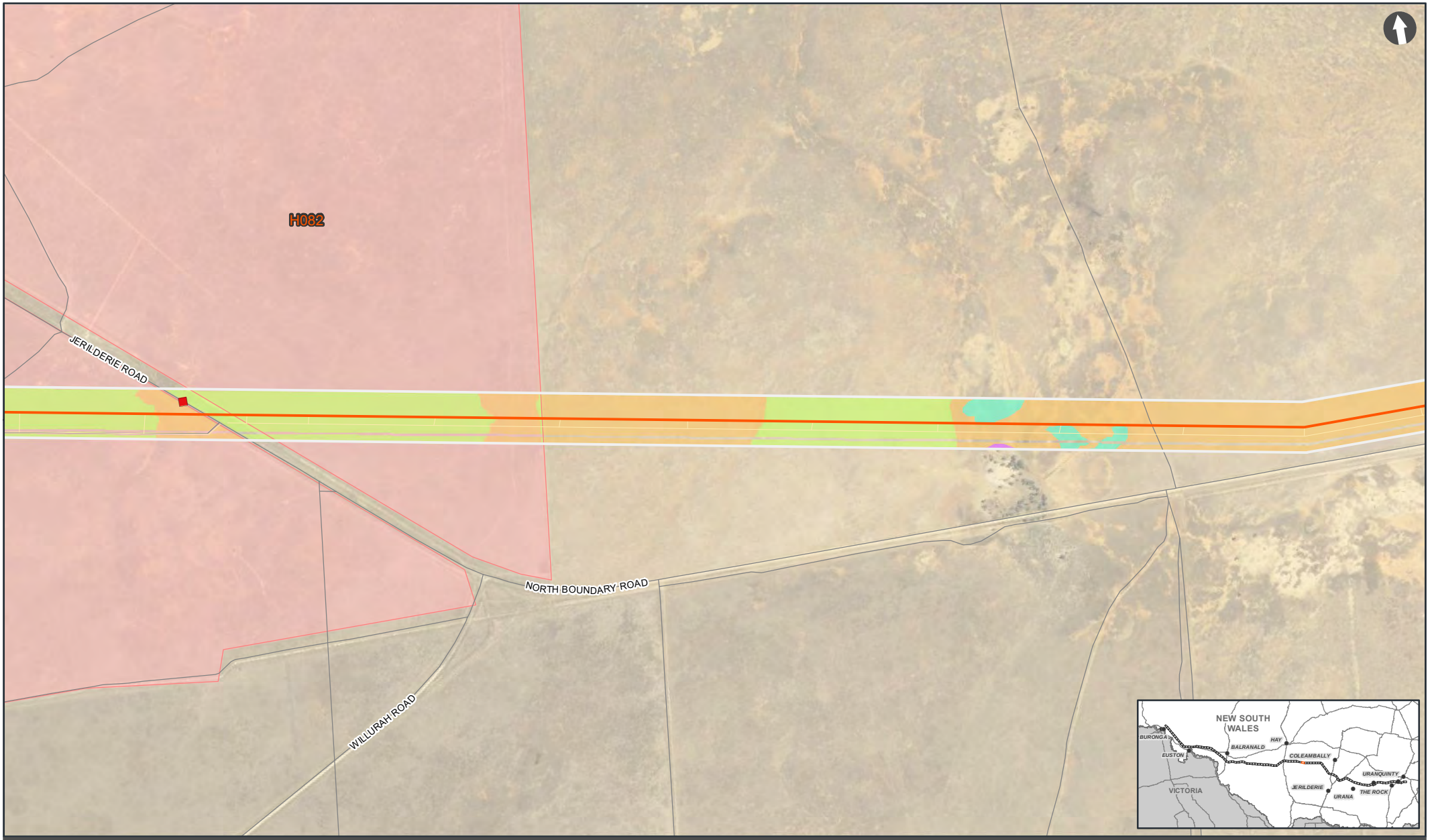
Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Holdings - No Access
- Biodiversity Study Area
- Plains Wanderer Important Habitat

Threatened Fauna Species
- White-fronted Chat - Epthianura albifrons

Fauna Stratification
- Chenopod shrublands
- Grasslands
- Wetlands

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Holdings - No Access
- Biodiversity Study Area

Threatened Fauna Species
- White-fronted Chat - Epthianura albifrons

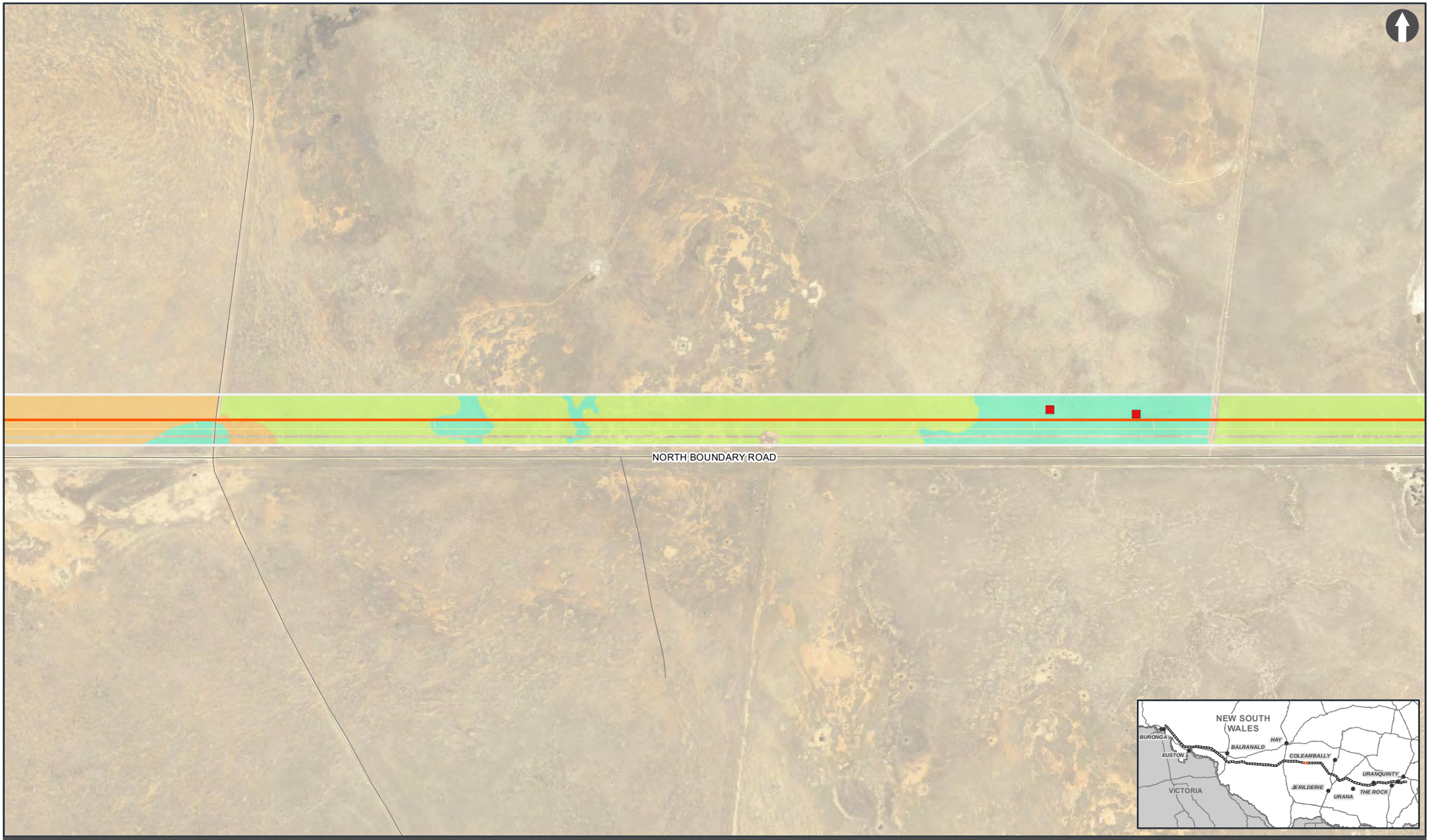
Fauna Stratification
- Chenopod shrublands
- Grasslands
- Riverine
- Wetlands

BDAR - Figure C-8bf

Threatened Fauna Species Indivual and Polygon Maps

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\03_AppendixC\PS117658_BDAR_C008_ThreatenedFaunaSpeciesIndividualAndPolygon_r1v18.mxd

Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-8bg

Threatened Fauna Species Indivual and Polygon Maps

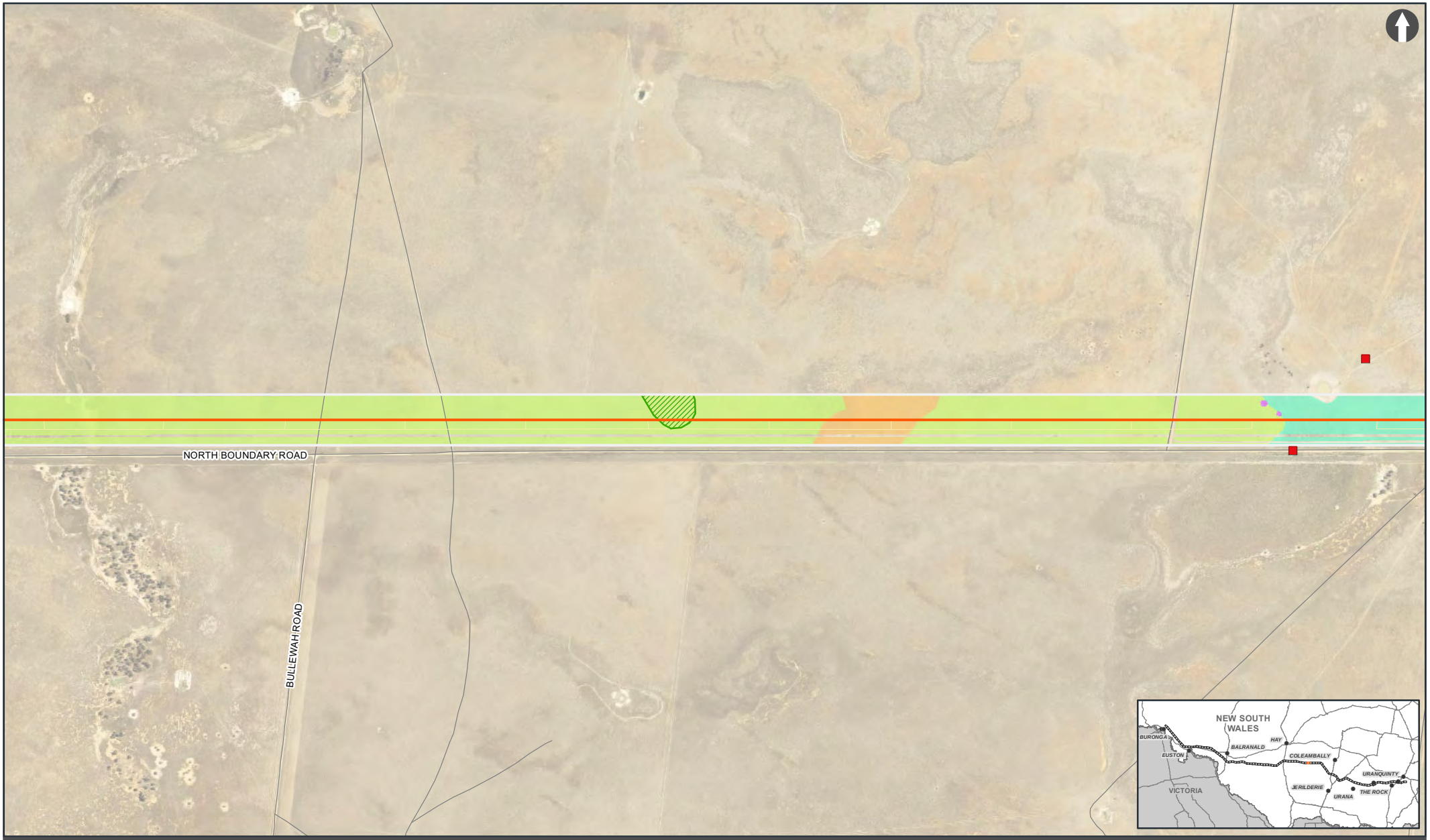
Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Fauna Species
- White-fronted Chat - Epthianura albifrons

Fauna Stratification
- Chenopod shrublands
- Grasslands
- Wetlands

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-8bh

Threatened Fauna Species Indivual and Polygon Maps

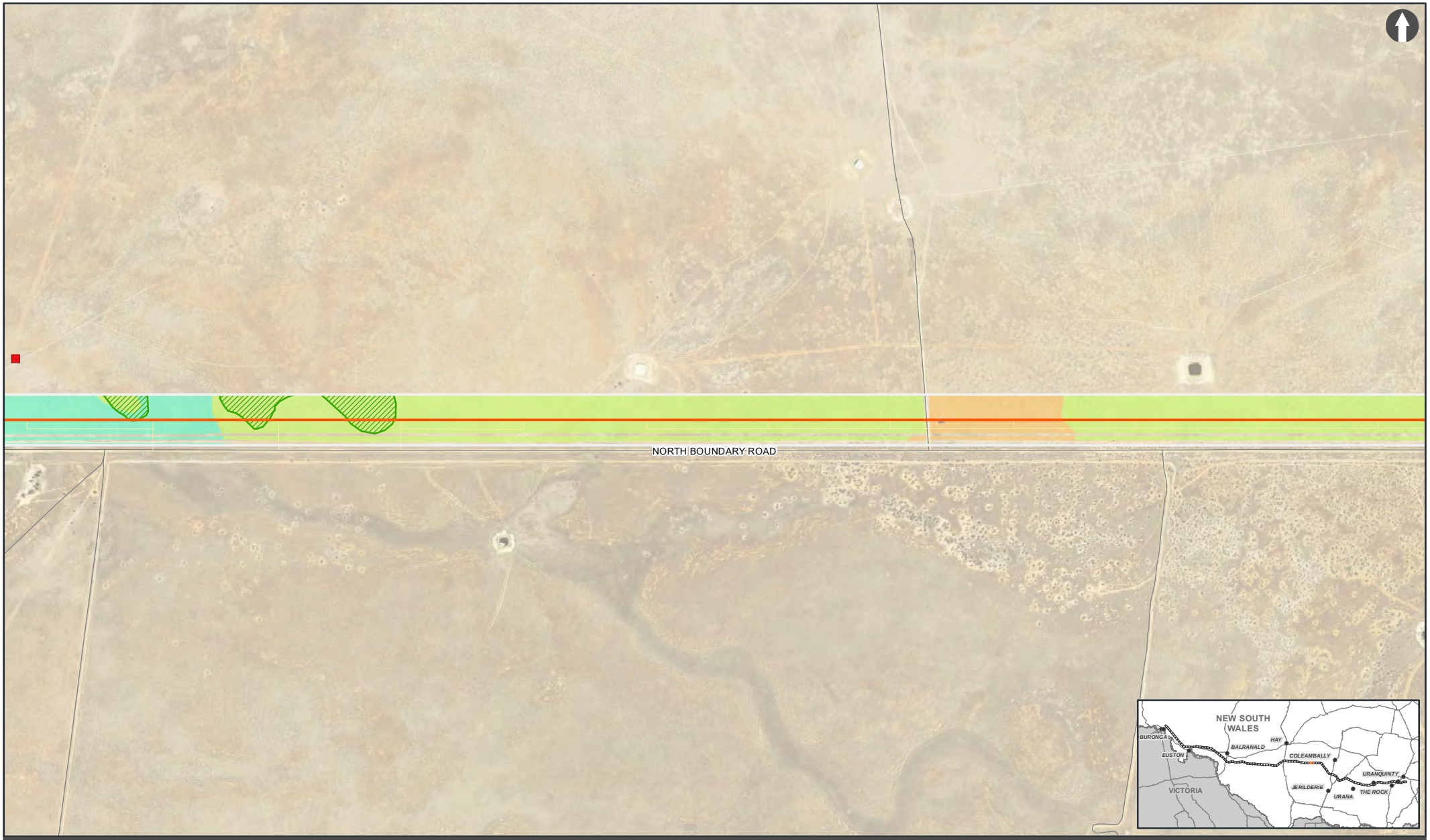
Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Plains Wanderer Important Habitat

Threatened Fauna Species
- White-fronted Chat - Epthianura albifrons

Fauna Stratification
- Chenopod shrublands
- Grasslands
- Riverine
- Wetlands

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-8bi

Threatened Fauna Species Indivual and Polygon Maps

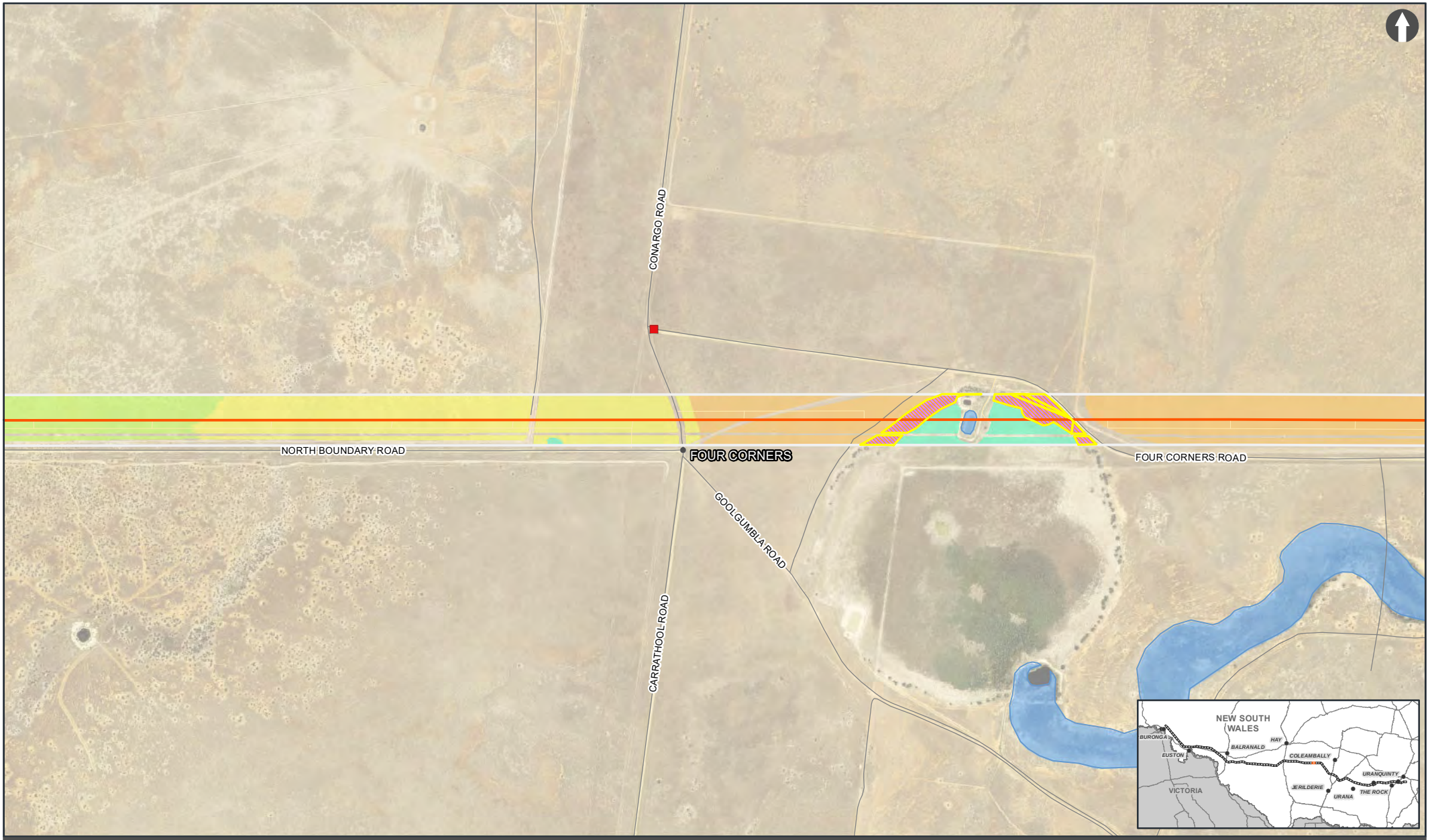
Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Plains Wanderer Important Habitat

Threatened Fauna Species
- White-fronted Chat - Epthianura albifrons

Fauna Stratification
- Chenopod shrublands
- Grasslands
- Wetlands

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure C-8bj

Threatened Fauna Species Indivual and Polygon Maps

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Major Mitchell's Cockatoo Potential Breeding Habitat
- Regent Parrot Potential Breeding Habitat

Threatened Fauna Species

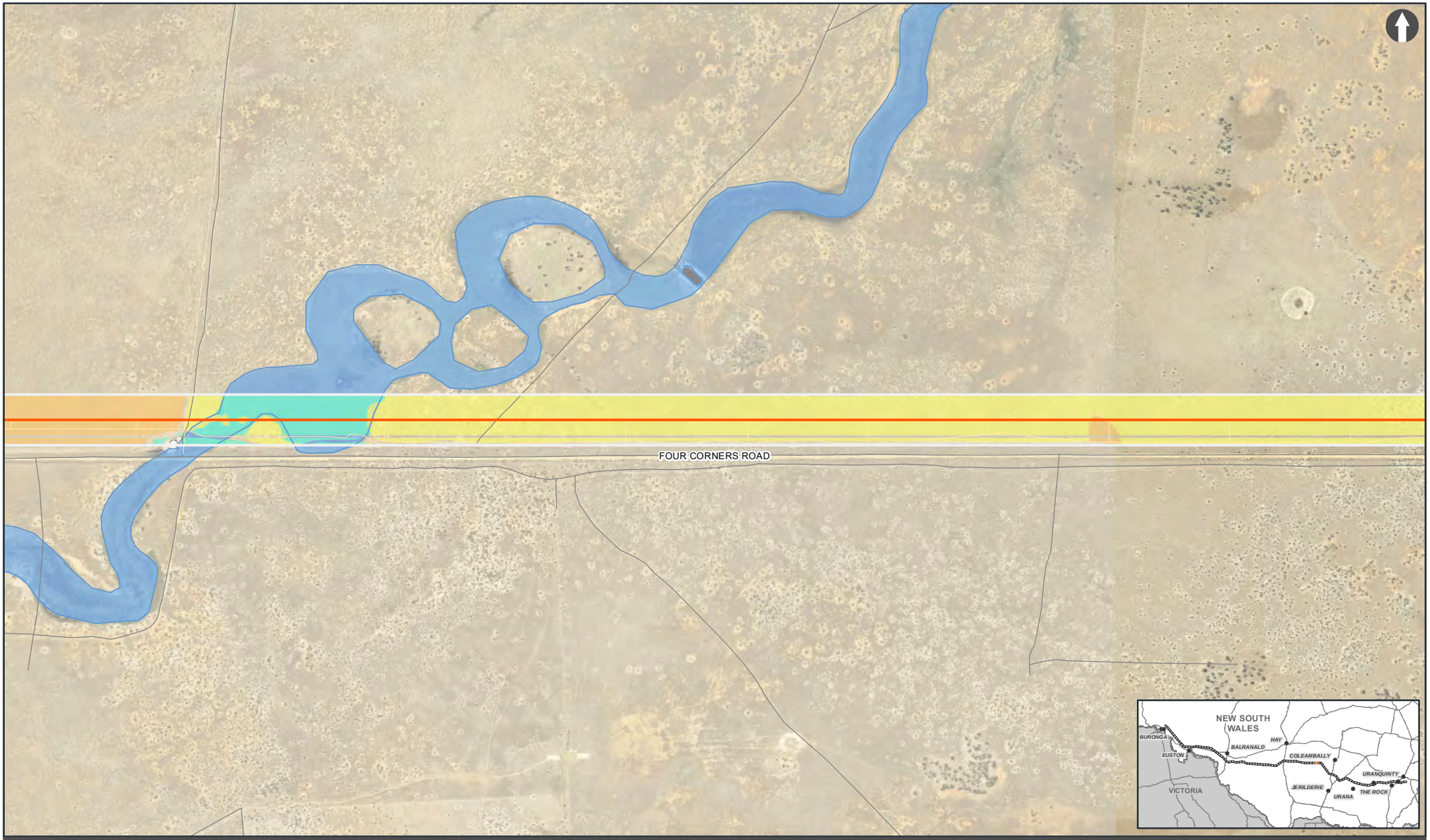
- White-fronted Chat - Epthianura albifrons

Fauna Stratification

- Arid woodland/shrublands
- Chenopod shrublands
- Grasslands
- Riverine
- Wetlands

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-8bk

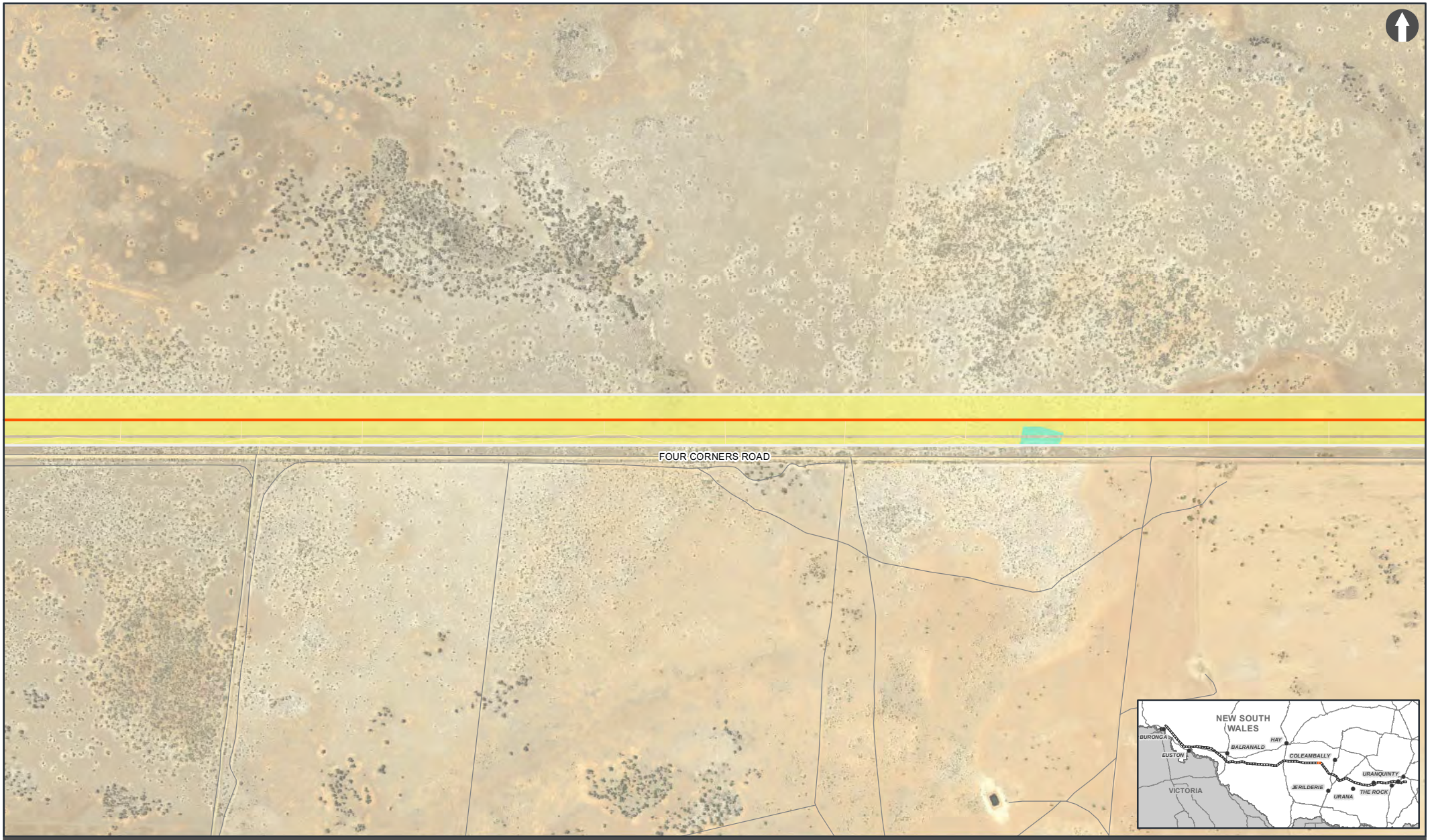
Threatened Fauna Species Indivual and Polygon Maps

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Fauna Stratification
- Arid woodland/shrublands
- Chenopod shrublands
- Wetlands

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Fauna Stratification

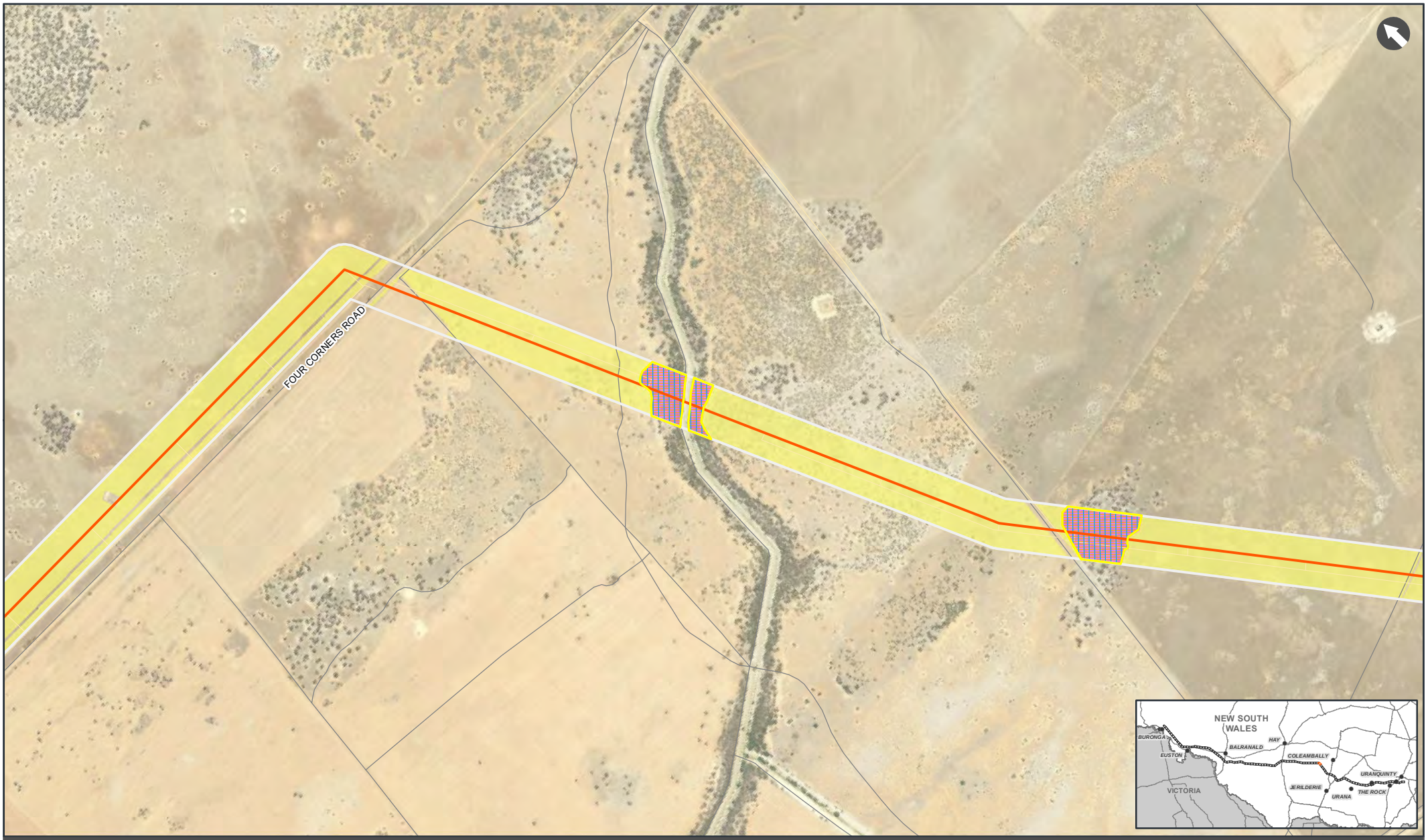
- Arid woodland/shrublands
- Wetlands

BDAR - Figure C-8bl

Threatened Fauna Species Indivual and Polygon Maps

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Major Mitchell's Cockatoo Potential Breeding Habitat
- Superb Parrot Potential Breeding Habitat
- Regent Parrot Potential Breeding Habitat

Fauna Stratification

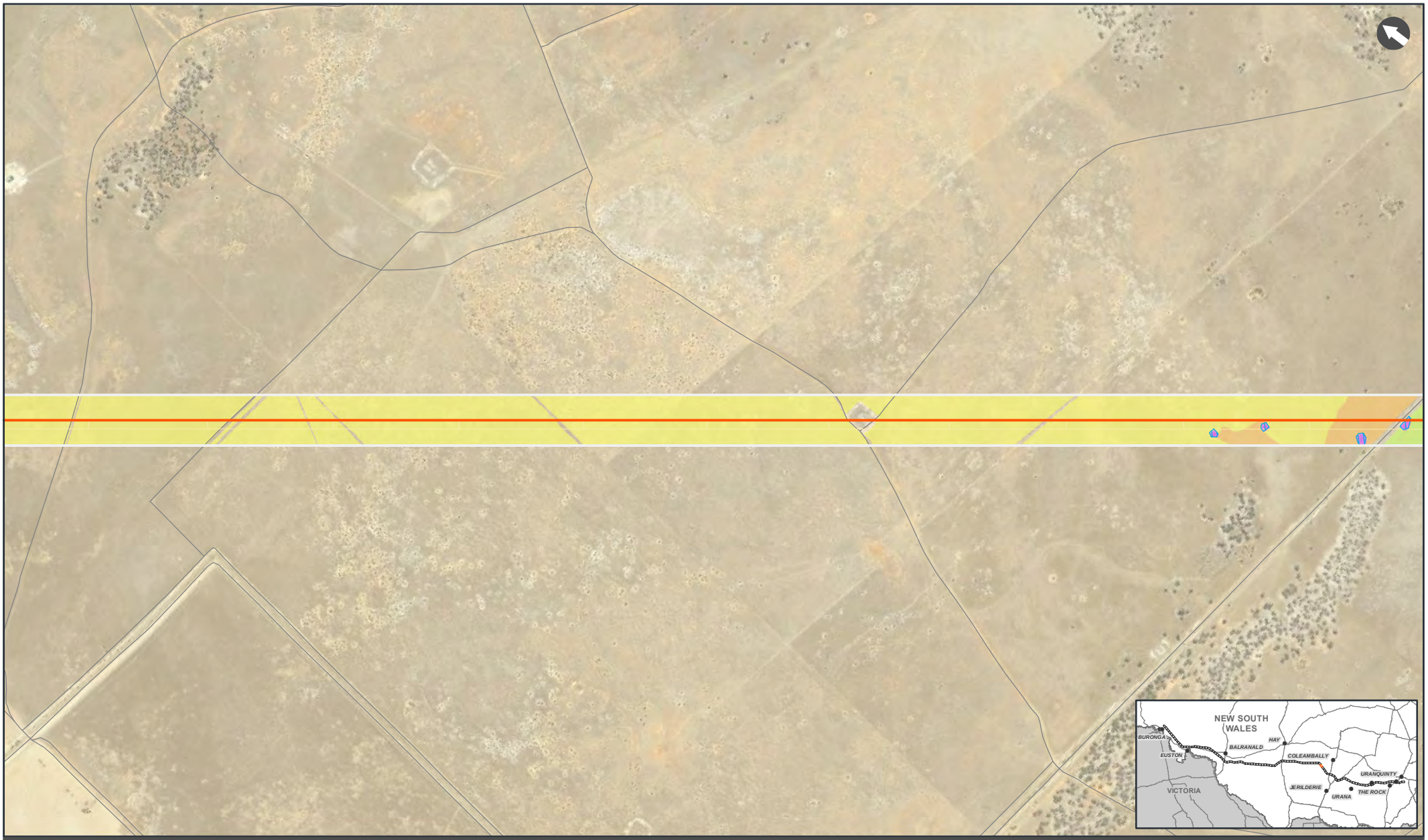
- Arid woodland/shrublands
- Riverine

BDAR - Figure C-8bm

Threatened Fauna Species Indivual and Polygon Maps

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-8bn

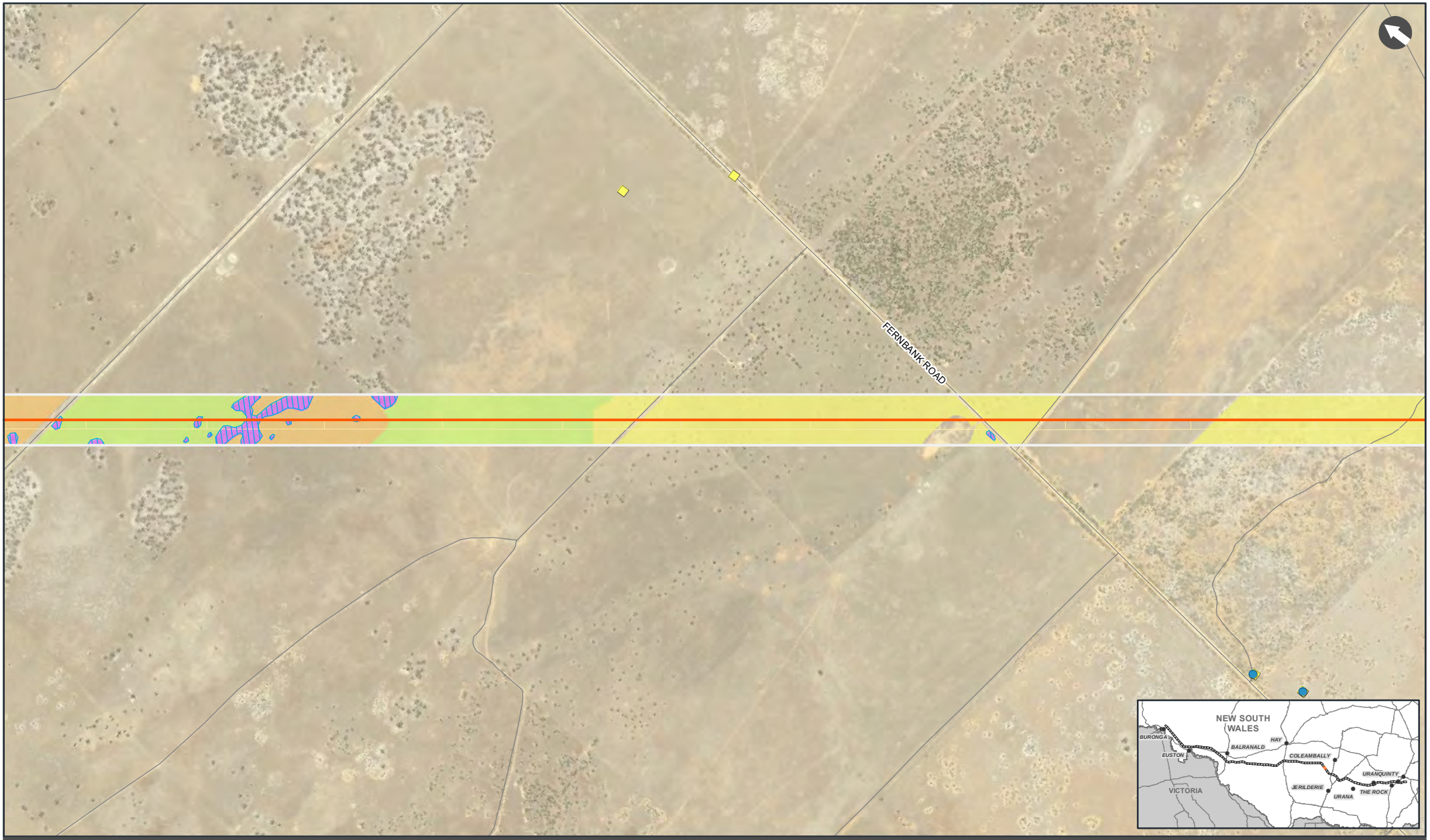
Threatened Fauna Species Indivual and Polygon Maps

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Superb Parrot Potential Breeding Habitat

Fauna Stratification
- Arid woodland/shrublands
- Chenopod shrublands
- Grasslands
- Riverine

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Superb Parrot Potential Breeding Habitat

Threatened Fauna Species
- Grey-crowned Babbler - Pomatostomus temporalis
- Superb Parrot - Polytelis swainsonii

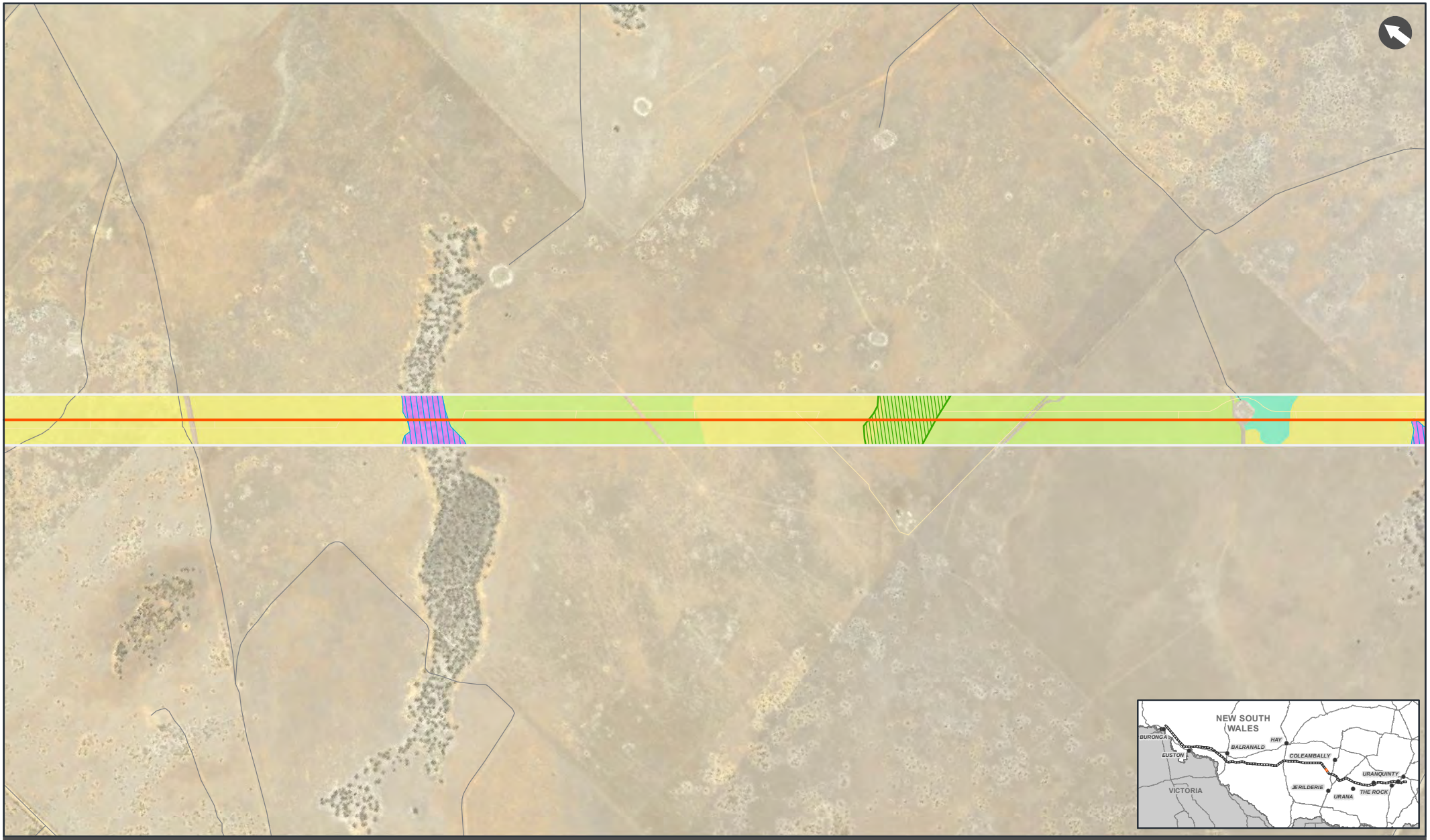
Fauna Stratification
- Arid woodland/shrublands
- Chenopod shrublands
- Grasslands
- Riverine

BDAR - Figure C-8bo

Threatened Fauna Species Indivual and Polygon Maps

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\03_AppendixC\PS117658_BDAR_C008_ThreatenedFaunaSpeciesIndividualAndPolygon_r1v18.mxd

Source: NSWSS, ESRI, Transgrid, WSP



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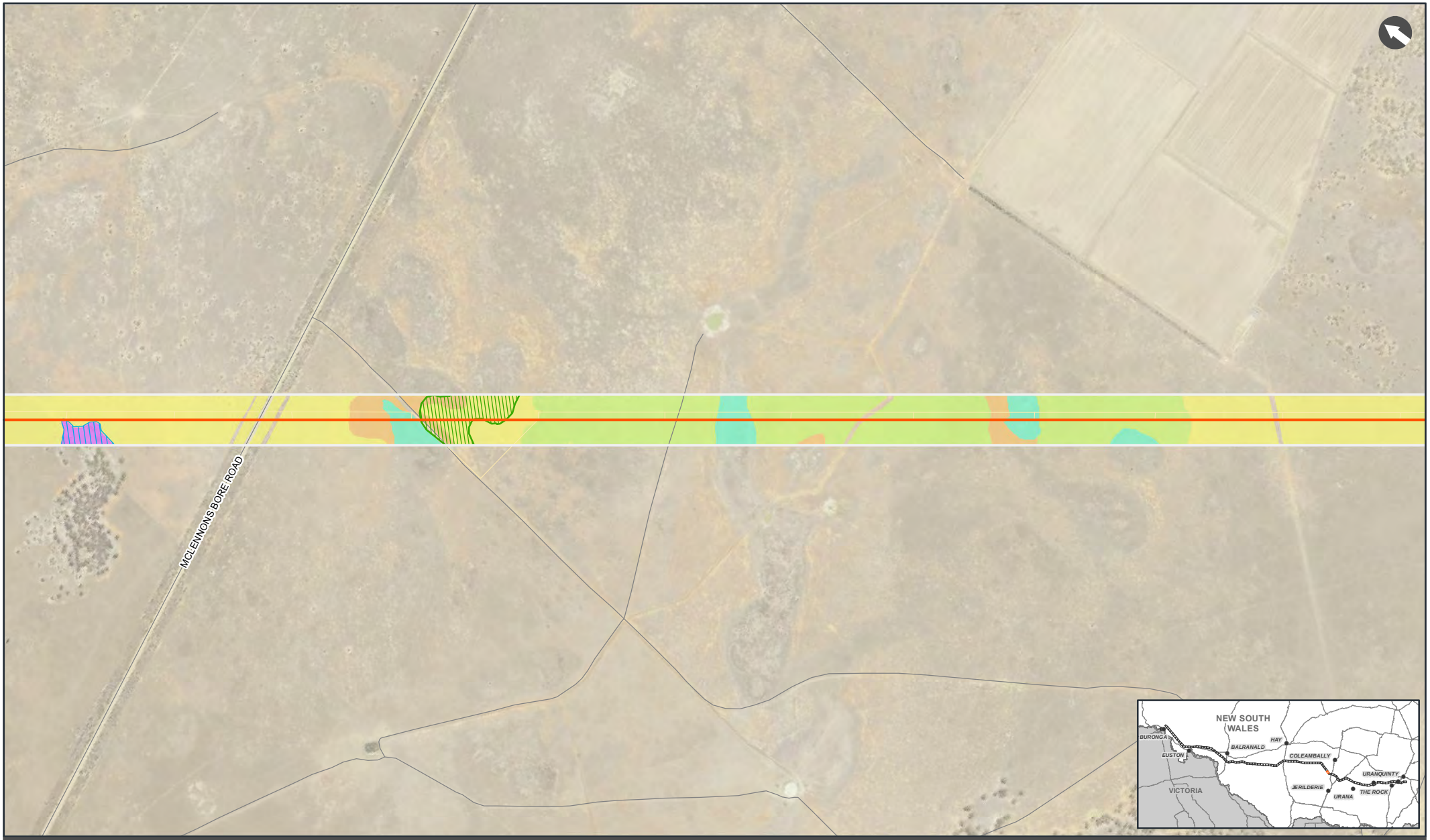
Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Superb Parrot Potential Breeding Habitat
- Plains Wanderer Important Habitat

Fauna Stratification
- Arid woodland/shrublands
- Grasslands
- Riverine
- Wetlands

BDAR - Figure C-8bp
Threatened Fauna Species Indivual and Polygon Maps

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-8bq

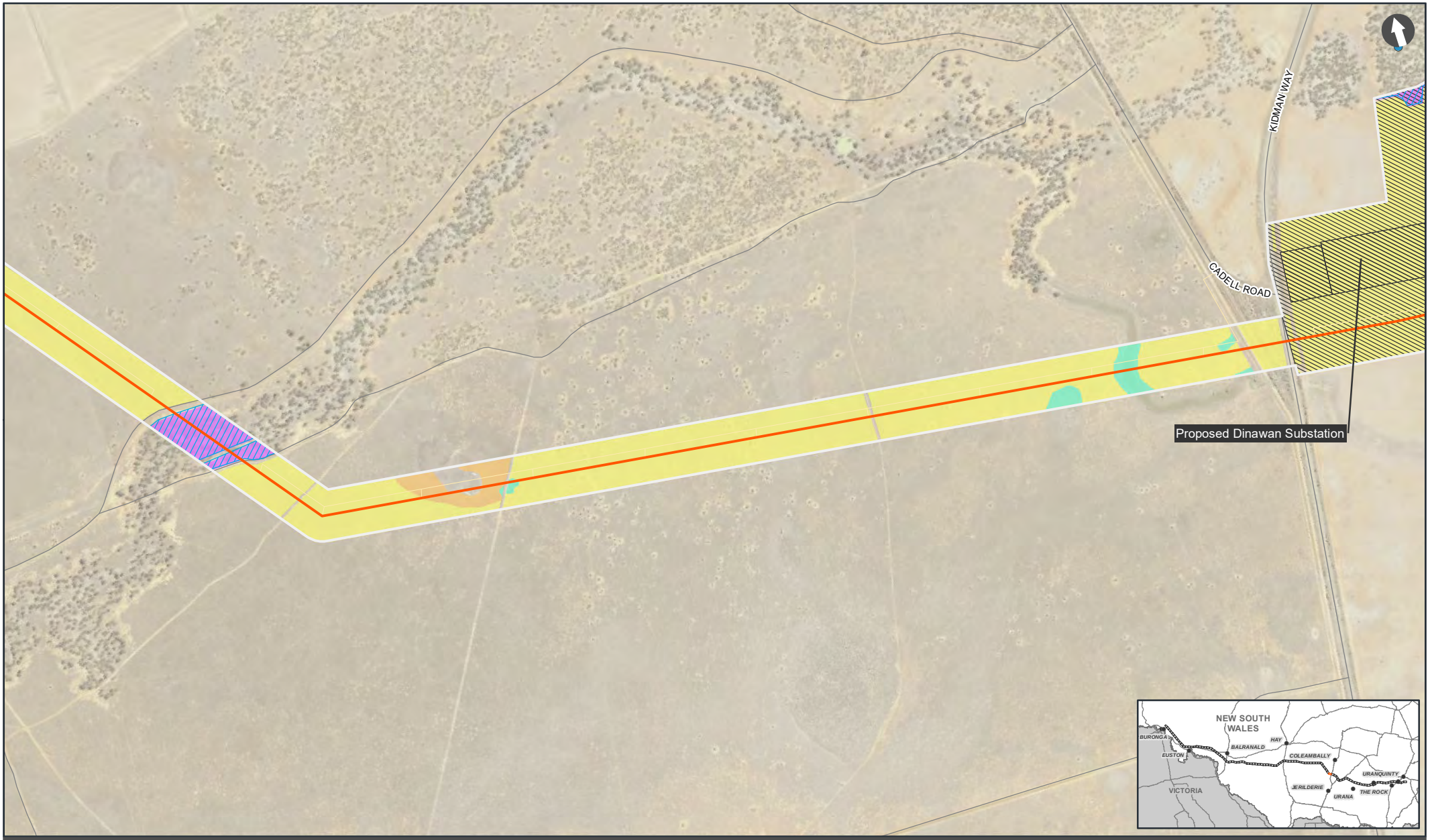
Threatened Fauna Species Indivual and Polygon Maps

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Superb Parrot Potential Breeding Habitat
- Plains Wanderer Important Habitat

Fauna Stratification
- Arid woodland/shrublands
- Chenopod shrublands
- Grasslands
- Riverine
- Wetlands

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Superb Parrot Potential Breeding Habitat

Threatened Fauna Species
- Grey-crowned Babbler - Pomatostomus temporalis

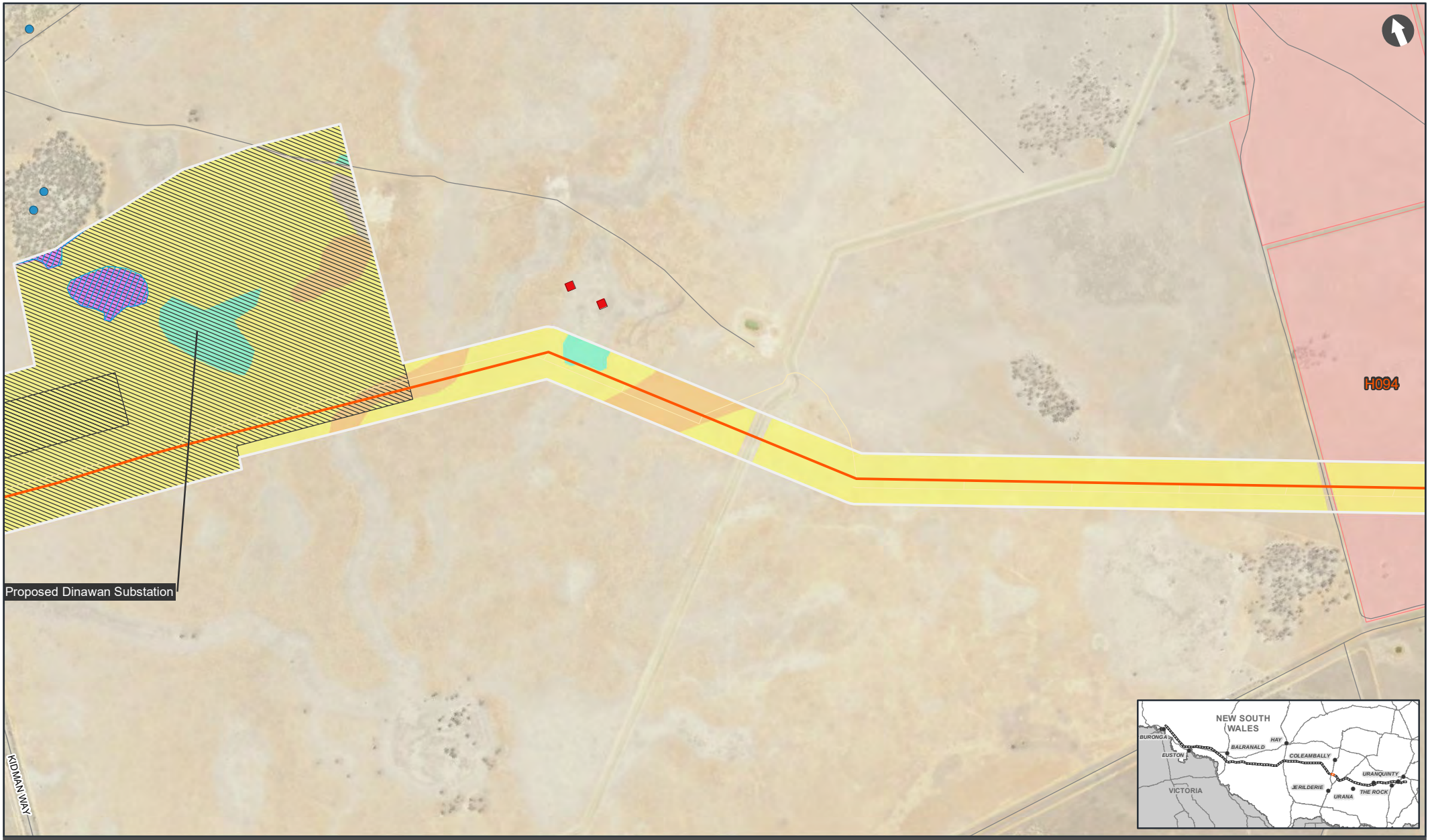
Fauna Stratification
- Arid woodland/shrublands
- Chenopod shrublands
- Grasslands
- Riverine
- Wetlands

BDAR - Figure C-8br

Threatened Fauna Species Indivual and Polygon Maps

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\03_AppendixC\PS117658_BDAR_C008_ThreatenedFaunaSpeciesIndividualAndPolygon_r1v18.mxd

Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure C-8bs

Threatened Fauna Species Indivual and Polygon Maps

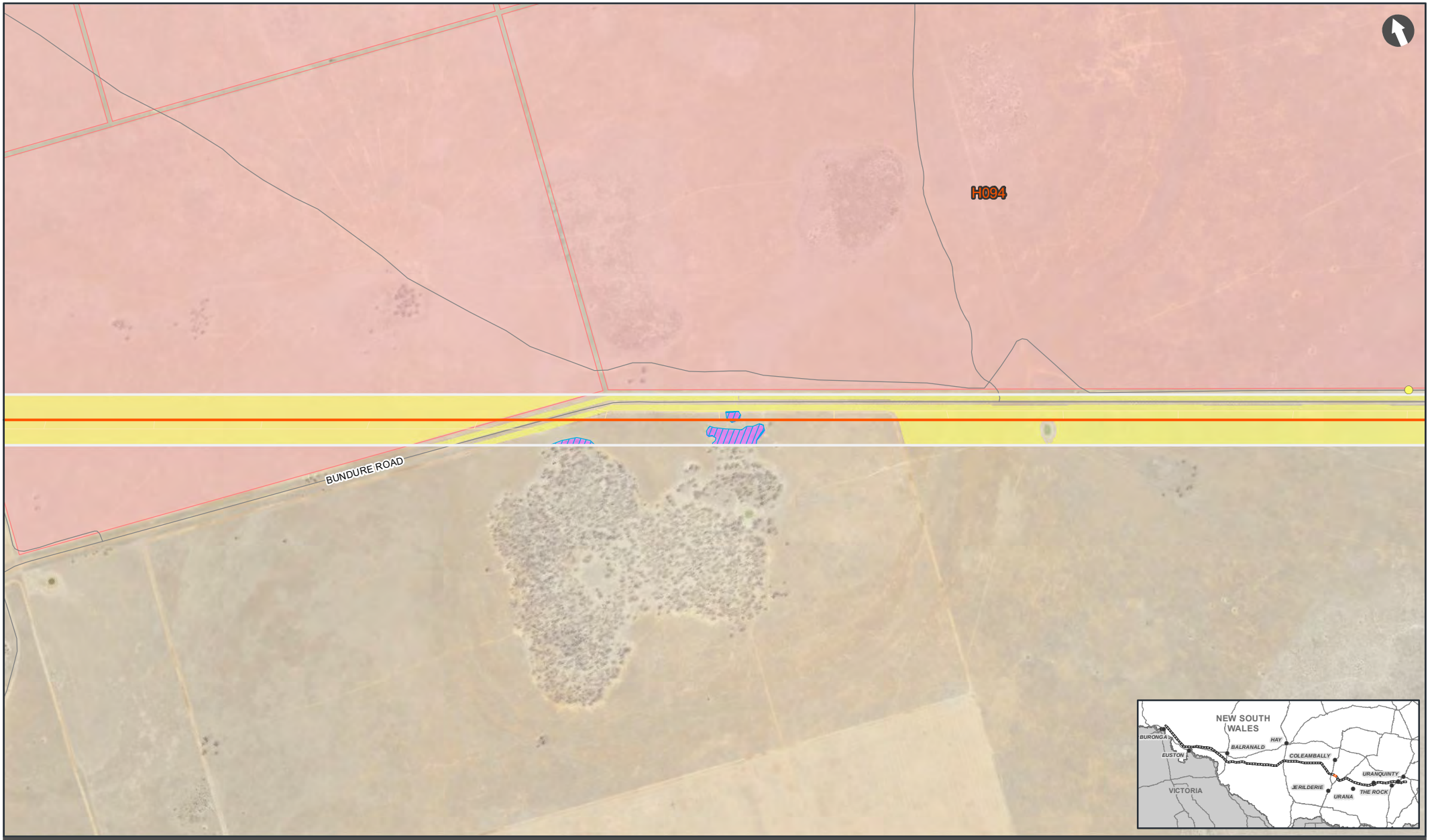
Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Holdings - No Access
- Biodiversity Study Area
- Superb Parrot Potential Breeding Habitat

Threatened Fauna Species
- Grey-crowned Babbler - Pomatostomus temporalis
- White-fronted Chat - Epthianura albifrons

Fauna Stratification
- Arid woodland/shrublands
- Chenopod shrublands
- Grasslands
- Riverine
- Wetlands

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure C-8bt

Threatened Fauna Species Indivual and Polygon Maps

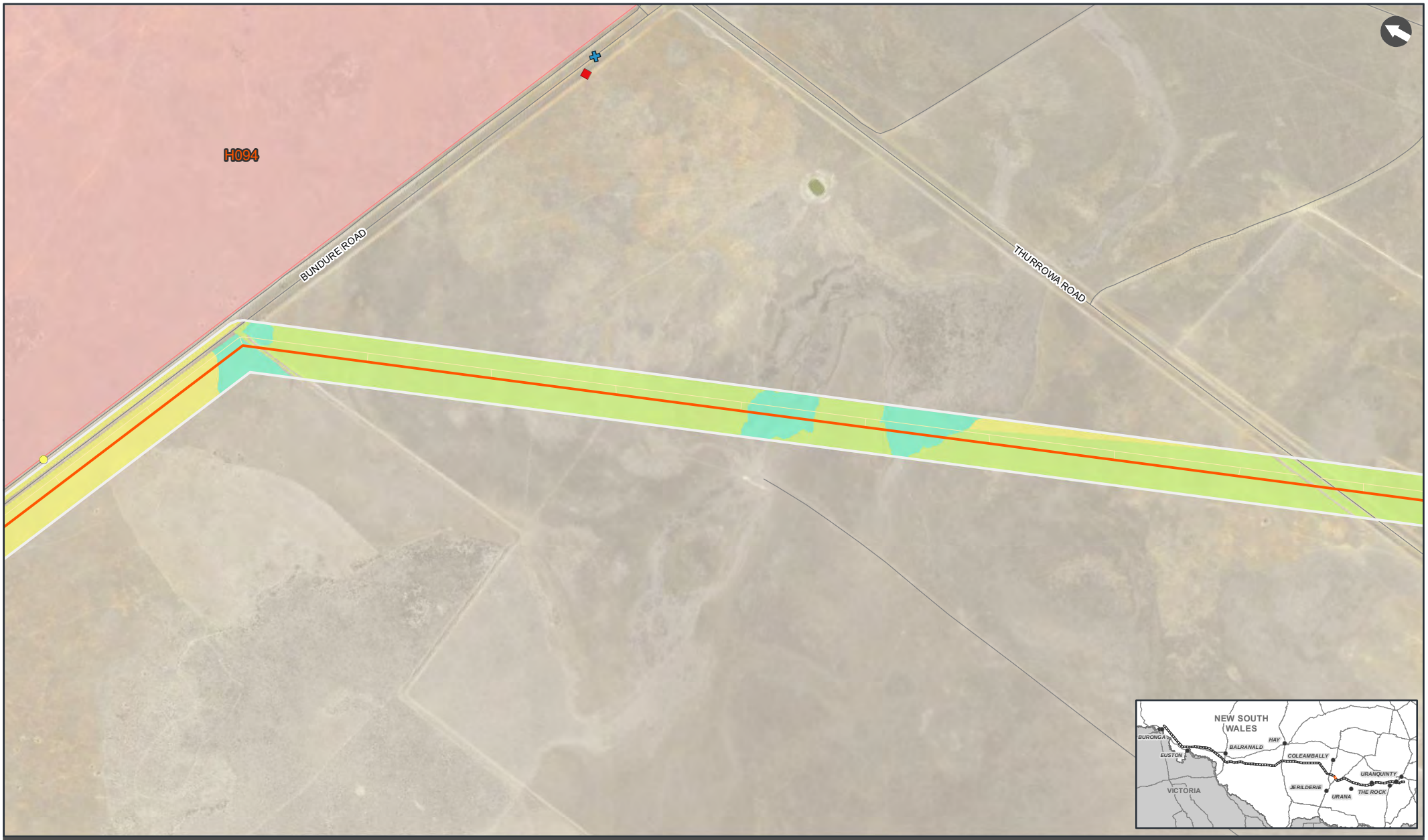
Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Holdings - No Access
- Biodiversity Study Area
- Superb Parrot Potential Breeding Habitat

Threatened Fauna Species
- Little Eagle - Hieraaetus morphnoides

Fauna Stratification
- Arid woodland/shrublands
- Riverine

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-8bu

Threatened Fauna Species Indivual and Polygon Maps

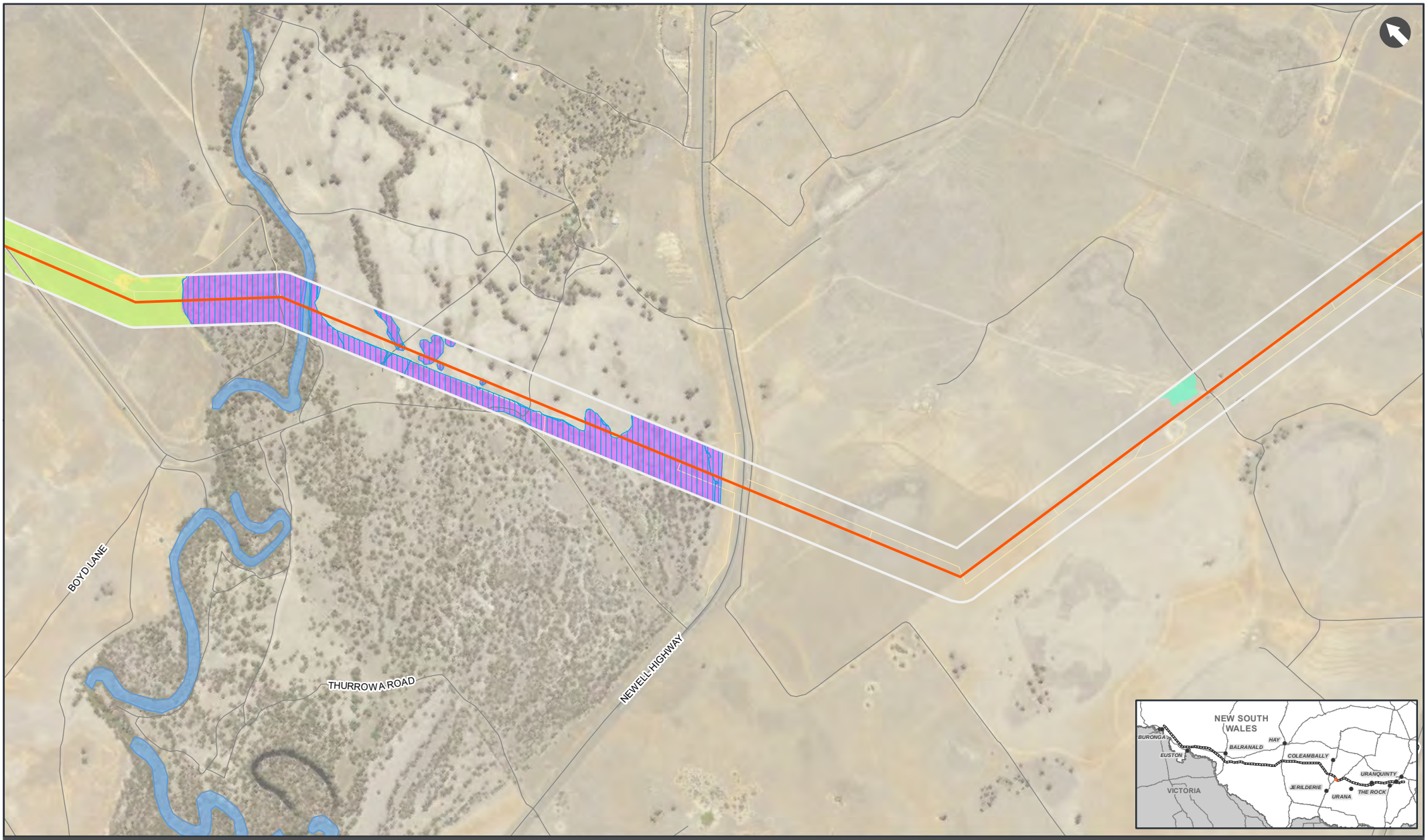
Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Holdings - No Access
- Biodiversity Study Area

Threatened Fauna Species
- Black Falcon - Falco subniger
- Little Eagle - Hieraaetus morphnoides
- White-fronted Chat - Epthianura albifrons

Fauna Stratification
- Arid woodland/shrublands
- Grasslands
- Wetlands

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-8bv

Threatened Fauna Species Indivual and Polygon Maps

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Superb Parrot Potential Breeding Habitat

Fauna Stratification
- Arid woodland/shrublands
- Grasslands
- Riverine
- Wetlands

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Superb Parrot Potential Breeding Habitat
- Plains Wanderer Important Habitat

Threatened Fauna Species
- Plains-wanderer - Pedionomus torquatus

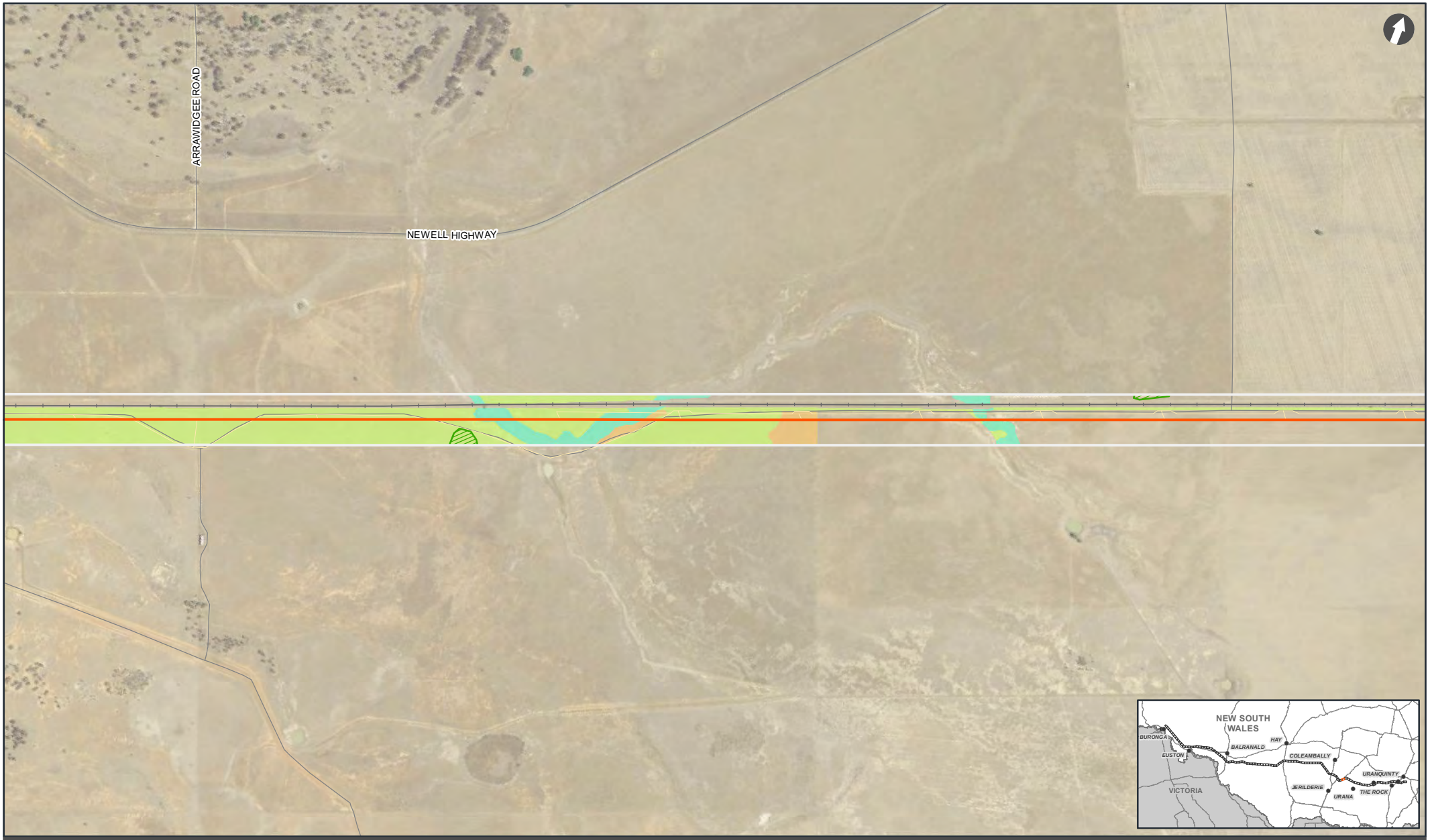
Fauna Stratification
- Arid woodland/shrublands
- Grasslands
- Riverine
- Wetlands

BDAR - Figure C-8bw

Threatened Fauna Species Indivual and Polygon Maps

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\03_AppendixC\PS117658_BDAR_C008_ThreatenedFaunaSpeciesIndividualAndPolygon_r1v18.mxd

Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-8bx

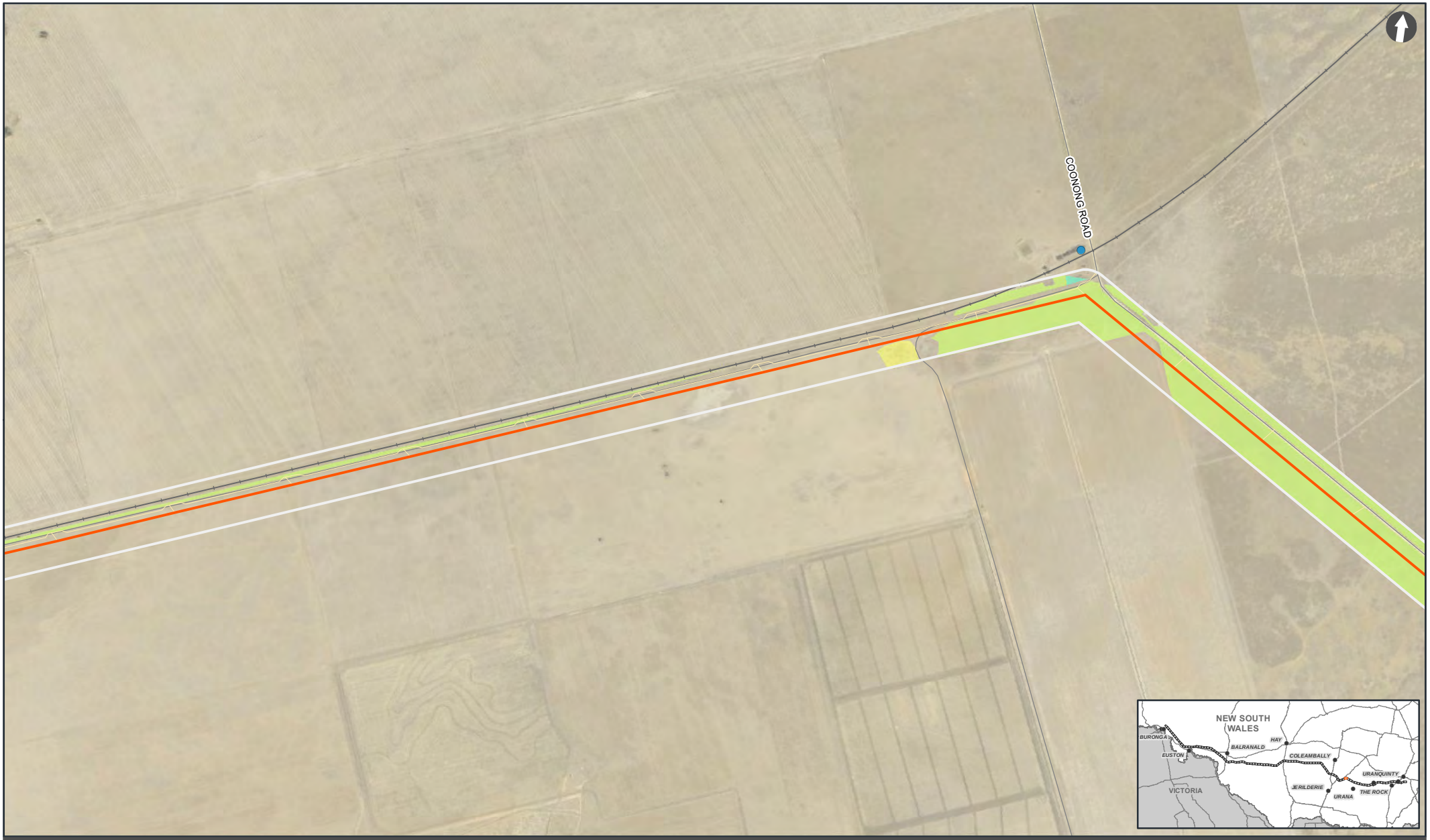
Threatened Fauna Species Indivual and Polygon Maps

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Plains Wanderer Important Habitat

Fauna Stratification
- Chenopod shrublands
- Grasslands
- Wetlands

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Threatened Fauna Species
- Grey-crowned Babbler - Pomatostomus temporalis

Fauna Stratification
- Arid woodland/shrublands
- Grasslands
- Wetlands

BDAR - Figure C-8by
Threatened Fauna Species Indivual and Polygon Maps

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-8bz

Threatened Fauna Species Indivual and Polygon Maps

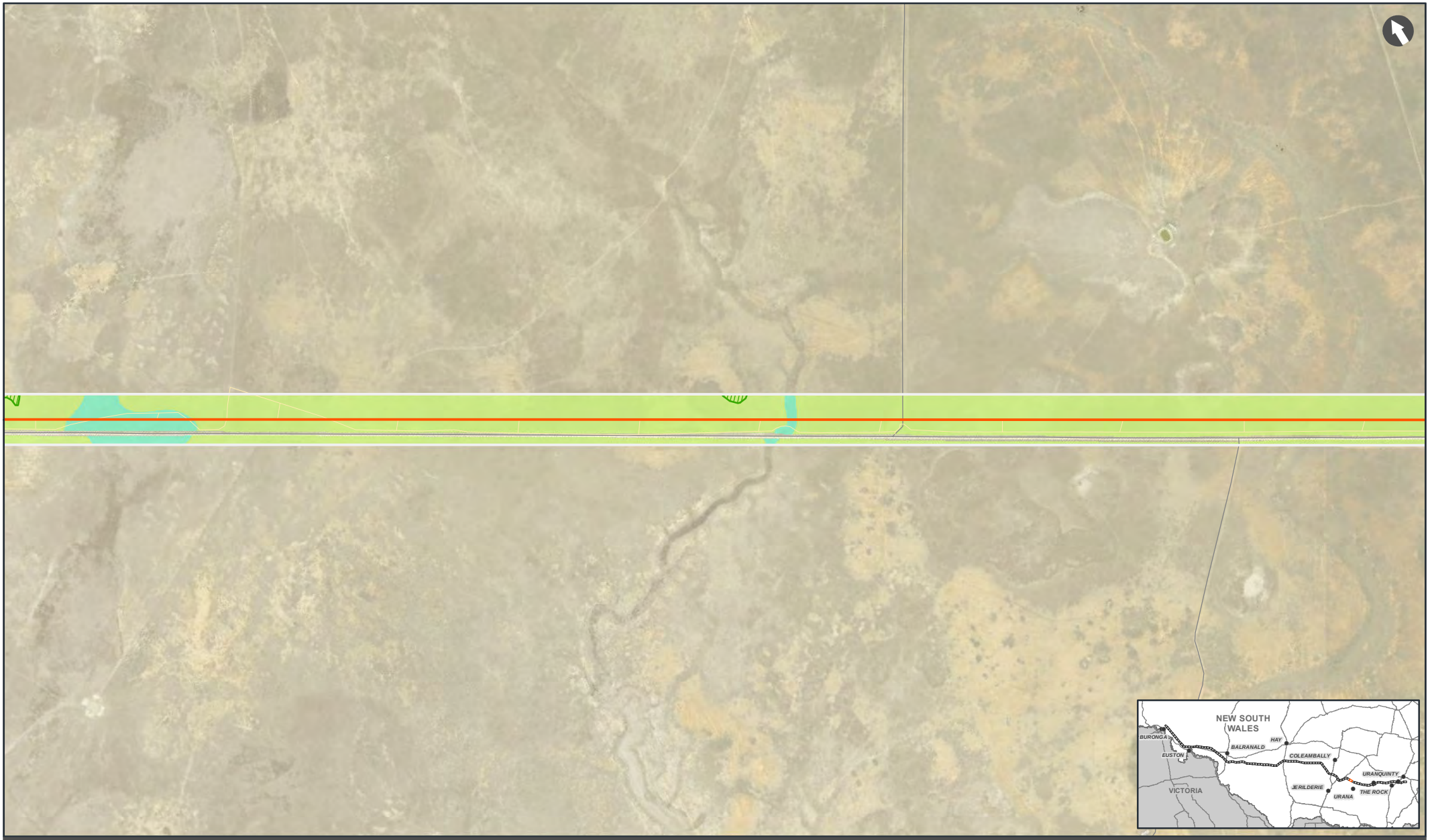
Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Superb Parrot Potential Breeding Habitat
- Plains Wanderer Important Habitat

Threatened Fauna Species
- Black Falcon - Falco subniger
- White-fronted Chat - Epthianura albifrons

Fauna Stratification
- Chenopod shrublands
- Grasslands
- Riverine
- Wetlands

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Plains Wanderer Important Habitat

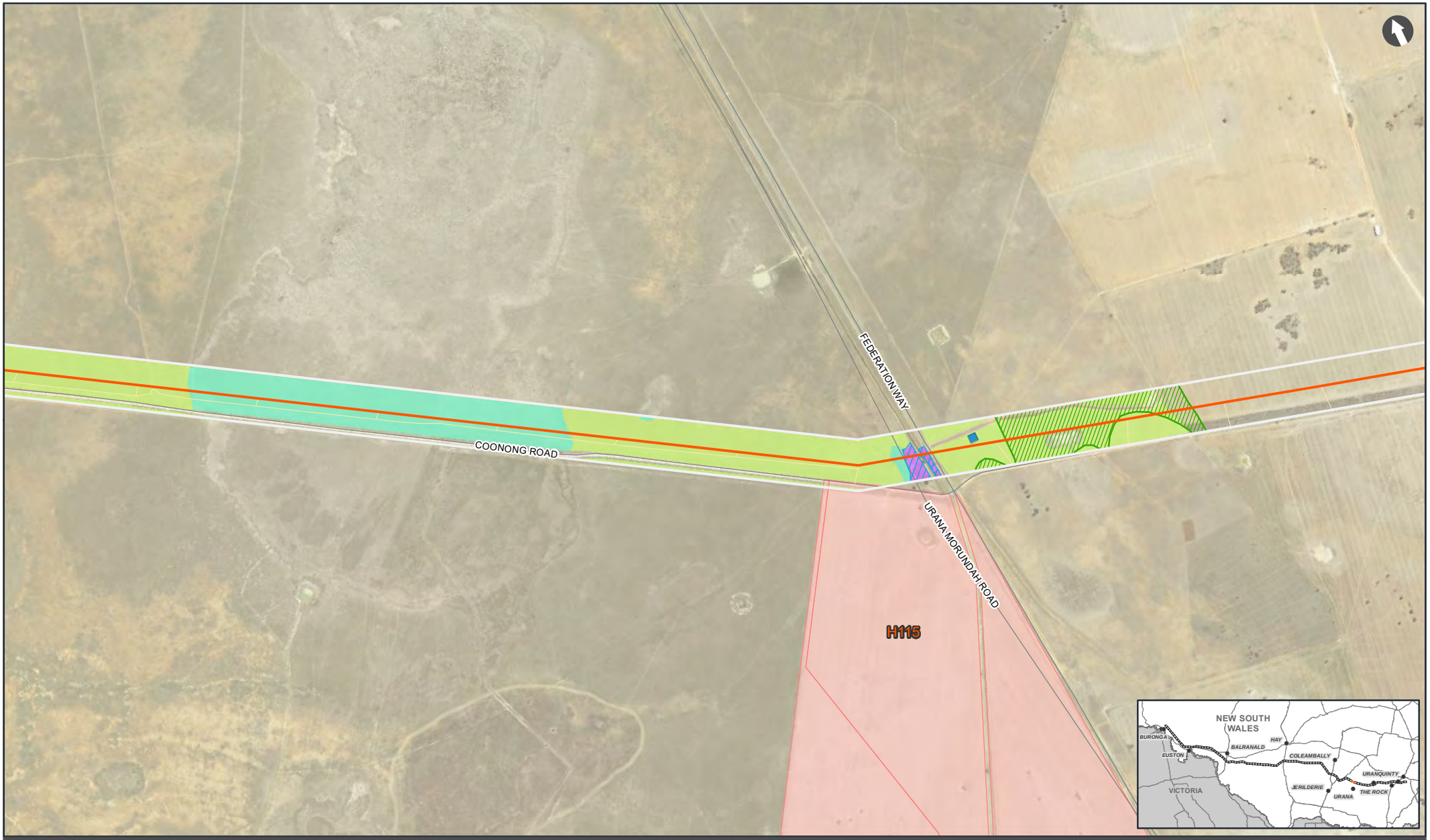
Fauna Stratification
- Grasslands
- Wetlands

BDAR - Figure C-8ca

Threatened Fauna Species Indivual and Polygon Maps

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-8cb

Threatened Fauna Species Indivual and Polygon Maps

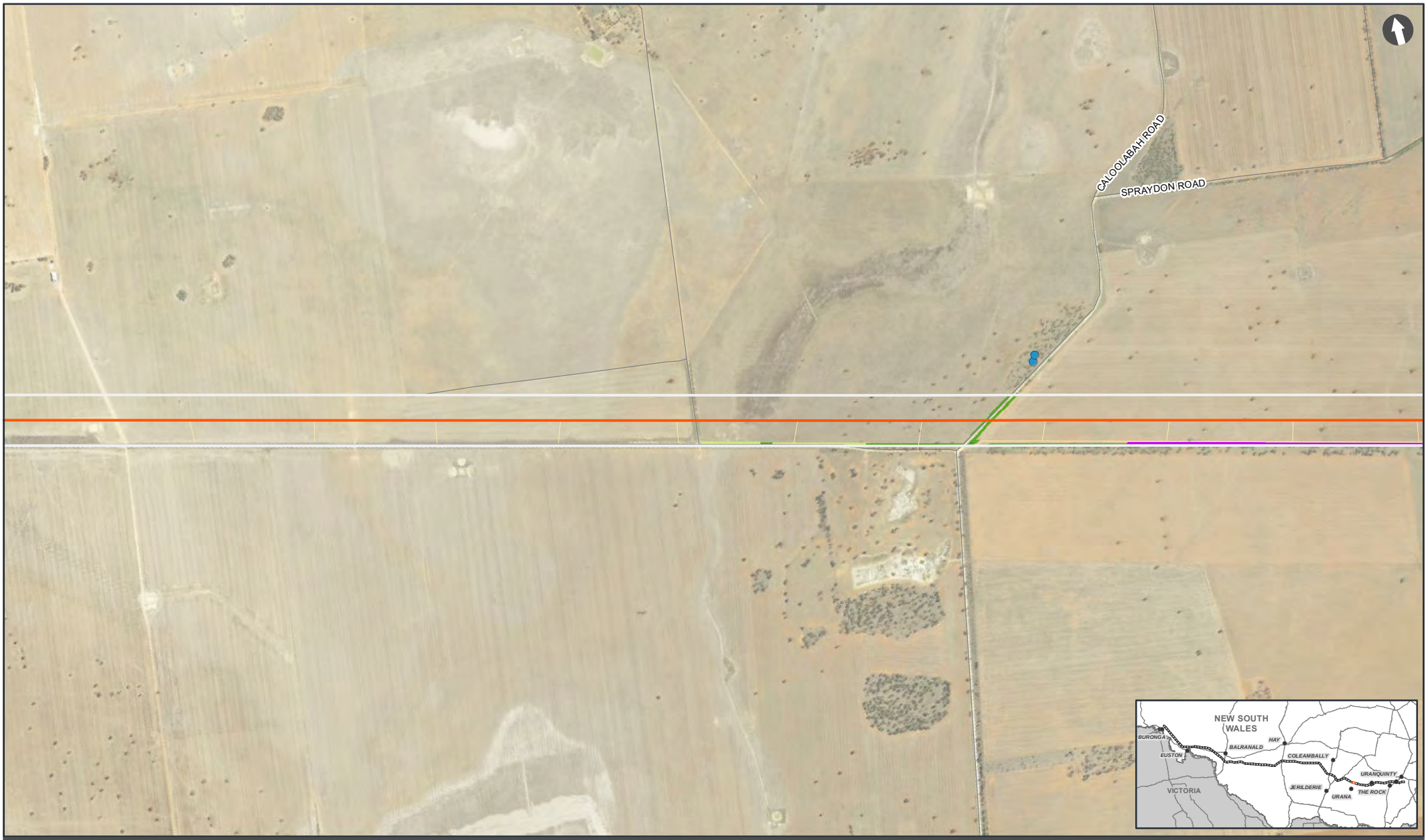
Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Holdings - No Access
- Biodiversity Study Area
- Superb Parrot Potential Breeding Habitat
- Plains Wanderer Important Habitat

Threatened Fauna Species
- Spotted Harrier - Circus assimilis

Fauna Stratification
- Grasslands
- Riverine
- Wetlands

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Squirrel Glider Habitat

Threatened Fauna Species
- Grey-crowned Babbler - Pomatostomus temporalis

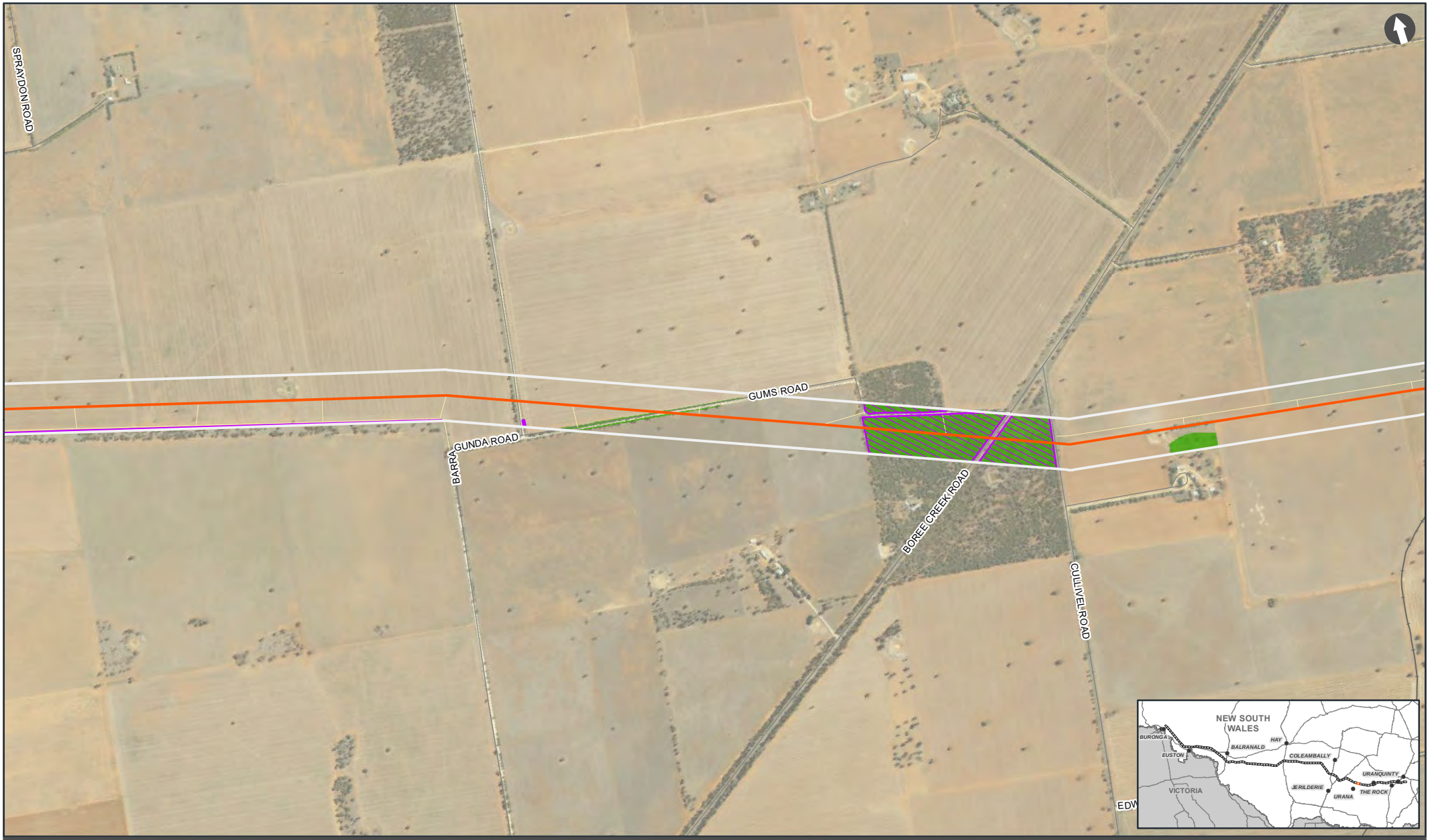
Fauna Stratification
- Grasslands
- Grassy Woodlands

BDAR - Figure C-8cc

Threatened Fauna Species Indivual and Polygon Maps

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Squirrel Glider Habitat

Fauna Stratification
- Grassy Woodlands

BDAR - Figure C-8cd

Threatened Fauna Species Indivual and Polygon Maps

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Squirrel Glider Habitat
- Superb Parrot Potential Breeding Habitat

Fauna Stratification
- Arid woodland/shrublands
- Grassy Woodlands
- Riverine

BDAR - Figure C-8ce

Threatened Fauna Species Indivual and Polygon Maps

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-8cf

Threatened Fauna Species Indivual and Polygon Maps

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Superb Parrot Potential Breeding Habitat

Fauna Stratification

- Riverine

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

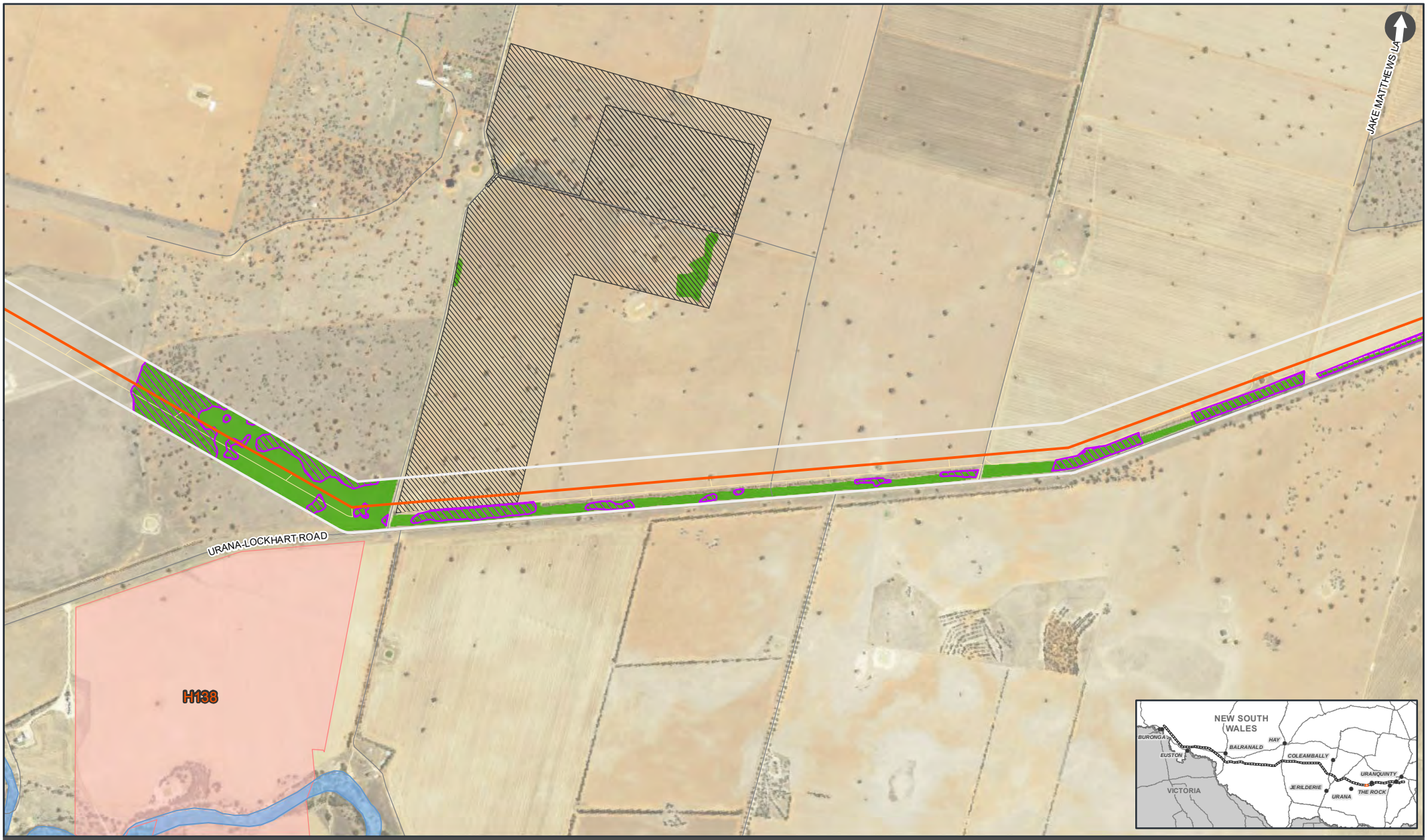
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

BDAR - Figure C-8cg

Threatened Fauna Species Indivual and Polygon Maps

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\03_AppendixC\PS117658_BDAR_C008_ThreatenedFaunaSpeciesIndividualAndPolygon_r1v18.mxd

Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-8ch

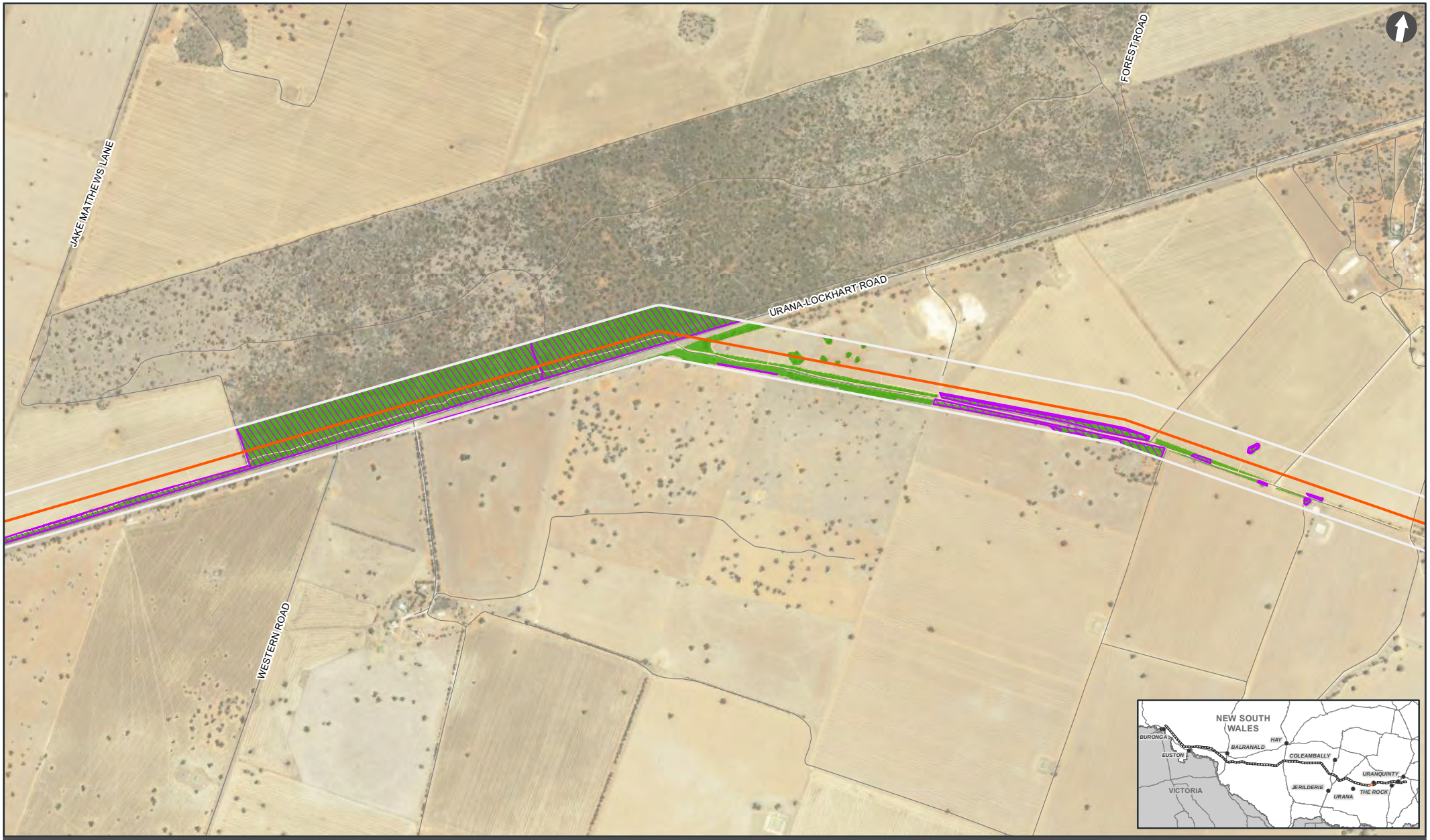
Threatened Fauna Species Indivual and Polygon Maps

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Holdings - No Access
- Biodiversity Study Area
- Squirrel Glider Habitat

Fauna Stratification
- Arid woodland/shrublands
- Grassy Woodlands

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-8ci

Threatened Fauna Species Indivual and Polygon Maps

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Squirrel Glider Habitat

Fauna Stratification

- Grassy Woodlands

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\03_AppendixC\PS117658_BDAR_C008_ThreatenedFaunaSpeciesIndividualAndPolygon_r1v18.mxd

Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Squirrel Glider Habitat

Threatened Fauna Species
- Grey-crowned Babbler - Pomatostomus temporalis

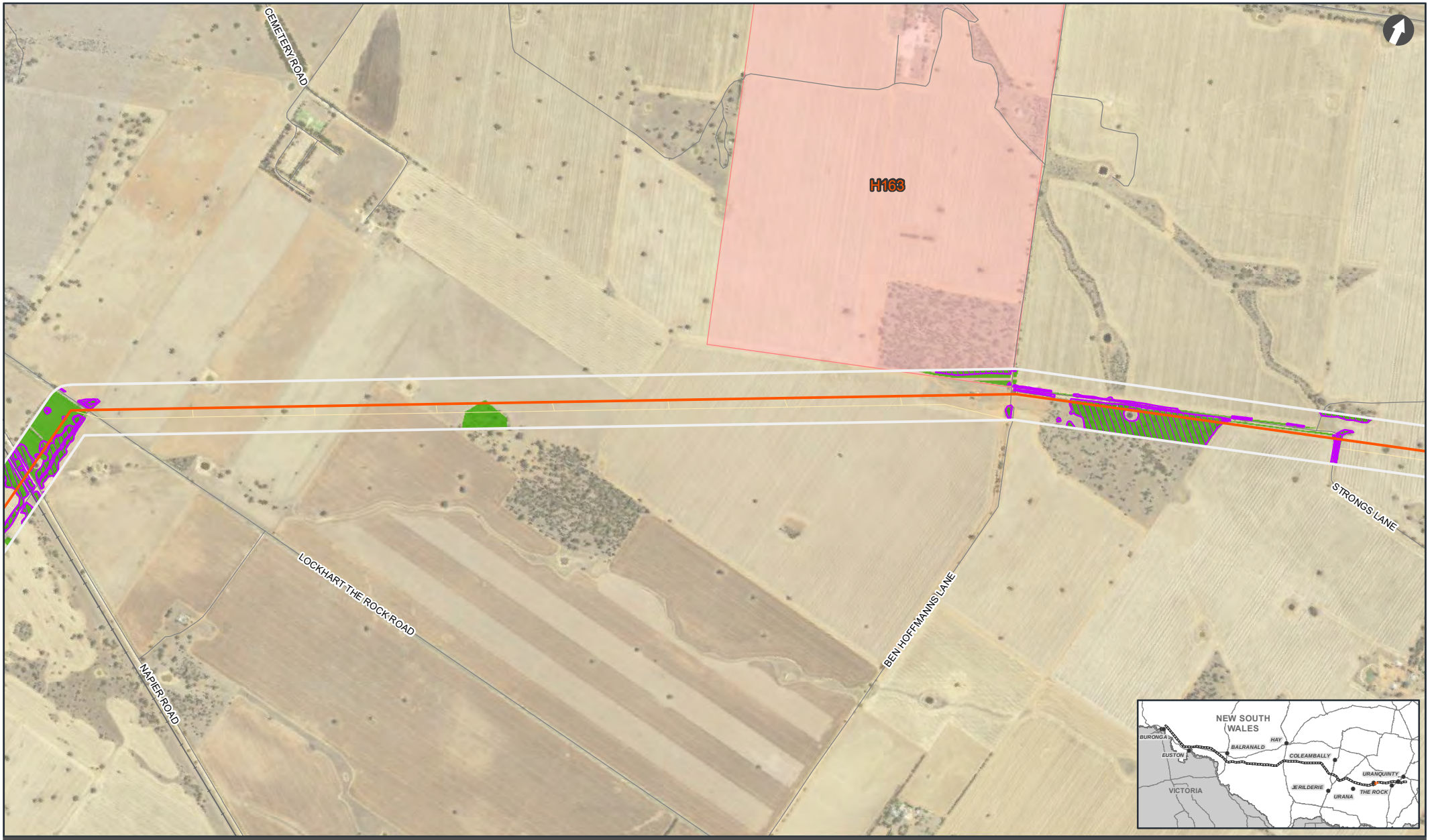
Fauna Stratification
- Grassy Woodlands

BDAR - Figure C-8cj

Threatened Fauna Species Indivual and Polygon Maps

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Holdings - No Access
- Biodiversity Study Area
- Squirrel Glider Habitat

Fauna Stratification
- Grassy Woodlands

BDAR - Figure C-8ck

Threatened Fauna Species Indivual and Polygon Maps

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\03_AppendixC\PS117658_BDAR_C008_ThreatenedFaunaSpeciesIndividualAndPolygon_r1v18.mxd

Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-8cm

Threatened Fauna Species Indivual and Polygon Maps

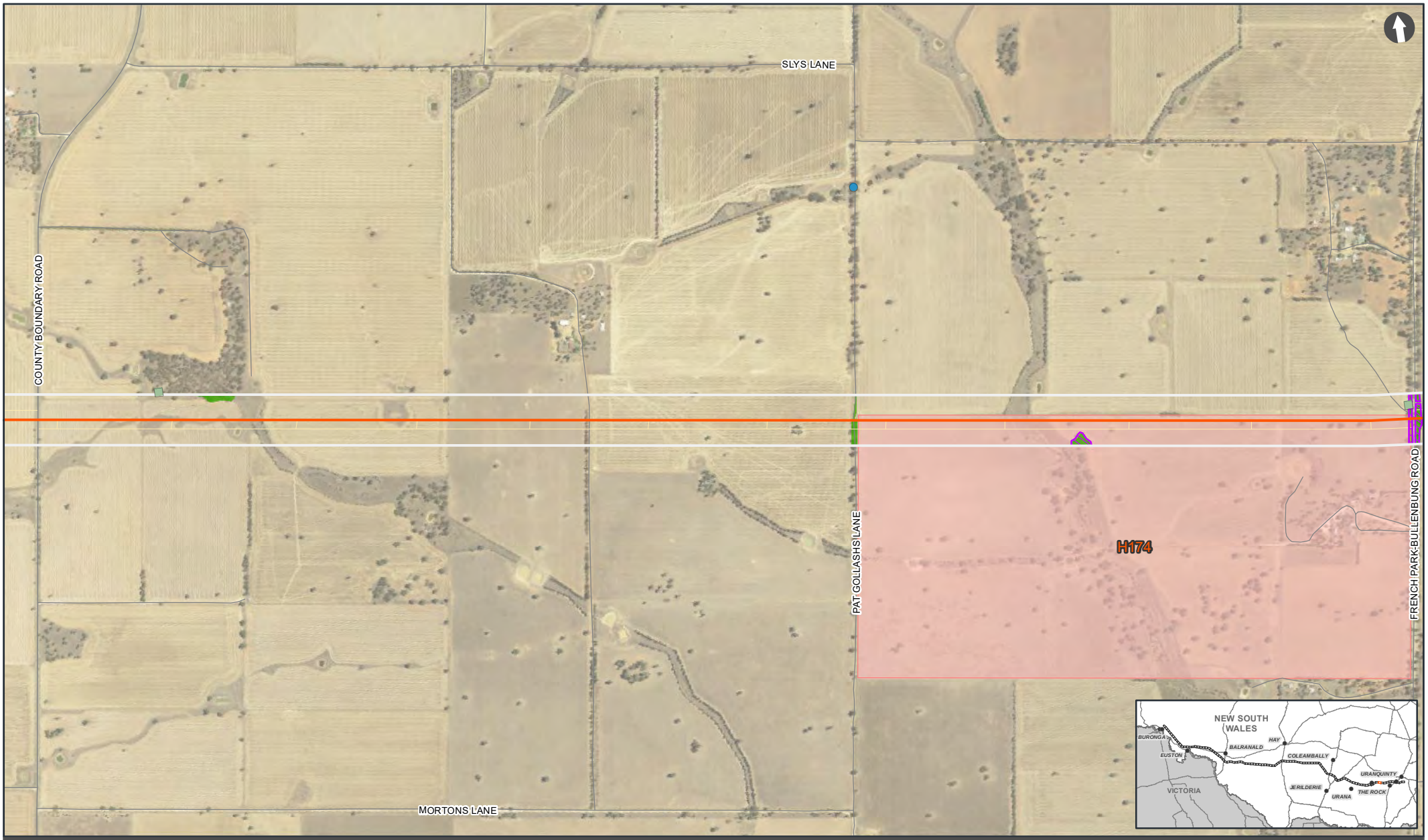
Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Squirrel Glider Habitat
- Superb Parrot Potential Breeding Habitat

Threatened Fauna Species
- Grey-crowned Babbler - Pomatostomus temporalis
- Squirrel Glider - Petaurus norfolcensis
- Superb Parrot - Polytelis swainsonii

Fauna Stratification
- Grassy Woodlands

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Holdings - No Access
- Biodiversity Study Area
- Squirrel Glider Habitat

Threatened Fauna Species
- Grey-crowned Babbler - Pomatostomus temporalis
- Squirrel Glider - Petaurus norfolcensis

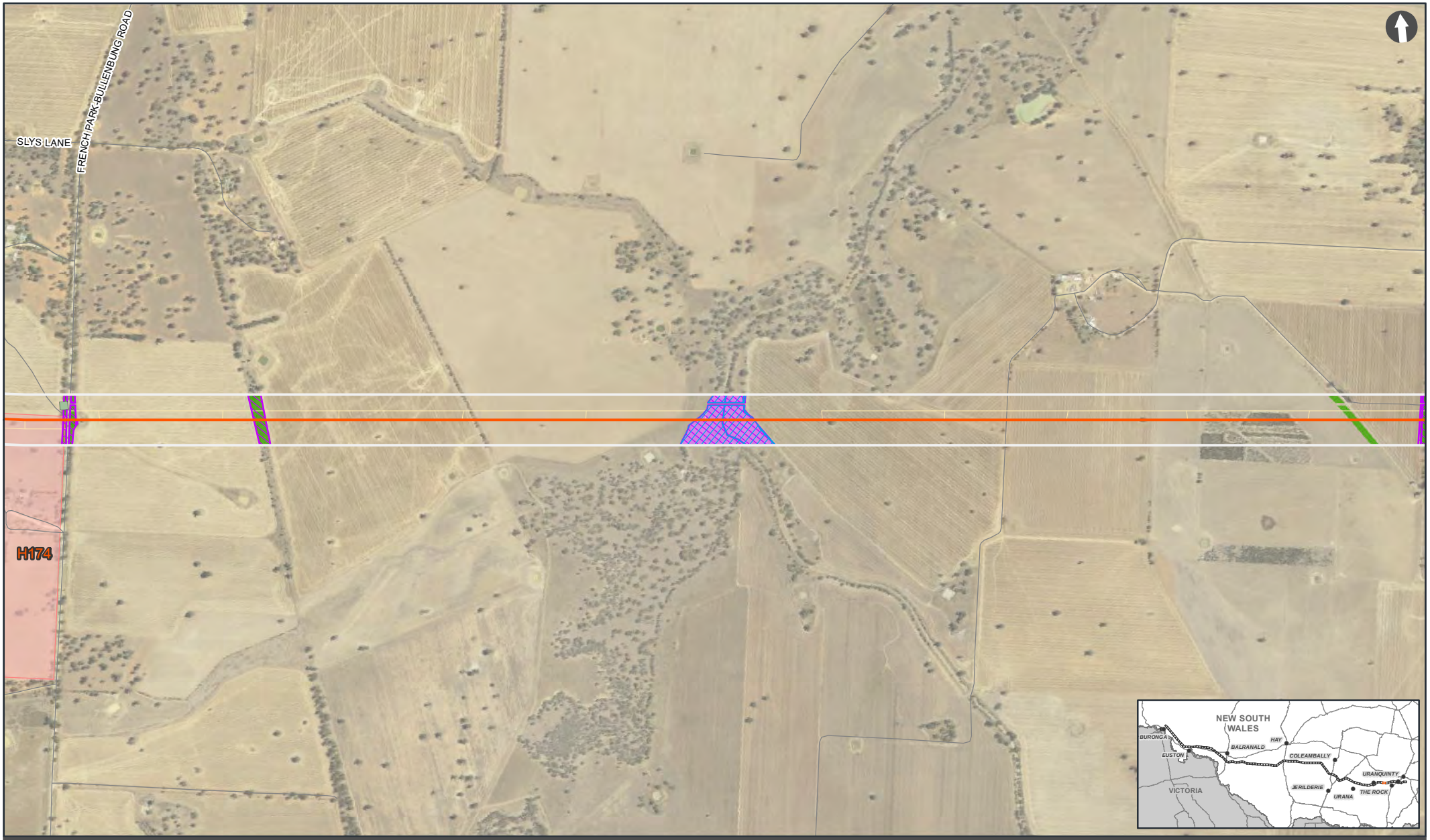
Fauna Stratification
- Grassy Woodlands

BDAR - Figure C-8cn

Threatened Fauna Species Indivual and Polygon Maps

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-8co

Threatened Fauna Species Indivual and Polygon Maps

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Holdings - No Access
- Biodiversity Study Area
- Squirrel Glider Habitat
- Superb Parrot Potential Breeding Habitat

Threatened Fauna Species
- Squirrel Glider - Petaurus norfolcensis

Fauna Stratification
- Grassy Woodlands
- Riverine

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-8cp

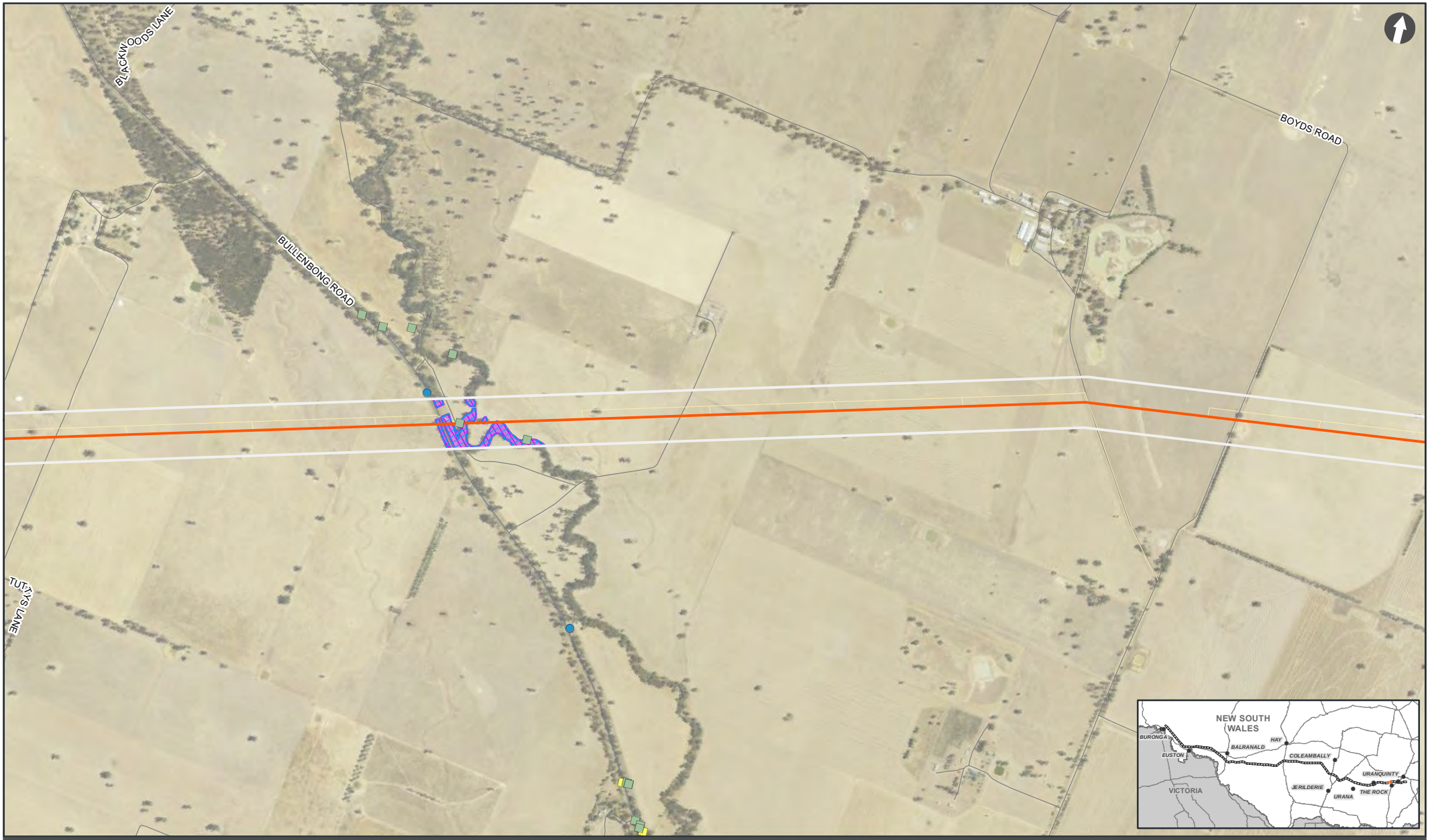
Threatened Fauna Species Indivual and Polygon Maps

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Squirrel Glider Habitat

Fauna Stratification
- Grassy Woodlands

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Squirrel Glider Habitat
- Superb Parrot Potential Breeding Habitat

Threatened Fauna Species
- Grey-crowned Babbler - Pomatostomus temporalis
- Squirrel Glider - Petaurus norfolcensis
- Superb Parrot - Polytelis swainsonii

Fauna Stratification
- Riverine

BDAR - Figure C-8cq

Threatened Fauna Species Indivual and Polygon Maps

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure C-8cr

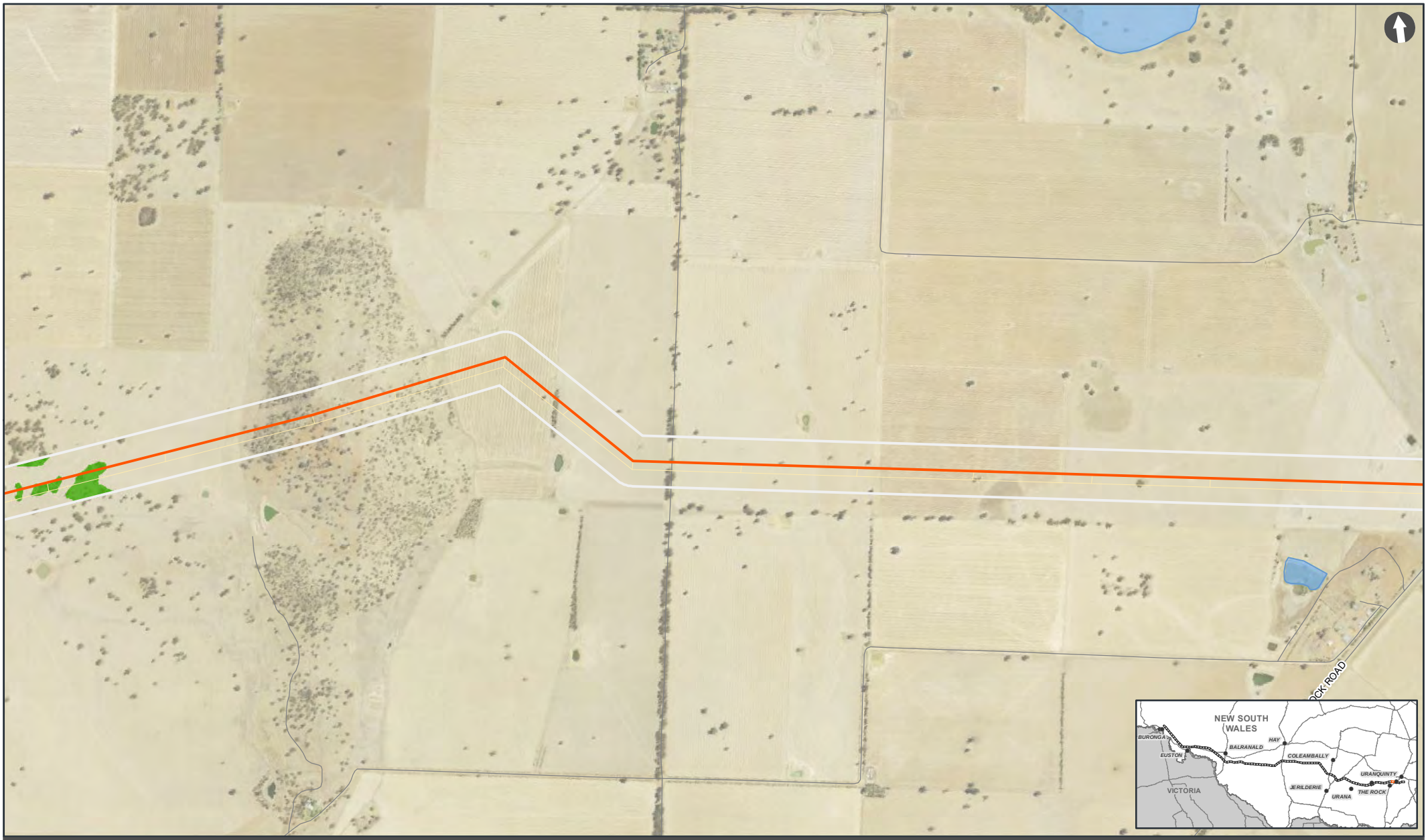
Threatened Fauna Species Indivual and Polygon Maps

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Squirrel Glider Habitat

Fauna Stratification
- Grassy Woodlands

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Fauna Stratification
- Grassy Woodlands

BDAR - Figure C-8cs

Threatened Fauna Species Indivual and Polygon Maps

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Fauna Stratification
- Grassy Woodlands

BDAR - Figure C-8ct

Threatened Fauna Species Indivual and Polygon Maps

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

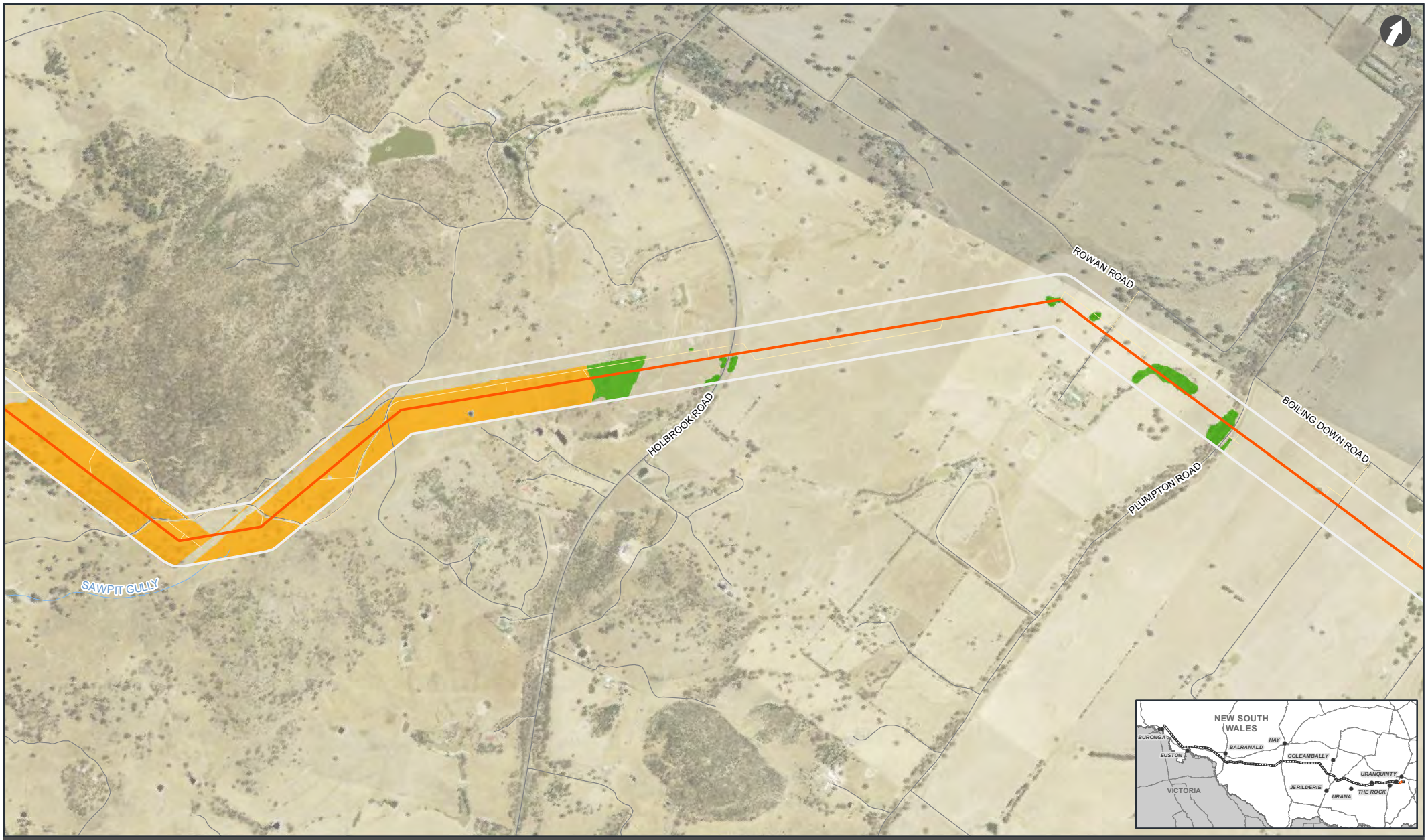
Fauna Stratification
- Grassy Woodlands
- Rocky Woodlands

BDAR - Figure C-8cu

Threatened Fauna Species Indivual and Polygon Maps

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area

Fauna Stratification
- Grassy Woodlands
- Rocky Woodlands

BDAR - Figure C-8cv

Threatened Fauna Species Indivual and Polygon Maps

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\03_AppendixC\PS117658_BDAR_C008_ThreatenedFaunaSpeciesIndividualAndPolygon_r1v18.mxd

Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Existing Railway
- Built Up Areas
- Waterbody
- Biodiversity Study Area
- Squirrel Glider Habitat

Fauna Stratification

- Grassy Woodlands

BDAR - Figure C-8CW

Threatened Fauna Species Indivual and Polygon Maps

C:\Users\autw500241\WSP O365\EnergyConnect - General\5_Shared\54_Production\Maps\003_PEC_East\02_SpecialistReports\01_Ecology\06_BDAR\03_AppendixC\PS117658_BDAR_C008_ThreatenedFaunaSpeciesIndividualAndPolygon_r1v18.mxd

Source: NSWSS, ESRI, Transgrid, WSP

APPENDIX C-9
Recorded fauna species

Table C-9.1 Fauna species recorded

SCIENTIFIC NAME	COMMON NAME	OBSERVATION TYPE	NATIVE (N) OR INTRODUCED (I)	BC ACT	EPBC ACT
Amphibians (6)					
Crinia parinsignifera	Eastern Sign-bearing Froglet	W	N		
Crinia signifera	Common Eastern Froglet	W	N		
Limnodynastes dumerilli dumerilli	Eastern Banjo Frog	W	N		
Limnodynastes fletcheri	Barking Frog	O	N		
Limnodynastes tasmaniensis	Spotted Marsh Frog	W	N		
Litoria peronii	Peron's Tree Frog	W	N		
Reptiles (29)					
Amphibolurus muricatus	Jacky Dragon	O	N		
Aprasia inaurita	Mallee Worm-Lizard	O	N	E	
Carlia tetradactyla	Southern Rainbow Skink	O	N		
Cryptoblepharus pannosus	Ragged Snake-eyed Skink	O	N		
Ctenophorus fordi	Mallee Military Dragon	O	N		
Ctenophorus pictus	Painted Dragon	T	N		
Ctenophorus spinodomus	Eastern Mallee Dragon	T	N		
Ctenotus atlas	Southern Mallee Ctenotus	T	N		
Ctenotus brachyonyx	Short-clawed Ctenotus	T	N		
Ctenotus regius	Royal Ctenotus	OT	N		
Ctenotus schomburgkii	Barred Wedge-snouted Ctenotus	T	N		
Diplodactylus vittatus	Eastern Stone Gecko	OT	N		
Diporiphora nobbi	Nobbi Dragon	O	N		
Gehyra versicolor	Eastern Dtella	OT	N		
Heteronotia binoei	Bynoe's Gecko	O	N		
Lerista emmotti	Noonbah Robust Slider	T	N		
Lerista punctatovittata	Eastern Robust Slider	T	N		
Lerista timida	Dwarf Three-toed Slider	T	N		
Lialis burtonis	Burton's Snake Lizard	T	N		
Lucasium damaeum	Beaded Gecko	OT	N		

SCIENTIFIC NAME	COMMON NAME	OBSERVATION TYPE	NATIVE (N) OR INTRODUCED (I)	BC ACT	EPBC ACT
Lucasium steindachneri	Box-patterned Gecko	O	N		
Menetia greyii	Common Dwarf Skink	T	N		
Morethia boulengeri	Boulenger's Morethia	T	N		
Morethia obscura	Shrubland Pale-flecked Morethia	T	N		
Pogona vitticeps	Central Bearded Dragon	OT	N		
Pseudonaja textilis	Common Brown Snake	O	N		
Rhynchoedura ormsbyi	Eastern Beaked Gecko	OT	N		
Strophurus intermedius	Southern Spiny Tail Gecko	OT	N		
Tiliqua rugosa	Shingleback	O	N		
Underwoodisaurus milli	Thick-tailed Gecko	T	N		
Varanus varius	Lace Monitor	O	N		
Birds (144)					
Acanthagenys rufogularis	Spiny-cheeked Honeyeater	OW	N		
Acanthiza chrysorrhoa	Yellow-rumped Thornbill	OW	N		
Acanthiza nana	Yellow Thornbill	OW	N		
Acanthiza reguloides	Buff-rumped Thornbill	OW	N		
Acanthiza uropygialis	Chestnut-rumped Thornbill	O	N		
Accipiter cirrocephalus	Collared Sparrowhawk	O	N		
*Acridotheres tristis**	Common Myna*	O	I		
Aegotheles cristatus	Australian Owlet Nightjar	W	N		
Anas gracilis	Grey Teal	O	N		
Anas rhynchotis	Australasian Shoveler	O	N		
Anas superciliosa	Pacific Black Duck	O	N		
Anhinga novaehollandiae	Australasian Darter	O	N		
Anthochaera carunculata	Red Wattlebird	OW	N		
Anthus novaeseelandiae	Australian Pipit	O	N		
Aphelocephala leucopsis	Southern Whiteface	O	N		
Aquila audax	Wedge-tailed Eagle	O	N		
Ardea Alba	Great Egret	O	N		
Ardea pacifica	White-necked Heron	O	N		

SCIENTIFIC NAME	COMMON NAME	OBSERVATION TYPE	NATIVE (N) OR INTRODUCED (I)	BC ACT	EPBC ACT
Artamus cinereus	Black-faced Woodswallow	O	N		
Artamus cyanopterus	Dusky Woodswallow	O	N	V	
Artamus leucorhynchus	White-breasted Woodswallow	O	N		
Artamus personatus	Masked Woodswallow	O	N		
Artamus superciliosus	White-browed Woodswallow	O	N		
Aythya australis	Hardhead	O	N		
Barnardius zonarius	Australian Ringneck	OW	N		
Cacatua galerita	Sulphur-crested Cockatoo	OW	N		
Cacatua sanguinea	Little Corella	OW	N		
Chenonetta jubata	Australian Wood Duck	OW	N		
Chlamydera maculata	Spotted Bowerbird	O	N		
Chlidonias hybrida	Whiskered Tern	O	N		
Chroicocephalus novaehollandiae	Silver Gull	O	N		
Chrysococcyx basilis	Horsfield's Bronze-cuckoo	O	N		
Cincloramphus cruralis	Brown Songlark	OW	N		
Cincloramphus mathewsi	Rufous Songlark	OW	N		
Cinclosoma castanotum	Chestnut Quail-thrush	OW	N	V	
Circus approximans	Swamp Harrier	O	N		
Circus assimilis	Spotted Harrier	O	N	V	
Climacteris picumnus picumnus	Brown Treecreeper	O	N		
Colluricincla harmonica	Grey Shrike-thrush	OW	N		
Columba livia	Rock Dove	O	N		
Coracina novaehollandiae	Black-faced Cuckoo-shrike	O	N		
Corcorax melanorhamphos	White-winged Chough	O	N		
Corvus coronoides	Australian Raven	OW	N		
Corvus mellori	Little Raven	OW	N		
Coturnix pectoralis	Stubble Quail	OW	N		
Cracticus nigrogularis	Pied Butcherbird	OW	N		
Cracticus tibicen	Australian Magpie	OW	N		

SCIENTIFIC NAME	COMMON NAME	OBSERVATION TYPE	NATIVE (N) OR INTRODUCED (I)	BC ACT	EPBC ACT
Cracticus torquatus	Grey Butcherbird	OW	N		
Cygnus atratus	Black Swan	O	N		
Dacelo novaeguineae	Laughing Kookaburra	OW	N		
Dendrocygna eytoni	Plumed Whistling-Duck	O	N		
Dicaeum hirundinaceum	Mistletoebird	OW	N		
Dromaius novaehollandiae	Emu	O	N		
Egretta novaehollandiae	White-faced Heron	O	N		
Elanus caeruleus	Black-shouldered Kite	O	N		
Elseyornis melanops	Black-fronted Dotterel	O	N		
Entomyzon cyanotis	Blue-faced Honeyeater	O	N		
Eolophus roseicapilla	Galah	OW	N		
Epthianura albifrons	White-fronted Chat	O	N	V	
Epthianura tricolor	Crimson Chat	O	N		
Eurostopodus argus	Spotted Nightjar	W	*N*		
Falco berigora	Brown Falcon	O	N		
Falco cenchroides	Nankeen Kestrel	O	N		
Falco longipennis	Australian Hobby	O	N		
Falco peregrinus	Peregrine Falcon	O	N		
Falco subniger	Black Falcon	O	N	V	
Falcunculus frontatus	Crested Shrike-tit	O	N		
Fulica atra	Eurasian Coot	O	N		
Geopelia placida	Peaceful Dove	O	N		
Gerygone fusca	Western Gerygone	O	N		
Gerygone olivacea	White-throated Gerygone	O	N		
Grallina cyanoleuca	Magpie Lark	OW	N		
Grus rubicunda	Brolga	O	N	V	
Haliastur sphenurus	Whistling Kite	OW	N		
Hieraaetus morphnoides	Little Eagle	O	N	V	
Himantopus himantopus	Pied Stilt	O	N		
Hirundo neoxena	Welcome Swallow	O	N		

SCIENTIFIC NAME	COMMON NAME	OBSERVATION TYPE	NATIVE (N) OR INTRODUCED (I)	BC ACT	EPBC ACT
Lichenostomus leucotis	White-eared Honeyeater	OW	N		
Lichenostomus ornatus	Yellow-plumed Honeyeater	OW	N		
Lichenostomus penicillatus	White-plumed Honeyeater	OW	N		
Lichenostomus virescens	Singing Honeyeater	OW	N		
Lophochroa leadbeateri	Major Mitchell's Cockatoo	O	N	V	
Malacorhynchus membranaceus	Pink-eared Duck	O	N		
Malurus assimilis	Purple-backed Fairy-wren	O	N		
Malurus cyaneus	Superb Fairy-wren	OW	N		
Malurus leucopterus	White-winged Fairy-wren	OW	N		
Malurus splendens	Splendid Fairy-wren	OW	N		
Manorina flavigula	Yellow-throated Miner	OW	N		
Manorina melanocephala	Noisy Miner	OW	N		
Megalurus gramineus	Little Grassbird	W	N		
Melanodryas cucullata	Hooded Robin	O	N	V	
Melithreptus brevirostrus	Brown-headed Honeyeater	OW	N		
Merops ornatus	Rainbow Bee-eater	O	N		
Microeca flavigaster	Jacky Winter	OW	N		
Milvus migrans	Black Kite	O	N		
Mirafra javanica	Horsefield's Bushlark	OW	N		
Myiagra inquieta	Restless Flycatcher	OW	N		
Ninox novaeseelandiae	Southern Boobook	OW	N		
Northiella haematogaster	Blue Bonnet	OW	N		
Nycticorax caledonicus	Nankeen Night-Heron	O	N		
Nymphicus hollandicus	Cockatiel	OW	N		
Ocyphaps lophotes	Crested Pigeon	O	N		
Oreoica gutturalis	Crested Bellbird	OW	N		
Pachycephala inornata	Gilbert's Whistler	OW	N	V	
Pachycephala rufiventris	Rufous Whistler	OW	N		
Pardalotus punctatus	Spotted Pardalote	OW	N		
Pardalotus striatus	Striated Pardalote	OW	N		

SCIENTIFIC NAME	COMMON NAME	OBSERVATION TYPE	NATIVE (N) OR INTRODUCED (I)	BC ACT	EPBC ACT
*Passer domesticus**	House Sparrow*	O	I		
Pedionomus torquatus	Plains Wanderer	O	N	E1	CE
Pelecanus conspicillatus	Australian Pelican	O	N		
Petrochelidon nigricans	Tree Martin	O	N		
Petroica goodenovii	Red-capped Robin	O	N		
Phalacrocorax carbo	Great Cormorant	O	N		
Phalacrocorax melanoleucos	Little Pied Cormorant	O	N		
Phalacrocorax sulcirostris	Little Black Cormorant	O	N		
Phaps chalcoptera	Common Bronzewing	O	N		
Philemon citreogularis	Little Friarbird	OW	N		
Philemon corniculatus	Noisy Friarbird	OW	N		
Platalea flavipes	Yellow-billed Spoonbill	O	N		
Platalea regia	Royal Spoonbill	O	N		
Platycercus elegans	Crimson Rosella	OW	N		
Platycercus eximius	Eastern Rosella	OW	N		
Plectorhyncha lanceolata	Striped Honeyeater	OW	N		
Polytelis anthopeplus monarchoides	Regent Parrot (eastern subspecies)	OW	N	E1	V
Polytelis swainsonii	Superb Parrot	O	N	V	V
Pomatostomus ruficeps	Chestnut-crowned Babbler	O	N		
Pomatostomus superciliosus	White-browed Babbler	O	N		
Pomatostomus temporalis temporalis	Grey-crowned Babbler (eastern subspecies)	OW	N	V	
Porphyrio porphyrio	Purple Swamphen	OW	N		
Psephotus haematonotus	Red-rumped Parrot	OW	N		
Psephotus varius	Mulga Parrot	OW	N		
Rhipidura albiscapa	Grey Fantail	OW	N		
Rhipidura leucophrys	Willie Wagtail	OW	N		
Smicrornis brevirostris	Weebill	OW	N		
Stagonopleura guttata	Diamond Firetail	O	N	V	
Strepera versicolor	Grey Currawong	OW	N		

SCIENTIFIC NAME	COMMON NAME	OBSERVATION TYPE	NATIVE (N) OR INTRODUCED (I)	BC ACT	EPBC ACT
Struthidea cinerea	Apostlebird	OW	N		
*Sturnus vulgaris**	Common Starling*	O	I		
Tachybaptus novaehollandiae	Australasian Grebe	O	N		
Tadorna tadornoides	Australian Shelduck	O	N		
Taeniopygia bichenovii	Double-barred Finch	O	N		
Taeniopygia guttata	Zebra Finch	OW	N		
Threskiornis molucca	Australian White Ibis	O	N		
Threskiornis spinicollis	Australian Straw-necked Ibis	O	N		
Todiramphus sanctus	Sacred Kingfisher	O	N		
Tribonyx ventralis	Black-tailed Native-hen	O	N		
Trichoglossus haematodus	Rainbow Lorikeet	O	N		
Turdus merula	Common Blackbird	W	N		
Tyto alba	Barn Owl	O	N		
Vanellus miles	Masked Lapwing	OW	N		
Vanellus tricolor	Banded Lapwing	OW	N		
Zosterops lateralis	Silvereye	OW	N		
Mammals (25)					
*Bos taurus**	Cattle*	O	I		
*Capra hircus**	Goat*	O	I		
Chalinolobus morio	Chocolate Wattled Bat	T	N		
Chalinolobus gouldii	Gould's Wattled Bat	T	N		
*Lepus europaeus**	Brown Hare*	O	I		
Macropus fuliginosus	Western Grey Kangaroo	O	N		
Macropus giganteus	Eastern Grey Kangaroo	O	N		
Macropus rufus	Red Kangaroo	O	N		
*Mus musculus**	House Mouse*	T	I		
Myotis macropus	Southern Myotis	O	N	V	
Nyctophilus corbeni	Corben's Long-eared Bat	T	N	V	V
Nyctophilus geoffroyi	Lesser Long-eared Bat	T	N		
*Oryctolagus cuniculus**	Rabbit*	OP	I		

SCIENTIFIC NAME	COMMON NAME	OBSERVATION TYPE	NATIVE (N) OR INTRODUCED (I)	BC ACT	EPBC ACT
Ozimops petersi	Inland Free-tailed Bat	T	N		
Ozimops planiceps	South-eastern Free-tailed Bat	T	N		
Petaurus norfolcensis	Squirrel Glider	OT	N	V	
Pseudomys bolami	Bolam's Mouse	T	N	E1	
Scotorepens balstoni	Inland Broad-nosed Bat	T	N		
Scotorepens greyii	Little Broad-nosed Bat	T	N		
Sminthopsis crassicaudata	Fat-tailed Dunnart	O	N		
*Sus scrofa**	Pig*	O	I		
Vespadelus baverstocki	Inland Forest Bat	T	N	V	
Vespadelus regulus	Southern Forest Bat	T	N		
Vespadelus vulturnus	Little Forest Bat	T	N		
*Vulpes vulpes**	Fox*	O	I		

1. Observation Type, OW = Seen and Heard, O = Observed, T = Trapped, W = Heard, K = Dead, P = Scat, E = Nest
2. V = Vulnerable, E1 = Endangered under *Biodiversity Conservation Act 2016* (BC Act)
3. V = Vulnerable, Ma = Marine, M = Migratory under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)

* = Introduced

Appendix D

Matters of National Environmental Significance assessment

APPENDIX D-1
Commonwealth EPBC Act assessment of significance

D-1.1 Introduction

The *Matters of National Environmental Significance Significant Impact Guidelines 1.1 EPBC Act* (Significant Impact Guidelines) is designed to inform proponents who propose to undertake an action (development), to decide whether they should submit a referral to DoAWE. The purpose of the significant impact assessments is to inform an EPBC Referral to the Commonwealth Minister of Environment to assess the Project's eligibility as a controlled action under the EPBC Act. Under the EPBC Act an action will require approval from the Minister if the action has, will have, or is likely to have, a significant impact on an MNES.

Tests of significance have been conducted for threatened species, populations and communities that were recorded in the Proposal study area during field surveys or were identified as having a moderate or higher potential to occur in the Proposal study area based on the presence of habitat. Those EPBC Act listed species specifically noted in the SEARs have also been assessed. For threatened biodiversity listed under the EPBC Act, significance assessments have been completed following the Significant Impact Guidelines. The Significant Impact Guidelines state that a 'significant impact' is an impact which is important, notable, or of consequence, having regard to its context or intensity. Whether or not an action is likely to have a significant impact depends upon the sensitivity, value, and quality of the environment that is affected, and upon the intensity, duration, magnitude and geographic extent of the impacts. Importantly, for a significant impact to be likely, it is not necessary for a significant impact to have a greater than 50 per cent chance of happening; it is sufficient if a significant impact on the environment is a real or not remote chance or possibility. If there is scientific uncertainty about the impacts of an action and potential impacts are serious or irreversible, the precautionary principle is applicable.

The Significant Impact Guidelines provide definitions for specific terms used throughout the significant impact assessment criteria contained in the Significant Impact Guidelines as follows:

- population of a species
- important population
- habitat critical to the survival of a species or ecological community
- important habitat for migratory species
- ecologically significant proportion (migratory species)
- population of a migratory species
- invasive species.

These definitions are key considerations when conducting a significant impact assessment for threatened and migratory species listed under the EPBC Act. The definition for each is presented below.

D-1.1.1 Population of a species

A 'population of a species' is defined under the EPBC Act as an occurrence of the species in a particular area. In relation to critically endangered, endangered or vulnerable threatened species, occurrences include but are not limited to:

- a geographically distinct regional population, or collection of local populations, or
- a population, or collection of local populations, that occurs within a particular bioregion.

D-1.1.2 Important population

An '*important population*' is defined by the Significant Impact Guidelines as" a population that is necessary for a species' long-term survival and recovery. This may include populations identified as such in recovery plans, and/or that are:

- key source populations either for breeding or dispersal
- populations that are necessary for maintaining genetic diversity, and/or
- populations that are near the limit of the species range."

D-1.1.3 Habitat critical to the survival of a species or ecological community

'*Habitat critical to the survival of a species*' is defined by the Significant Impact Guidelines as habitat critical to the survival of a species or ecological community' refers to areas that are necessary:

- for activities such as foraging, breeding, roosting, or dispersal
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
- to maintain genetic diversity and long-term evolutionary development, or
- for the reintroduction of populations or recovery of the species or ecological community.

Such habitat may be, but is not limited to:

- habitat identified in a recovery plan for the species or ecological community as habitat critical for that species or ecological community; and/or
- habitat listed on the Register of Critical Habitat maintained by the minister under the EPBC Act.

Critical habitat can be further explained as an identified area of viable habitat that contains habitat attributes that are essential for the conservation of a threatened species. These areas are typically under a regime of special protection and management to ensure the critical habitat remains a stronghold for the species to ensure its long-term survival and viability in the wild. Critical habitat may also include an area of land not currently occupied by the species but can act as a sanctuary by possessing the necessary whole of life cycle habitat attributes to facilitate the recovery of a declining population of the species.

D-1.1.4 Important habitat for migratory species

An area of 'important habitat' for a migratory species is:

- habitat utilised by a migratory species occasionally or periodically within a region that supports an ecologically significant proportion of the population of the species, and/or
- habitat that is of critical importance to the species at particular life-cycle stages, and/or
- habitat utilised by a migratory species which is at the limit of the species range, and/or
- habitat within an area where the species is declining.

D-1.1.5 Ecologically significant proportion (migratory species)

Listed migratory species cover a broad range of species with different life cycles and population sizes. Therefore, what is an 'ecologically significant proportion' of the population varies with the species (each circumstance will need to be evaluated). Some factors that should be considered include the species' population status, genetic distinctiveness and species-specific behavioural patterns (for example, site fidelity and dispersal rates).

D-1.1.6 Population of a migratory species

'Population', in relation to migratory species, means the entire population or any geographically separate part of the population of any species or lower taxon of wild animals, a significant proportion of whose members cyclically and predictably cross one or more national jurisdictional boundaries including Australia.

D-1.1.7 Invasive species

An *'invasive species'* is an introduced species, including an introduced (translocated) native species, which out-competes native species for space and resources or which is a predator of native species. Introducing an invasive species into an area may result in that species becoming established. An invasive species may harm listed threatened species or ecological communities by direct competition, modification of habitat or predation.

D-1.1.8 Threatened ecological communities subject to assessment

Seven threatened ecological communities listed under the EPBC Act were recorded during field surveys within the Proposal study area. These include:

- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland – Critically Endangered
- Natural Grasslands of the Murray Valley Plains – Critically Endangered
- Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains – Critically Endangered
- Plains mallee box woodland of the Murray Darling Depression, Riverina and Naracoorte Coastal Plains bioregions - Critically Endangered
- Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions - Endangered
- Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia – Endangered
- Weeping Myall Woodlands – Endangered.

Details of the scope, timing and methodology of the targeted surveys used for EPBC Act listed threatened ecological communities and how they are consistent with (or justification for divergence from) published Australian Government guidelines and policy statements is provided during further analysis below – refer to section D-1.2.

D-1.1.9 Threatened flora species subject to assessment

Appendix A of the SEARs outlines an initial list of EPBC Act listed threatened flora species likely to be impacted by the action. Combined with database searches (BioNet, BAM-C and PMST), there is predicted habitat or identified known habitat within the Proposal study area for 36 threatened flora species listed under the EPBC Act (refer to Appendix C-1). Of these, 20 have been identified to have a moderate likelihood of occurrence and were the subject of targeted surveys. Appendix C-1 provides a description of the habitat requirements for each EPBC Act listed species. Due to the scale of this Proposal, only species recorded within the Proposal study area have been assessed for significance. A total of four EPBC listed flora species were recorded and are discussed below.

Details of the scope, timing and methodology of the targeted surveys used for EPBC Act listed threatened flora species and how they are consistent with (or justification for divergence from) published Australian Government guidelines and policy statements is provided in Section 5.2.2).

Of the EPBC Act listed threatened flora species that were identified to have a moderate likelihood of occurrence and were the subject of targeted surveys, the following three species were recorded during the targeted surveys that were completed for the Proposal in 2020 and 2021:

- *Brachyscome papillosa* (Mossgiel Daisy) – Vulnerable
- *Lepidium monoplocoides* (Winged Peppercress) – Endangered
- *Maireana cheelii* (Chariot Wheels) – Vulnerable
- *Swainsona murrayana* (Slender Darling Pea) – Vulnerable.

Significance assessments for these species has been completed following the Significant Impact Guidelines.

D-1.1.10 Threatened fauna species subject to assessment

Appendix A of the SEARs outlines the original list of EPBC Act listed threatened fauna species likely to be impacted by the action. Combined with database searches (BioNet, BAM-C and PMST), there is predicted habitat or identified known habitat within the Proposal study area for 43 threatened fauna species listed under the EPBC Act, 33 of which have been identified to have a moderate likelihood of occurrence or higher. There is also impact on 19 migratory species, 17 with moderate likelihood of occurrence of higher) listed under the EPBC Act (5 of these have additional threat status under the EPBC Act) (refer to Appendix C-2). Appendix C-2 provides a description of the habitat requirements for each EPBC Act listed species, and the reasoning for inclusion and exclusion of EPBC Act listed species in this assessment.

Details of the scope, timing and methodology of the targeted surveys used for EPBC Act listed threatened fauna species and how they are consistent with (or justification for divergence from) published Australian Government guidelines and policy statements is provided in Section 5.5.3.

The EPBC Act listed threatened fauna species that were identified to have a moderate or higher likelihood of occurrence and were the subject of targeted surveys are outlined in Table D-1.1. Significance assessments for these species have been completed following the *Matters of National Environmental Significance - Significant Impact Guidelines 1.1* (Department of the Environment Water Heritage and the Arts 2013).

Table D-1.1 Listed EPBC Act threatened fauna species considered for assessment

SCIENTIFIC NAME	COMMON NAME	EPBC ACT	DIRECT IMPACT (HA) (INCLUDING BOTH POTENTIAL FORAGING AND BREEDING HABITAT)	SIGNIFICANT IMPACT?
Invertebrates				
Synemon plana	Golden Sun Moth	CE	3.49	Suitable habitat recorded in the form of PCT 277 in the NSW South Western Slopes (Inland Slopes subregion) IBRA bioregion. No - the Proposal is considered unlikely to have a significant impact on the species
Amphibians				
Crinia sloanei	Sloane's Froglet	E	42.42	Suitable habitat recorded in the form of PCT 5, 74, 76, 80 & 249. Surveys completed – species not recorded. No - the Proposal is considered unlikely to have a significant impact on the species
Litoria booroolongensis	Booroolong Frog	E	3.49	Suitable habitat recorded in the form of PCT 277. No - the Proposal is considered unlikely to have a significant impact on the species
Litoria raniformis	Southern Bell Frog	V	47.5	Suitable habitat recorded in the form of PCT 7, 8, 11, 13, 17, 24, 53 & 249 No - the Proposal is considered unlikely to have a significant impact on the species

SCIENTIFIC NAME	COMMON NAME	EPBC ACT	DIRECT IMPACT (HA) (INCLUDING BOTH POTENTIAL FORAGING AND BREEDING HABITAT)	SIGNIFICANT IMPACT?
Reptiles				
Aprasia parapulchella	Pink-tailed Worm Lizard	V	3.75	Suitable habitat recorded in the form of PCT 267, 277 & 319. No - the Proposal is considered unlikely to have a significant impact on the species
Delma impar	Striped Legless Lizard	V	3.49	Suitable habitat recorded in the form of PCT 277. No - the Proposal is considered unlikely to have a significant impact on the species
Bird				
Anthochaera phrygia	Regent Honeyeater	CE	69.87	Suitable habitat recorded in the form of PCT 5, 7, 74, 75, 267, 277 & 319. No - the Proposal is considered unlikely to have a significant impact on the species
Botaurus poiciloptilus	Australasian Bittern	E	94.18	Suitable habitat recorded in the form of PCT 8, 11, 13, 17, 24, 53, 160, 182 & 249. No - the Proposal is considered unlikely to have a significant impact on the species
Calidris ferruginea	Curlew Sandpiper	CE	16.97	Suitable habitat in the form of Lake Cullivel recorded with the Proposal area, including PCT 24, 47 & 53. No - the Proposal is considered unlikely to have a significant impact on the species
Falco hypoleucos	Grey Falcon	V	1482.34	Suitable habitat recorded in the form of PCT 8, 11, 13, 15, 17, 22, 23, 24, 26, 28, 44, 45, 46, 47, 53, 58, 76, 80, 143, 157, 160, 163, 164, 166, 170, 171, 172, 182, 199, 216 & 249. No - the Proposal is considered unlikely to have a significant impact on the species
Grantiella picta	Painted Honeyeater	V	642.97	Suitable habitat recorded in the form of PCT 5, 7, 8, 11, 13, 15, 23, 26, 28, 58, 74, 75, 76, 80, 110, 143, 249, 267, 277 & 319. No - the Proposal is considered unlikely to have a significant impact on the species

SCIENTIFIC NAME	COMMON NAME	EPBC ACT	DIRECT IMPACT (HA) (INCLUDING BOTH POTENTIAL FORAGING AND BREEDING HABITAT)	SIGNIFICANT IMPACT?
Hirundapus caudacutus	White-throated Needletail	V	709.58	Suitable habitat recorded in the form of PCT 5, 7, 8, 11, 13, 15, 17, 24, 26, 44, 45, 46, 47, 53, 74, 76, 80, 110, 157, 160, 182, 216, 249, 277, 319. No - the Proposal is considered unlikely to have a significant impact on the species
Lathamus discolor	Swift Parrot	CE	95.57	Suitable habitat recorded in the form of PCT 5, 7, 8, 11, 74, 75, 76, 80, 110, 249, 267 & 277Disturbance area. No - the Proposal is considered unlikely to have a significant impact on the species
Leipoa ocellata	Malleefowl	V	232.6	Suitable habitat recorded in the form of PCT 110, 170, 171 & 172. No - the Proposal is considered unlikely to have a significant impact on the species
Limosa lapponica-baueri	Bar-tailed Godwit (baueri), Western Alaskan Bar-tailed Godwit	V	tbc	Species considered likely to cross above the powerline during migration. No - the Proposal is considered unlikely to have a significant impact on the species
Manorina melanotis	Black-eared Miner	E	389.35	Suitable habitat recorded in the form of PCT 170, 171 & 172. In NSW the Black-eared Miner is limited to a few small groups in the Tarawari/Scotia region in the states far central west against the South Australian border. The species is not present in Mallee Cliffs National Park to the north of the Proposal area and the quality of mallee habitats associated with the Proposal area is currently incapable of supporting this species, due to; the ready availability of water supporting the Yellow-throated Miner; the poor quality of mallee habitats from a long history of degradation by agricultural land-use, particularly grazing, which has eroded structural complexity and plant diversity from the understories of these habitats. No - the Proposal is considered unlikely to have a significant impact on the species

SCIENTIFIC NAME	COMMON NAME	EPBC ACT	DIRECT IMPACT (HA) (INCLUDING BOTH POTENTIAL FORAGING AND BREEDING HABITAT)	SIGNIFICANT IMPACT?
Pachycephala rufogularis	Red-lored Whistler	V	89.78	Suitable habitat recorded in the form of PCT 171 & 172. No - the Proposal is considered unlikely to have a significant impact on the species
Pedionomus torquatus	Plains-wanderer	CE	113.41	Suitable habitat recorded in the form of PCT 44 & 46. Three birds recorded at Bundure Siding TSR. Preferred habitat identified within the Proposal study area. No - the Proposal is considered unlikely to have a significant impact on the species
Polytelis anthopeplus monarchoides	Regent Parrot (eastern subspecies)	V	537.87	Suitable habitat recorded in the form of PCT 5, 7, 11, 13, 23, 26, 45, 46, 74, 75, 76, 80, 267 & 277. Recorded at several locations within the Proposal study area. Indicative disturbance footprint will remove both foraging and breeding habitat. No - the Proposal is considered unlikely to have a significant impact on the species
Polytelis swainsonii	Superb Parrot	V	tbc	Species considered likely to cross above the powerline during migration. No - the Proposal is considered unlikely to have a significant impact on the species
Rostratula australis	Australian Painted Snipe	E	96.41	Suitable habitat recorded in the form of PCT 5, 7, 8, 11, 13, 17, 24, 47, 53, 160, 182 & 249. Suitable habitat in the form of ephemeral wetlands identified within the Proposal study area. No - the Proposal is considered unlikely to have a significant impact on the species

SCIENTIFIC NAME	COMMON NAME	EPBC ACT	DIRECT IMPACT (HA) (INCLUDING BOTH POTENTIAL FORAGING AND BREEDING HABITAT)	SIGNIFICANT IMPACT?
Stipiturus mallee	Mallee Emu-wren	E	344.04	Suitable habitat recorded in the form of PCT 170 & 171 Identified in the SEARs as a matter that needs further consideration. This species is no longer listed as threatened in NSW as the NSW Scientific Committee have recently reassessed that the species no longer exists in NSW. No - the Proposal is considered unlikely to have a significant impact on the species
Mammals				
Chalinolobus dwyeri	Large-eared Pied Bat	V	3.75	Suitable habitat recorded in the form of PCT 267 & 277 Scattered records within the locality and predicted habitat within many Inland Slopes PCTs No - the Proposal is considered unlikely to have a significant impact on the species
Dasyurus maculatus maculatus	Spotted-Tailed Quoll (southern subspecies)	E	20.99	Suitable habitat recorded in the form of PCT 5, 110, 249, 267 & 277. Proposal occurs within know species distribution, however, lack of potential habitat identified within the Proposal study area. No - the Proposal is considered unlikely to have a significant impact on the species
Nyctophilus corbeni	Corben's Long-eared Bat	V	633.56	Suitable habitat recorded in the form of PCT 22, 23, 28, 58, 75, 80, 110, 170, 171, 172, 199, 249 & 267. Recorded during field surveys. No - the Proposal is considered unlikely to have a significant impact on the species

SCIENTIFIC NAME	COMMON NAME	EPBC ACT	DIRECT IMPACT (HA) (INCLUDING BOTH POTENTIAL FORAGING AND BREEDING HABITAT)	SIGNIFICANT IMPACT?
Petauroides volans	Greater Glider	V	nil	Identified in the SEARs as a matter that needs further consideration. This species is not listed as threatened in NSW and SPRAT mapping for the species falls well to the east of Wagga Wagga. Habitat within the study area has long expired in its ability to support this species. No - the Proposal is considered unlikely to have a significant impact on the species
Phascolarctos cinereus	Koala	V	137.12	Suitable habitat recorded in the form of PCT 5, 7, 8, 11, 13, 15, 74, 75, 76, 80, 110, 249, 267 & 277. Predicted habitat identified in multiple PCTs within the Murrumbidgee, Lower Slopes and Inland Slopes subregion. No - the Proposal is considered unlikely to have a significant impact on the species
Pteropus poliocephalus	Grey-headed Flying-fox	V	10.04	Suitable habitat recorded in the form of PCT 5, 76 & 267. Scattered records and known roosting sites within the locality. No - the Proposal is considered unlikely to have a significant impact on the species
Fish				
Bidyanus bidyanus	Silver Perch	CE	nil	Records within the locality. Potential habitat in the form of the Murrumbidgee River identified within the Proposal study area. However, due to the nature of powerline construction the Proposal is unlikely to impact this species (i.e. powerline will span the river). No - the Proposal is considered unlikely to have a significant impact on the species

SCIENTIFIC NAME	COMMON NAME	EPBC ACT	DIRECT IMPACT (HA) (INCLUDING BOTH POTENTIAL FORAGING AND BREEDING HABITAT)	SIGNIFICANT IMPACT?
Craterocephalus fluviatilis	Murray Hardyhead	CE	nil	Potential habitat in the form of slow flowing lowland rivers (i.e. the Murrumbidgee River) identified within the Proposal study area. However, due to the nature of powerline construction the Proposal is unlikely to impact this species (i.e. powerline will span the river). No - the Proposal is considered unlikely to have a significant impact on the species
Galaxias rostratus	Flathead Galaxias	CE	nil	Potential habitat in the form of small streams, lakes, billabongs and backwaters identified within the Proposal study area. No - the Proposal is considered unlikely to have a significant impact on the species
Maccullochella peelii	Murray Cod	V	nil	Proposal study area within the known range of this species. Potential habitat identified. No - the Proposal is considered unlikely to have a significant impact on the species
Macquaria australasica	Macquarie Perch	E	nil	Species may occur. Preferred habitat (i.e. clear water and deep, rocky holes with lots of cover) not identified within the Proposal study area. No - the Proposal is considered unlikely to have a significant impact on the species

(1) Threat status under the EPBC Act: V = vulnerable, E = endangered, CE = critically endangered

D-1.1.11 Threatened aquatic species subject to assessment

The following EPBC Act listed threatened aquatic species have been considered to have moderate likelihood of occurrence:

- Murray Hardyhead (*Craterocephalus fluviatilis*) – listed as Endangered under EPBC Act
- Murray Cod (*Maccullochella peelii*) – listed as vulnerable under EPBC Act
- Silver Perch (*Bidyanus bidyanus*) – listed as Critically Endangered under EPBC Act.
- Flathead Galaxias (*Galaxias rostratus*) listed as Critically Endangered under the EPBC Act.
- Macquarie Perch *(Macquaria australasica*) listed as Endangered under the EPBC Act.

Within the Proposal study area threatened aquatic habitat occurs in the form of fresh and saline wetlands, rivers and creeks that contain mapped key fish habitats (Strahler 4/5th Order streams) and other open water bodies such as agricultural dams, irrigation canals, road table drains and low depressions that periodical pond water. Areas of mapped key fish habitat have been considered to provide moderate likelihood of occurrence for the three threatened fish species listed under the EPBC Act. However, impacts from the Proposal on aquatic habitats, particularly mapped key fish habitats (Strahler 4/5th Order streams) are considered likely to be negligible. Avoiding and minimising impacts on

aquatic habitats would be a priority of detailed design and any residual indirect impacts will be subject to mitigation measures.

The maximum aquatic impact likely to occur to any of the key fish habitat would be the removal or trimming of tree canopy on riverbanks to facilitate the construction and operation of the powerlines spanning each riparian area. All trunk bases and understorey would be retained in-situ adjoining the riverbanks. All potential erosion and sedimentation impacts would be managed and monitored to ensure that these do not impact the riparian areas. At most, any impact to water quality would be temporary and negligible. Each riparian area would continue to function as it currently functions. Nevertheless, significance assessments for these five threatened aquatic species have been completed following the Significant Impact Guidelines.

D-1.1.12 Migratory species subject to assessment

Based on the results of the database searches, 19 listed migratory species may occur in the broader locality (refer to Appendix D-2). The following EPBC Act listed Migratory species are considered moderately likely to occur in, or adjacent to, the Proposal study area based on the presence of suitable habitats:

Table D-1.2 Migratory species subject to assessment

MIGRATORY SPECIES		EPBC ACT	DIRECT IMPACT (HA)	SIGNIFICANT IMPACT?
Scientific name	**Common name**			
Actitis hypoleucos	Common Sandpiper	M	tbc	Suitable habitats in the form of freshwater wetlands identified within the Proposal study area. No - the Proposal is considered unlikely to have a significant impact on the species
Apus pacificus	Fork-tailed Swift	M	tbc	The Proposal area may represent an increase in powerline strike for this species. No - the Proposal is considered unlikely to have a significant impact on the species
Calidris acuminata	Sharp-tailed Sandpiper	M	tbc	Suitable habitat in the form of Lake Cullivel recorded with the Proposal area. The Proposal area may represent an increased powerline collision risk. No - the Proposal is considered unlikely to have a significant impact on the species
Calidris ferruginea	Curlew Sandpiper	CE, M	16.97	Suitable habitat in the form of Lake Cullivel recorded with the Proposal area. The Proposal area may represent an increased powerline collision risk. No - the Proposal is considered unlikely to have a significant impact on the species
Gallinago harwickii	Latham's Snipe	M	tbc	Suitable habitat in the form of intermittent wetlands recorded across the Proposal study area. No - the Proposal is considered unlikely to have a significant impact on the species

MIGRATORY SPECIES		EPBC ACT	DIRECT IMPACT (HA)	SIGNIFICANT IMPACT?
Scientific name	**Common name**			
Grantiella picta	Painted Honeyeater	V, M	642.97	Records within the locality and suitable habitat found within the Proposal study area. No - the Proposal is considered unlikely to have a significant impact on the species
Hirundapus caudacutus	White-throated Needletail	V, M	709.58	Potential foraging habitat occurs over the Proposal study area. No - the Proposal is considered unlikely to have a significant impact on the species
Leipoa ocellata	Malleefowl	V, M	232.6	Abundance of records scatted throughout the locality. Suitable habitat identified onsite. No - the Proposal is considered unlikely to have a significant impact on the species
Limosa lapponica	Bar-tailed Godwit	M	tbc	The Proposal area may represent an increased powerline collision risk for the species. No - the Proposal is considered unlikely to have a significant impact on the species
Limosa lapponica baueri	Bar-tailed Godwit (baueri), Western Alaskan Bar-tailed Godwit	V, M	tbc	The Proposal area may represent an increased powerline collision risk for the species. No - the Proposal is considered unlikely to have a significant impact on the species
Limosa limosa	Black-tailed Godwit	M	tbc	The Proposal area may represent an increased powerline collision risk for the species. No - the Proposal is considered unlikely to have a significant impact on the species
Tringa nebularia	Common Greenshank	M	tbc	The Proposal area may represent an increased powerline collision risk for the species. No - the Proposal is considered unlikely to have a significant impact on the species

Significance assessments for these listed Migratory species have been completed following the Significant Impact Guidelines.

D-1.2 Significance assessments

D-1.2.1 White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland

The White Box Yellow Box Blakely's Red Gum Woodland (*Box Gum Woodland*) ecological community is listed Critically Endangered under EPBC Act and Endangered under the BC Act.

D-1.2.1.1 Description

Box Gum Woodland is characterised by a species-rich understorey of native tussock grasses, herbs and scattered shrubs, and the dominance, or prior dominance, of White Box (*Eucalyptus albens*), Yellow Box (*Eucalyptus* melliodora) and Blakely's Red Gum (*Eucalyptus blakelyi*). Tree-cover is generally discontinuous and consists of widely-spaced trees of medium height.

In its pre-1750 state, this ecological community was characterised by:

- a ground layer dominated by tussock grasses
- an overstorey dominated or co-dominated by White Box, Yellow Box or Blakely's Red Gum, or Grey Box in the Nandewar bioregion
- a sparse or patchy shrub layer.

The Australian Government listing of White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland is slightly different to the NSW listing. Areas that are part of the Australian Government listed ecological community must have either:

- an intact tree layer and predominately native ground layer; or
- an intact native ground layer with a high diversity of native plant species but no remaining tree layer.
- *Box Gum Woodland* occurs along the western slopes and tablelands of the Great Dividing Range from southern Queensland through New South Wales and the Australian Capital Territory to Victoria.

Due to the ecological community's occurrence on fertile soils it has been extensively cleared for agriculture and intact remnants, including both trees and unmodified understory, are now extremely rare. Clearing and fragmentation for urban, rural residential, agricultural and infrastructure development remain on-going threats to this ecological community, while degradation resulting from inappropriate management and weed invasion by introduced perennial grasses continues to erode the conservation value of remnant areas.

D-1.2.1.2 Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- The SPRAT database indicates that the extent of this ecological community was included with the Grassy White Box Woodlands ecological community and information on the previously listed ecological community is provided in its Listing Advice (Endangered Species Scientific Subcommittee 2000)
- The "White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland National Recovery Plan" (2010) was developed by New South Wales Department of Environment, Climate Change and Water. Key objectives in this plan include:
  - increasing protection of sites in good condition
  - increasing landscape function of the ecological community through management and restoration of degraded sites
  - increasing transitional areas around remnants and linkages between remnants; and

- bringing about enduring changes in participating land manager attitudes and behaviours towards environmental protection and sustainable land management practices to increase extent, integrity and function of Box-Gum Grassy Woodland.

D-1.2.1.3 Specific impacts

The following vegetation types recorded within the study area were considered consistent with the EPBC Act *Box Gum Woodland* listing based on condition criteria:

- PCT 74 – Yellow Box – River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion
- PCT 75 – Yellow Box – White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion
- PCT 267 – White Box – White Cypress Pine – Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion
- PCT 277 Blakely's Red Gum – Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion

Based on these assessments, the proposed action is estimated to impact upon of 35.45 ha of the *Box Gum Woodland*.

D-1.2.1.4 Significant impact criteria

An action is likely to have a significant impact on a Critically Endangered ecological community if there is a real chance or possibility that it will:

- **REDUCE THE EXTENT OF AN ECOLOGICAL COMMUNITY.**

The proposed action would result in a reduction of the extent of the *Box Gum Woodland*. Approximately 35.45 ha of this community would be impacted by the proposed action. These potential impacts are considered to reduce the extent of the community within study area, as well as reduce the extent of the community within the region.

- **FRAGMENT OR INCREASE FRAGMENTATION OF AN ECOLOGICAL COMMUNITY, FOR EXAMPLE BY CLEARING VEGETATION FOR ROADS OR TRANSMISSION LINES.**

The proposed action would require the removal and /or disturbance to 35.45 ha *Box-Gum Woodland* within areas of existing disturbance. This community generally occurs within a fragmented landscape, by other impacts such as agriculture. The proposed action would increase fragmentation of *Box-Gum Woodland* marginally within the area.

- **ADVERSELY AFFECT HABITAT CRITICAL TO THE SURVIVAL OF AN ECOLOGICAL COMMUNITY**

Box-Gum Woodlands recorded within the survey area occur as highly fragmented patches with a variety of condition types. "White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland National Recovery Plan" (2010) notes that "*given the currently highly fragmented and degraded state of this ecological community, all areas of Box-Gum Grassy Woodland which meet the minimum condition criteria outlined in Section 3 should be considered critical to the survival of this ecological community"*.

Based on the recovery plan for this community, all areas that have been assigned are likely to be habitat critical for the community.

- **MODIFY OR DESTROY ABIOTIC (NON-LIVING) FACTORS (SUCH AS WATER, NUTRIENTS, OR SOIL) NECESSARY FOR AN ECOLOGICAL COMMUNITY'S SURVIVAL, INCLUDING REDUCTION OF GROUNDWATER LEVELS, OR SUBSTANTIAL ALTERATION OF SURFACE WATER DRAINAGE PATTERNS.**

Any large-scale excavation that occurs in close proximity to the community or to marginal patches would involve mitigation measures to minimise sedimentation and hydrological impacts. Therefore, the proposed action is considered unlikely to substantially modify or destroy these abiotic factors.

- **CAUSE A SUBSTANTIAL CHANGE IN THE SPECIES COMPOSITION OF AN OCCURRENCE OF AN ECOLOGICAL COMMUNITY, INCLUDING CAUSING A DECLINE OR LOSS OF FUNCTIONALLY IMPORTANT SPECIES, FOR EXAMPLE THROUGH REGULAR BURNING OR FLORA OR FAUNA HARVESTING.**

The proposed action would require the removal and/or disturbance to 35.45 ha *Box-Gum Woodland* within areas of existing disturbance. Additionally, the community generally occurs in a highly modified condition as a result of existing disturbance practices in the area. This has resulted in the modification of the communities structurally integrity i.e. absence of one or more strata.

Therefore, the proposed action is considered unlikely to substantially change the species composition of an occurrence of this community.

- **WILL THE ACTION CAUSE A SUBSTANTIAL REDUCTION IN THE QUALITY OR INTEGRITY OF AN OCCURRENCE OF AN ECOLOGICAL COMMUNITY, INCLUDING, BUT NOT LIMITED TO:**
  - **assisting invasive species, that are harmful to the listed ecological community, to become established**
  - **causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit the growth of species in the ecological community.**

Box-Gum Woodlands within the Proposal area are currently subject to weed and pest invasion. Additionally, the majority of the proposed action occurs within previously disturbed land. Therefore, it is considered unlikely that the proposed action would substantially reduce the quality or integrity of the community's occurrence or significantly increase the spread of invasive species.

Additionally, mitigation measures recommended in the BDAR, such as weed and pest management plans, vegetation clearing protocols, installation vehicle wash stations and sediment and control measures, to minimise the likelihood of spread of weeds or pathogens into the site. These mitigation measures would aid in reducing potential impacts associated with the proposed action that may otherwise result in the further reduction of the community's quality.

- **INTERFERE WITH THE RECOVERY OF AN ECOLOGICAL COMMUNITY**

A national recovery plan was written for *Box Gum Woodlands* by the NSW Department of Environment, Climate Change and Water in 2010 and was adopted by the Commonwealth in 2013. The following are the objectives of the National Recovery Plan:

- achieving no net loss in extent and condition of the ecological community throughout is geographic distribution
- increasing protection of sites with high recovery potential
- increasing landscape functionality of the ecological community through management and restoration of degraded sites
- increase transitional areas around remnants and linkages between remnants; and
- bringing about enduring changes in participating land manager attitudes and behaviours towards environmental protection and sustainable land management practices to increase extent, integrity and function of Box Gum Woodlands.

The proposed action is likely to remove 35.45 ha of this community, which is likely to interfere with the recovery of Box Gum Woodlands at a sub-regional level.

- **CONCLUSION**

Approximately 35.45 ha of the EPBC listed ecological community would be removed. The proposed action would result in a reduction of the extent of the *Box-Gum Woodlands* within the Proposal study area, the majority of which is considered habitat critical to the survival of this community. The proposed action would interfere with the recovery of this community and has the potential to increase fragmentation of *Box-Gum Woodland* marginally within the area.

For these reasons, the proposed action is **likely to have a significant impact** on this community at a local scale.

D-1.2.1.5 NSW Assessment Bilateral requirements

For each of the EPBC Act listed threatened species and communities and migratory species likely to be impacted by the action the EIS must provide a separate:

- **DESCRIPTION OF THE HABITAT (INCLUDING IDENTIFICATION AND MAPPING OF SUITABLE BREEDING HABITAT, SUITABLE FORAGING HABITAT, IMPORTANT POPULATIONS AND HABITAT CRITICAL FOR SURVIVAL), WITH CONSIDERATION OF, AND REFERENCE TO, ANY RELEVANT COMMONWEALTH GUIDELINES AND POLICY STATEMENTS INCLUDING LISTING ADVICE, CONSERVATION ADVICE AND RECOVERY PLAN**

A description of habitat for this community, important populations, habitat critical for survival and relevant Commonwealth documents are provided in Section D-1.2.1.1, with a map showing its modelled distribution provided in Figure D-1.1.



Figure D-1.1 Current distribution map for Box-Gum Grassy Woodland (DEACCW 2010)

The "White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland National Recovery Plan" (DEACCW 2010) is the key recovery plan for this community. This Plan notes that all areas of *Box-Gum Grassy Woodland* which meet minimum condition criteria should be considered critical to the survival of this ecological community.

The habitat map showing the location of this vegetation is provided in Appendix D-2.

- **DETAILS OF THE SCOPE, TIMING AND METHODOLOGY FOR STUDIES OR SURVEYS USED AND HOW THEY ARE CONSISTENT WITH (OR JUSTIFICATION FOR DIVERGENCE FROM) PUBLISHED AUSTRALIAN GOVERNMENT GUIDELINES AND POLICY STATEMENTS**

Survey guidelines for *Box-Gum Grassy Woodland* are provided in the recovery plan for this community (DEACCW 2010 and field data was used to assign condition classes for any given observed patch. The field survey techniques used to undertake surveys were also in general accordance with the *NSW guide for the BAM* (Department of Planning, Industry and Environment, 2020) with a detailed field verification method provided in Section 3.7 of the BDAR.

Native vegetation survey methods were undertaken within the study area during the following dates:

- 24–26 May 2019
- 10-18 February 2020
- 19-20 March 2020
- 4-10 September 2020
- 20-28 October 2020
- 23-31 March 2021
- 8-15 April 2021
- 7-8 June 2021
- 5-16 August 2021
- 7 -16 September 2021
- 30 October – 1 November 2021

Mapping of native vegetation extent within the Proposal site is required under section 4.1 of the BAM with detailed requirements outlined in section 3.2 of the BAM 2020 Operational Manual.

In determining native vegetation extent within the Proposal study area the following method was employed:

1. Preliminary mapping of vegetation community boundaries was undertaken through analysis of existing vegetation mapping and aerial photograph interpretation.
2. Vegetation within the Proposal study area and locality has been mapped at the regional scale in:
    a. State Vegetation Type Map: Riverina Region Version v1.2 – VIS_ID 4469 (OEH 2016d)
3. Field verified vegetation mapping was undertaken by WSP during the as part of the BDAR.

- **DESCRIPTION OF THE SPECIFIC IMPACTS AND ITS REGARD TO THE FULL NATIONAL EXTENT OF THE SPECIES OR COMMUNITY'S RANGE**

The direct impacts of the Proposal on *Box-Gum Grassy Woodland* include removal of approximately 35.45 ha of habitat. The area of potential impact for *Box-Gum Grassy Woodland*. is mapped in Appendix D-2. Figure D-1.1 shows the current known generalised distribution based on recovery plan mapping, with 416,326 ha of current extent estimated (DEACCW 2010).

- **DESCRIPTION OF THE SPECIFIC PROPOSED AVOIDANCE AND MITIGATION MEASURES TO DEAL WITH RELEVANT IMPACTS OF THE ACTION**

The proposed avoidance and mitigation measures are outlined in Section 8 & 10 of the BDAR. Detailed avoidance description for impacts relating to biodiversity values (including threatened species) are outlined in Section 8. Regarding specific measures for *this community*, the following relevant mitigation measures are recommended for any related residual impacts to the species:

- positioning of the Proposal area to minimise clearance of this community
- establishment of no-go zones to protect mapped patches of habitat during construction.

- **IDENTIFICATION OF SIGNIFICANT RESIDUAL ADVERSE IMPACTS LIKELY TO OCCUR AFTER THE PROPOSED ACTIVITIES TO AVOID AND MITIGATE ALL IMPACTS ARE TAKEN INTO ACCOUNT**

The residual impact to *Box-Gum Grassy Woodland is* estimated at 35.45 ha of habitat removal.

- **A DESCRIPTION OF ANY OFFSETS PROPOSED TO ADDRESS RESIDUAL ADVERSE SIGNIFICANT IMPACTS AND HOW THESE OFFSETS WILL BE ESTABLISHED**

Details of offset requirements and obligations for this species as a result of residual impacts due the proposed action is addressed in Section 12 of the BDAR.

- **DETAILS OF HOW THE CURRENT PUBLISHED NSW BIODIVERSITY ASSESSMENT METHOD (BAM) HAS BEEN APPLIED IN ACCORDANCE WITH THE OBJECTS OF THE EPBC ACT TO OFFSET SIGNIFICANT RESIDUAL ADVERSE IMPACTS**

The BDAR specifically addresses Section 11 of the BAM and provides information on the application of the no net loss standard and the Proposal biodiversity offset obligations.

- **DETAILS OF THE OFFSET PACKAGE TO COMPENSATE FOR SIGNIFICANT RESIDUAL IMPACTS INCLUDING DETAILS OF THE CREDIT PROFILES REQUIRED TO OFFSET THE ACTION IN ACCORDANCE WITH THE BAM AND/OR MAPPING AND DESCRIPTIONS OF THE EXTENT AND CONDITION OF THE RELEVANT HABITAT AND/OR THREATENED COMMUNITIES OCCURRING ON PROPOSED OFFSET SITES**

Section 12.5 of the BDAR outlines the biodiversity offset strategy for the proposal. The offset obligations will be met through implementing a combination of the following offset delivery options, being:

- the purchase and retirement of existing biodiversity credits currently available on the biodiversity credit register
- establishing a biodiversity stewardship site(s) on lands with like for like biodiversity values to those impacted by the proposal
- through making a payment into the Biodiversity Conservation Fund.

D-1.2.2 Natural Grasslands of the Murray Valley Plains

Natural Grasslands of the Murray Valley Plains is listed as a Critically Endangered Ecological Community under the EPBC Act.

D-1.2.2.1 Description

The *Natural Grasslands of the Murray Valley Plains* ecological community occurs predominately across the southern parts of the Riverina bioregion and extends into parts of the Murray Darling Depression and NSW South-Western Slopes bioregions. This landscape consists of a mosaic of woodlands interspersed with grasslands, wherever soil textures are heavier and less well-drained, and ephemeral or seasonal wetlands on depressions and drainage lines (DSE, 2010).

The community is characterised by:

- Grey self-mulching (cracking) clays are widespread and can occur in association with minor occurrences of red and brown cracking clays (DSEWPC 2012)
- Usually occur on level to gently undulating gilgai plains (DSEWPC 2012)
- Most occurrences of the Natural Grasslands of the Murray Valley Plains ecological community are associated with Quaternary alluvial sediments (including the Shepparton formation), consisting of calcareous clay loams and clays on wetter sites, including self-mulching (cracking) clays (DSE, 2010)
- Dominance of perennial tussock grasses, a lack of woody plants and the presence of broad-leaved herbs in the inter-tussock spaces. This ecological community may also be dominated or co-dominated by a range of forb species depending on seasonal conditions and management history. Hence, the ecological community ranges from open to closed tussock grassland dominated by one or more of *Rytidosperma spp.* (wallaby-grasses), *Austrostipa spp.* (spear-grasses) and *Enteropogon ramosus* or *E. acicularis* (curly windmill grass, spider grass). In areas where grasses are sparse it may be a herbland / forbland (DSEWPC 2012).

D-1.2.2.2 Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- Conservation Advice for this ecological community (DSEWPC 2012) provides a description and survey methods for this community
- Listing Advice on Natural Grasslands of the Murray Valley Plains (DSEWPC 2012) is available on the SPRAT database. In effect under the EPBC Act from 08-Sep-2012
- There is no adopted or made Recovery Plan for this ecological community
- No Threat Abatement Plan has been identified as being relevant for this ecological community.

D-1.2.2.3 Specific impacts

The following vegetation types recorded within the study area were considered consistent with the EPBC Act *Natural Grasslands of the Murray Valley Plains* listing based on condition criteria:

- PCT 44 – Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion
- PCT 45 – Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion
- PCT 46 – Curly Windmill Grass – speargrass – wallaby grass grassland on alluvial clay and loam on the Hay plains, Riverina Bioregion

Based on these assessments, the proposed action is estimated to impact upon of 72.51 ha of the *Natural Grasslands of the Murray Valley Plains.*

D-1.2.2.4 Significant impact criteria

An action is likely to have a significant impact on a Critically Endangered ecological community if there is a real chance or possibility that it will:

- **REDUCE THE EXTENT OF AN ECOLOGICAL COMMUNITY.**

The proposed action would result in a reduction of the extent of the *Natural Grasslands of the Murray Valley Plains.* Approximately 72.51 ha of this community would be impacted by the proposed action. These potential impacts are considered to reduce the extent of the community within study area, as well as reduce the extent of the community within the region.

- **FRAGMENT OR INCREASE FRAGMENTATION OF AN ECOLOGICAL COMMUNITY, FOR EXAMPLE BY CLEARING VEGETATION FOR ROADS OR TRANSMISSION LINES.**

The proposed action would require the removal and /or disturbance to 72.51 ha *Natural Grasslands of the Murray Valley Plains* within areas of varying disturbance. This community generally occurs within a fragmented landscape impacted by other impacts such as agriculture. Disturbance of this community would in general be in a linear configuration and while avoidance of the community will be undertaken as far as practical, some patches will be bisected. The proposed action would increase fragmentation of *Natural Grasslands of the Murray Valley Plains* marginally within the area.

- **ADVERSELY AFFECT HABITAT CRITICAL TO THE SURVIVAL OF AN ECOLOGICAL COMMUNITY**

Natural Grasslands of the Murray Valley Plains was recorded within the survey area occur as fragmented patches with a variety of condition types. The Listing Advice on Natural Grasslands of the Murray Valley Plains (DSEWPC 2012) does not map or describe any habitats or areas critical to the survival of this community.

‘Habitat critical to the survival of a species or ecological community’ refers to areas that are necessary:

- for activities such as foraging, breeding, roosting, or dispersal
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
- to maintain genetic diversity and long term evolutionary development, or
- for the reintroduction of populations or recovery of the species or ecological community.

Based on the widespread occurrence of this community across the region, and the scattered nature of patches intersected by the proposed action, no areas impacted by the proposed action are likely to be habitat critical to the survival of this community.

- **MODIFY OR DESTROY ABIOTIC (NON-LIVING) FACTORS (SUCH AS WATER, NUTRIENTS, OR SOIL) NECESSARY FOR AN ECOLOGICAL COMMUNITY’S SURVIVAL, INCLUDING REDUCTION OF GROUNDWATER LEVELS, OR SUBSTANTIAL ALTERATION OF SURFACE WATER DRAINAGE PATTERNS.**

Any large-scale excavation that occurs in close proximity to the community or to marginal patches would involve mitigation measures to minimise sedimentation and hydrological impacts. Therefore, the proposed action is considered unlikely to substantially modify or destroy these abiotic factors.

- **CAUSE A SUBSTANTIAL CHANGE IN THE SPECIES COMPOSITION OF AN OCCURRENCE OF AN ECOLOGICAL COMMUNITY, INCLUDING CAUSING A DECLINE OR LOSS OF FUNCTIONALLY IMPORTANT SPECIES, FOR EXAMPLE THROUGH REGULAR BURNING OR FLORA OR FAUNA HARVESTING.**

The proposed action would require the removal and/or disturbance to *Natural Grasslands of the Murray Valley Plains* within a variety of condition classes, including modified patches. Additionally, the community generally occurs in a variety of modified conditions as a result of existing disturbance practices in the area. This has resulted in the modification of the communities structurally integrity i.e. areas of lower species diversity and varying dominance of exotic flora.

Therefore, the proposed action is considered unlikely to substantially change the species composition of an occurrence of this community outside of proposed clearing areas.

- **WILL THE ACTION CAUSE A SUBSTANTIAL REDUCTION IN THE QUALITY OR INTEGRITY OF AN OCCURRENCE OF AN ECOLOGICAL COMMUNITY, INCLUDING, BUT NOT LIMITED TO:**
  - **assisting invasive species, that are harmful to the listed ecological community, to become established**
  - **causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit the growth of species in the ecological community.**

Natural Grasslands of the Murray Valley Plains within the Proposal area are currently subject to weed and pest invasion. Additionally, the majority of the proposed action occurs within previously disturbed landscapes. Therefore, it is considered unlikely that the proposed action would substantially reduce the quality or integrity of the community’s occurrence or significantly increase the spread of invasive species.

Additionally, mitigation measures recommended in the EIS, such as weed and pest management plans, vegetation clearing protocols, installation vehicle wash stations and sediment and control measures, to minimise the likelihood of spread of weeds or pathogens into the site. These mitigation measures will aid in reducing potential impacts associated with the proposed action that may otherwise result in the further reduction of the community’s quality.

- **INTERFERE WITH THE RECOVERY OF AN ECOLOGICAL COMMUNITY**

While no national recovery plan exists was written *Natural Grasslands of the Murray Valley Plains* key objectives for other critically endangered vegetation communities generally include:

- achieving no net loss in extent and condition of the ecological community throughout is geographic distribution
- increasing protection of sites with high recovery potential
- increasing landscape functionality of the ecological community through management and restoration of degraded sites
- increase transitional areas around remnants and linkages between remnants.

The proposed action is likely to remove 72.51 ha of this community, which is likely to interfere with the recovery of *Natural Grasslands of the Murray Valley Plains* at a sub-regional level.

- **CONCLUSION**

Approximately 72.51 ha of the EPBC listed ecological community would be removed. The proposed action would result in a reduction of the extent of the *Natural Grasslands of the Murray Valley Plains* within the Proposal study area. The proposed action would interfere with the recovery of this community and has the potential to increase fragmentation of *Natural Grasslands of the Murray Valley Plains* marginally within the area.

For these reasons, the proposed action is **likely to have a significant impact** on this community at a local scale.

D-1.2.2.5 NSW Assessment Bilateral requirements

For each of the EPBC Act listed threatened species and communities and migratory species likely to be impacted by the action the EIS must provide a separate*:*

- **DESCRIPTION OF THE HABITAT (INCLUDING IDENTIFICATION AND MAPPING OF SUITABLE BREEDING HABITAT, SUITABLE FORAGING HABITAT, IMPORTANT POPULATIONS AND HABITAT CRITICAL FOR SURVIVAL), WITH CONSIDERATION OF, AND REFERENCE TO, ANY RELEVANT COMMONWEALTH GUIDELINES AND POLICY STATEMENTS INCLUDING LISTING ADVICE, CONSERVATION ADVICE AND RECOVERY PLAN**

A description of habitat for this community, important populations, habitat critical for survival and relevant Commonwealth documents are provided in Section D-1.2.1.1, with a map showing its modelled distribution provided in Figure D-1.2. No recovery plan exists for this community.

The habitat map showing the location of this vegetation is provided in Appendix D-2.

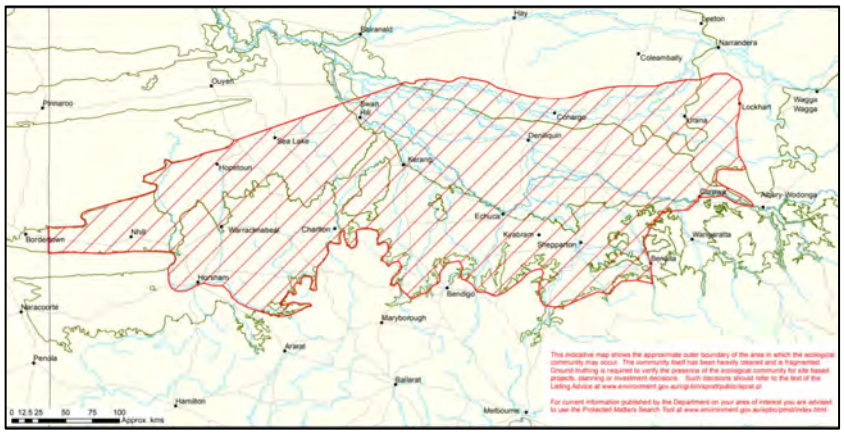


Figure D-1.2 Current distribution map for Natural Grasslands of the Murray Valley Plains (DAWE 2021)

- **DETAILS OF THE SCOPE, TIMING AND METHODOLOGY FOR STUDIES OR SURVEYS USED AND HOW THEY ARE CONSISTENT WITH (OR JUSTIFICATION FOR DIVERGENCE FROM) PUBLISHED AUSTRALIAN GOVERNMENT GUIDELINES AND POLICY STATEMENTS**

Survey guidelines for *Natural Grasslands of the Murray Valley Plains* are provided in the Conservation Advice for this ecological community (DSEWPC 2012). Field survey techniques used to undertake surveys were also in general accordance with the *NSW guide for the BAM* (Department of Planning, Industry and Environment, 2020) with a detailed field verification method provided in Section 3.7 of the BDAR. Field data was used to assign condition classes for any given observed patch.

Native vegetation survey methods were undertaken within the study area during the following dates:

- 24–26 May 2019
- 10-18 February 2020
- 19-20 March 2020
- 4-10 September 2020
- 20-28 October 2020
- 23-31 March 2021
- 8-15 April 2021
- 7-8 June 2021
- 5-16 August 2021
- 7 -16 September 2021
- 30 October 2021.

Mapping of native vegetation extent within the Proposal site is required under section 4.1 of the BAM with detailed requirements outlined in section 3.2 of the BAM 2020 Operational Manual.

In determining native vegetation extent within the Proposal study area the following method was employed:

1. Preliminary mapping of vegetation community boundaries was undertaken through analysis of existing vegetation mapping and aerial photograph interpretation.
2. Vegetation within the Proposal study area and locality has been mapped at the regional scale in:
    a. State Vegetation Type Map: Riverina Region Version v1.2 – VIS_ID 4469 (OEH 2016d)
3. Field verified vegetation mapping was undertaken by WSP during the as part of the BDAR.

- **DESCRIPTION OF THE SPECIFIC IMPACTS AND ITS REGARD TO THE FULL NATIONAL EXTENT OF THE SPECIES OR COMMUNITY'S RANGE**

The direct impacts of the Proposal on *Natural Grasslands of the Murray Valley Plains include* removal of approximately 72.51 ha of habitat. The area of potential impact for *Natural Grasslands of the Murray Valley Plains*. is mapped in Appendix D-2. Figure D-1.2 shows the current known generalised distribution based on state mapping, with 65,151 ha of current extent estimated (DEACCW 2010).

- **DESCRIPTION OF THE SPECIFIC PROPOSED AVOIDANCE AND MITIGATION MEASURES TO DEAL WITH RELEVANT IMPACTS OF THE ACTION**

The proposed avoidance and mitigation measures are outlined in Section 8 & 10 of the BDAR. Detailed avoidance description for impacts relating to biodiversity values (including threatened species) are outlined in Section 8. Regarding specific measures for *this community*, the following relevant mitigation measures are recommended for any related residual impacts to the species:

- positioning of the Proposal area to minimise clearance of this community
- establishment of no-go zones to protect mapped patches of habitat during construction.

- **IDENTIFICATION OF SIGNIFICANT RESIDUAL ADVERSE IMPACTS LIKELY TO OCCUR AFTER THE PROPOSED ACTIVITIES TO AVOID AND MITIGATE ALL IMPACTS ARE TAKEN INTO ACCOUNT**

The residual impact to *Natural Grasslands of the Murray Valley Plains is* estimated at 72.51 ha of habitat removal.

- **A DESCRIPTION OF ANY OFFSETS PROPOSED TO ADDRESS RESIDUAL ADVERSE SIGNIFICANT IMPACTS AND HOW THESE OFFSETS WILL BE ESTABLISHED**

Details of offset requirements and obligations for this species as a result of residual impacts due the proposed action is addressed in Section 12 of the BDAR

- **DETAILS OF HOW THE CURRENT PUBLISHED NSW BIODIVERSITY ASSESSMENT METHOD (BAM) HAS BEEN APPLIED IN ACCORDANCE WITH THE OBJECTS OF THE EPBC ACT TO OFFSET SIGNIFICANT RESIDUAL ADVERSE IMPACTS**

The BDAR specifically addresses Section 11 of the BAM and provides information on the application of the no net loss standard and the Proposal biodiversity offset obligations.

- **DETAILS OF THE OFFSET PACKAGE TO COMPENSATE FOR SIGNIFICANT RESIDUAL IMPACTS INCLUDING DETAILS OF THE CREDIT PROFILES REQUIRED TO OFFSET THE ACTION IN ACCORDANCE WITH THE BAM AND/OR MAPPING AND DESCRIPTIONS OF THE EXTENT AND CONDITION OF THE RELEVANT HABITAT AND/OR THREATENED COMMUNITIES OCCURRING ON PROPOSED OFFSET SITES**

Section 12 of the BDAR outlines the biodiversity offset strategy for the proposal. The offset obligations will be met through implementing a combination of the following offset delivery options, being:

- the purchase and retirement of existing biodiversity credits currently available on the biodiversity credit register
- establishing a biodiversity stewardship site(s) on lands with like for like biodiversity values to those impacted by the proposal
- through making a payment into the Biodiversity Conservation Fund.

D-1.2.3 Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains

Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains is listed as a Critically Endangered Ecological Community under the EPBC Act.

D-1.2.3.1 Description

The *Seasonal Herbaceous Wetlands* ecological community occurs predominately occur on the lowland plains of Victoria, southeastern South Australia (SA), and southern New South Wales (NSW). In some places the plains may be broken by local areas of higher relief, (e.g. stony rises on the Victorian Volcanic Plain), or grade into hills, (e.g. where plains grade into the Victorian Midlands bioregion). Key characteristics include:

- related soils are generally fertile but poorly draining clays of various geologies. In the Victorian Volcanic Plain clays are derived from basalt whereas in the Riverina they are alluvial deposits associated with grey or mixed soil types
- the ecological community is limited to plains and lower slopes or stony rises at elevations below 500 metres above sea level (asl)
- the vegetation is generally treeless and dominated by a herbaceous ground layer, often with a considerable graminoid dominance
- the type of wetland vegetation present is variable, but is often strongly represented by native species that are rooted in the soil and are emergent (DSEWPC 2012).

D-1.2.3.2 Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- Listing Advice on *Seasonal Herbaceous Wetlands* (DSEWPC 2012) is available on the SPRAT database. In effect under the EPBC Act from 27-March-2012
- There is no adopted or made Recovery Plan for this ecological community
- No Threat Abatement Plan has been identified as being relevant for this ecological community.

D-1.2.3.3 Specific impacts

The following vegetation types recorded within the study area were considered consistent with the EPBC Act *Seasonal Herbaceous Wetlands* listing based on condition criteria:

- PCT 47 – Swampland grassland wetland of the Riverine Plain.

Based on these assessments, the proposed action is estimated to impact upon of 3.01 ha of the *Seasonal Herbaceous Wetlands*.

D-1.2.3.4 Significant impact criteria

An action is likely to have a significant impact on a Critically Endangered ecological community if there is a real chance or possibility that it will:

- **REDUCE THE EXTENT OF AN ECOLOGICAL COMMUNITY.**

The proposed action would result in a reduction of the extent of the *Seasonal Herbaceous Wetlands*. Approximately 3.01 ha of this community would be impacted by the proposed action. These potential impacts are considered to reduce the extent of the community within study area, as well as a small reduction in the extent of the community within the region.

- **FRAGMENT OR INCREASE FRAGMENTATION OF AN ECOLOGICAL COMMUNITY, FOR EXAMPLE BY CLEARING VEGETATION FOR ROADS OR TRANSMISSION LINES.**

The proposed action would require the removal and /or disturbance to 3.01 ha of *Seasonal Herbaceous Wetlands* within areas of varying disturbance. Disturbance of this community would in general be in a linear configuration and while avoidance of the community will be undertaken as far as practical, some patches will be bisected. This community generally, and naturally, occurs fragmented within the landscape.

Due to natural fragmentation and the nature of construction of a powerline, i.e. powerline is likely to span over wetland areas, the proposed action is considered to not increase fragmentation of *Seasonal Herbaceous Wetlands* within the area.

- **ADVERSELY AFFECT HABITAT CRITICAL TO THE SURVIVAL OF AN ECOLOGICAL COMMUNITY**

Seasonal Herbaceous Wetlands was recorded within the survey area occur as fragmented patches amongst a larger grassland, gilgai mosaic. The Listing Advice on *Seasonal Herbaceous Wetlands* (DSEWPC 2012) does not map or describe any habitats or areas critical to the survival of this community.

'Habitat critical to the survival of a species or ecological community' refers to areas that are necessary:

- for activities such as foraging, breeding, roosting, or dispersal
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
- to maintain genetic diversity and long-term evolutionary development, or
- for the reintroduction of populations or recovery of the species or ecological community.

Based on the widespread occurrence of this community across the region, and the scattered nature of patches intersected by the proposed action, no areas impacted by the proposed action are likely to be habitat critical to the survival of this community.

- **MODIFY OR DESTROY ABIOTIC (NON-LIVING) FACTORS (SUCH AS WATER, NUTRIENTS, OR SOIL) NECESSARY FOR AN ECOLOGICAL COMMUNITY'S SURVIVAL, INCLUDING REDUCTION OF GROUNDWATER LEVELS, OR SUBSTANTIAL ALTERATION OF SURFACE WATER DRAINAGE PATTERNS.**

Any large-scale excavation that occurs in close proximity to the community or to marginal patches would involve mitigation measures to minimise sedimentation and hydrological impacts. Therefore, the proposed action is considered unlikely to substantially modify or destroy these abiotic factors.

- **CAUSE A SUBSTANTIAL CHANGE IN THE SPECIES COMPOSITION OF AN OCCURRENCE OF AN ECOLOGICAL COMMUNITY, INCLUDING CAUSING A DECLINE OR LOSS OF FUNCTIONALLY IMPORTANT SPECIES, FOR EXAMPLE THROUGH REGULAR BURNING OR FLORA OR FAUNA HARVESTING.**

The proposed action would require the removal and/or disturbance to *Seasonal Herbaceous Wetlands*, including areas that already have modification due to pre-existing infrastructure. The community generally occurs in a variety of modified conditions as a result of existing disturbance practices in the area. This has resulted in the modification of the communities structurally integrity i.e. areas of lower species diversity and varying dominance of exotic flora.

Therefore, the proposed action is considered unlikely to substantially change the species composition of an occurrence of this community outside of proposed impact areas.

- **WILL THE ACTION CAUSE A SUBSTANTIAL REDUCTION IN THE QUALITY OR INTEGRITY OF AN OCCURRENCE OF AN ECOLOGICAL COMMUNITY, INCLUDING, BUT NOT LIMITED TO:**
  - **assisting invasive species, that are harmful to the listed ecological community, to become established**
  - **causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit the growth of species in the ecological community.**

Seasonal Herbaceous Wetlands within the Proposal area are currently subject to weed and pest invasion. Additionally, the majority of the proposed action occurs within previously disturbed landscapes. Therefore, it is considered unlikely that the proposed action would substantially reduce the quality or integrity of the community's occurrence or significantly increase the spread of invasive species.

Additionally, mitigation measures recommended in the EIS, such as weed and pest management plans, vegetation clearing protocols, installation of vehicle wash stations and sediment and control measures, to minimise the likelihood of spread of weeds or pathogens into the site. These mitigation measures will aid in reducing potential impacts associated with the proposed action that may otherwise result in the further reduction of the community's quality.

- **INTERFERE WITH THE RECOVERY OF AN ECOLOGICAL COMMUNITY**

While no national recovery plan exists was written *Seasonal Herbaceous Wetlands* key objectives for other critically endangered vegetation communities generally include

- achieving no net loss in extent and condition of the ecological community throughout is geographic distribution
- increasing protection of sites with high recovery potential
- increasing landscape functionality of the ecological community through management and restoration of degraded sites
- increase transitional areas around remnants and linkages between remnants.

The proposed action is likely to remove 3.01 ha of this community, which is likely to not interfere with the recovery of *Seasonal Herbaceous Wetlands* at a sub-regional level.

- **CONCLUSION**

Approximately 3.01 ha of the EPBC listed ecological community would be removed. The proposed action would result in a reduction of the extent of the *Seasonal Herbaceous Wetlands* within the Proposal study area, but only a small reduction in the region. The proposed action would not interfere with the recovery of this community and has limited potential to increase fragmentation of *Seasonal Herbaceous Wetlands* marginally within the area.

For these reasons, the proposed action is **likely to not have a significant impact** on this community at a local scale.

D-1.2.3.5 NSW Assessment Bilateral requirements

For each of the EPBC Act listed threatened species and communities and migratory species likely to be impacted by the action the EIS must provide a separate:

- **DESCRIPTION OF THE HABITAT (INCLUDING IDENTIFICATION AND MAPPING OF SUITABLE BREEDING HABITAT, SUITABLE FORAGING HABITAT, IMPORTANT POPULATIONS AND HABITAT CRITICAL FOR SURVIVAL), WITH CONSIDERATION OF, AND REFERENCE TO, ANY RELEVANT COMMONWEALTH GUIDELINES AND POLICY STATEMENTS INCLUDING LISTING ADVICE, CONSERVATION ADVICE AND RECOVERY PLAN**

A description of habitat for this community, important populations, habitat critical for survival and relevant Commonwealth documents are provided in Section D-1.2.1.1, with a map showing its modelled distribution provided in Figure D-1.3. No recovery plan exists for this community. A map showing the field verified locations of this vegetation within the study area is provided in Appendix B-5.



Figure D-1.3 Current distribution map for Seasonal Herbaceous Wetlands (DAWE 2021)

- **DETAILS OF THE SCOPE, TIMING AND METHODOLOGY FOR STUDIES OR SURVEYS USED AND HOW THEY ARE CONSISTENT WITH (OR JUSTIFICATION FOR DIVERGENCE FROM) PUBLISHED AUSTRALIAN GOVERNMENT GUIDELINES AND POLICY STATEMENTS**

Survey guidelines for *Seasonal Herbaceous Wetlands* are provided in the Conservation Advice for this ecological community (DSEWPC 2012). Field survey techniques used to undertake surveys were also in general accordance with the *NSW guide for the BAM* (Department of Planning, Industry and Environment, 2020) with a detailed field verification method provided in Section 3.7 of the BDAR. Field data was used to assign condition classes for any given observed patch.

Native vegetation survey methods were undertaken within the study area during the following dates:

- 24–26 May 2019
- 10-18 February 2020
- 19-20 March 2020
- 4-10 September 2020
- 20-28 October 2020
- 23-31 March 2021
- 8-15 April 2021
- 7-8 June 2021
- 5-16 August 2021
- 7 -16 September 2021
- 30 September 2021.

Mapping of native vegetation extent within the Proposal site is required under section 4.1 of the BAM with detailed requirements outlined in section 3.2 of the BAM 2020 Operational Manual.

In determining native vegetation extent within the Proposal study area the following method was employed:

1. Preliminary mapping of vegetation community boundaries was undertaken through analysis of existing vegetation mapping and aerial photograph interpretation.
2. Vegetation within the Proposal study area and locality has been mapped at the regional scale in:
    a. State Vegetation Type Map: Riverina Region Version v1.2 – VIS_ID 4469 (OEH 2016d)
3. Field verified vegetation mapping was undertaken by WSP during the as part of the BDAR.

- **DESCRIPTION OF THE SPECIFIC IMPACTS AND ITS REGARD TO THE FULL NATIONAL EXTENT OF THE SPECIES OR COMMUNITY'S RANGE**

The direct impacts of the Proposal on *Seasonal Herbaceous Wetlands* include removal of approximately 3.01 ha of habitat. The area of potential impact for *Seasonal Herbaceous Wetlands* is mapped in Appendix D-2. Figure D-1.3 shows the current known generalised distribution based on state mapping, with 18,200 ha of current extent estimated (TSSC 2012).

- **DESCRIPTION OF THE SPECIFIC PROPOSED AVOIDANCE AND MITIGATION MEASURES TO DEAL WITH RELEVANT IMPACTS OF THE ACTION**

The proposed avoidance and mitigation measures are outlined in Section 8 & 10 of the BDAR. Detailed avoidance description for impacts relating to biodiversity values (including threatened species) are outlined in Section 8. Regarding specific measures for this community, the following relevant mitigation measures are recommended for any related residual impacts to the species:

- positioning of the Proposal area to minimise clearance of this community
- establishment of no-go zones to protect mapped patches of habitat during construction.

- **IDENTIFICATION OF SIGNIFICANT RESIDUAL ADVERSE IMPACTS LIKELY TO OCCUR AFTER THE PROPOSED ACTIVITIES TO AVOID AND MITIGATE ALL IMPACTS ARE TAKEN INTO ACCOUNT**

The residual impact to *Seasonal Herbaceous Wetlands is* estimated at 3.01 ha of habitat removal.

- **A DESCRIPTION OF ANY OFFSETS PROPOSED TO ADDRESS RESIDUAL ADVERSE SIGNIFICANT IMPACTS AND HOW THESE OFFSETS WILL BE ESTABLISHED**

Details of offset requirements and obligations for this species as a result of residual impacts due the proposed action is addressed in Section 12 of the BDAR.

- **DETAILS OF HOW THE CURRENT PUBLISHED NSW BIODIVERSITY ASSESSMENT METHOD (BAM) HAS BEEN APPLIED IN ACCORDANCE WITH THE OBJECTS OF THE EPBC ACT TO OFFSET SIGNIFICANT RESIDUAL ADVERSE IMPACTS**

The BDAR specifically addresses Section 11 of the BAM and provides information on the application of the no net loss standard and the Proposal biodiversity offset obligations.

- **DETAILS OF THE OFFSET PACKAGE TO COMPENSATE FOR SIGNIFICANT RESIDUAL IMPACTS INCLUDING DETAILS OF THE CREDIT PROFILES REQUIRED TO OFFSET THE ACTION IN ACCORDANCE WITH THE BAM AND/OR MAPPING AND DESCRIPTIONS OF THE EXTENT AND CONDITION OF THE RELEVANT HABITAT AND/OR THREATENED COMMUNITIES OCCURRING ON PROPOSED OFFSET SITES**

Section 12.5 of the BDAR outlines the biodiversity offset strategy for the proposal. The offset obligations will be met through implementing a combination of the following offset delivery options, being:

- the purchase and retirement of existing biodiversity credits currently available on the biodiversity credit register
- establishing a biodiversity stewardship site(s) on lands with like for like biodiversity values to those impacted by the proposal
- through making a payment into the Biodiversity Conservation Fund.

D-1.2.4 Plains Mallee Box Woodland of the Murray Darling Depression, Riverina and Naracoorte Coastal Plains bioregions

Plains Mallee Box Woodland is listed as a Critically Endangered Ecological Community under the EPBC Act.

D-1.2.4.1 Description

The *Plains Mallee Box Woodland* ecological community occurs predominately across within the following bioregions (DAWE 2021):

- Murray Darling Depression Bioregion (NSW, SA, Vic)
- Riverina Bioregion (NSW, Vic)
- Naracoorte Coastal Plain (SA).

Typical characteristics of this community include:

- associated with areas with an average annual rainfall typically in the range of 260 mm – 45 0mm, within semi-arid to arid regions of the Murray Darling Depression, Riverina and Naracoorte Coastal Plain Bioregions (DAWE 2021)
- soils are variable but are typically duplex, with clay loam or occasionally sandy clay loam topsoil textures mostly of Woorinen Formation aeolian origin, above deep fine textured clay subsoils. Typically, they are heavier in texture than soils that support most other mallee vegetation (DAWE 2021)
- canopy is mostly medium (5-10 m) to occasionally tall (to 15 m). Tree canopy cover is typically sparse or open (10–15%)
- a small tree and/or large shrub layer may be present but is typically low (3–5 m) and very sparse with < 5% cover. A medium shrub layer 1–3 m tall may also be present, but is also normally very sparse (< 10% cover)
- primary diagnostic species particular to this community are the dominance of the eucalypt species *Eucalyptus porosa* (Black Mallee Box) or *E. behriana* (Bull Mallee, Broad-leaved Mallee Box) (DAWE 2021).

D-1.2.4.2 Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- Conservation Advice on Plains Mallee Box Woodland (DAWE 2021) is available on the SPRAT database. In effect under the EPBC Act from 10-Jun-2021.
- There is no adopted or made Recovery Plan for this ecological community. DAWE (2021) have noted that recovery Plan not required: "including the mallee woodland in the List as well as implementing the priority actions set out in the Conservation Advice, are sufficient to prevent extinction and guide restoration."
- No Threat Abatement Plan has been identified as being relevant for this ecological community.

D-1.2.4.3 Specific impacts

The following vegetation types recorded within the study area were considered consistent with the EPBC Act *Plains Mallee Box Woodland* listing based on condition criteria:

- PCT 170 – Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones.

Based on these assessments, the proposed action is estimated to impact upon of 5.98 ha of the *Plains Mallee Box Woodland.*

D-1.2.4.4 Significant impact criteria

An action is likely to have a significant impact on a Critically Endangered ecological community if there is a real chance or possibility that it will:

- **REDUCE THE EXTENT OF AN ECOLOGICAL COMMUNITY.**

The proposed action would result in a reduction of the extent of the *Plains Mallee Box Woodland*. Approximately 5.98 ha of this community would be impacted by the proposed action. These potential impacts are considered to reduce the extent of the community within study area, as well as reduce the extent of the community within the region.

- **FRAGMENT OR INCREASE FRAGMENTATION OF AN ECOLOGICAL COMMUNITY, FOR EXAMPLE BY CLEARING VEGETATION FOR ROADS OR TRANSMISSION LINES.**

The proposed action would require the removal and /or disturbance to 5.98 ha *Plains Mallee Box Woodland.* Disturbance of this community would in general be in a linear configuration and while avoidance of the community will be undertaken as far as practical, some patches will be bisected. The proposed action has been collocated alongside pre-existing power and gas infrastructure. Therefore, the proposed action would only increase fragmentation of *Plains Mallee Box Woodland* marginally within the area.

- **ADVERSELY AFFECT HABITAT CRITICAL TO THE SURVIVAL OF AN ECOLOGICAL COMMUNITY**

Plains mallee box woodland was recorded within the survey area in one discrete location amongst a larger continuous patch of mallee vegetation. The Conservation Advice on Plains Mallee Box Woodland (DAWE 2021) notes that "habitat or areas most critical to the survival of the ecological community are those patches that are in the best condition (i.e. Classes A and B in Table 3). Based on field verified information collected by Dr. Ian Sluiter, it was determined that the recorded *Plains mallee box woodland* met the criteria of Class B -moderate quality.

Given limited occurrence of this community across the region, along with the Class B determination the actions proposed in the Proposal are likely to adversely affect habitat critical to the survival of this community.

- **MODIFY OR DESTROY ABIOTIC (NON-LIVING) FACTORS (SUCH AS WATER, NUTRIENTS, OR SOIL) NECESSARY FOR AN ECOLOGICAL COMMUNITY'S SURVIVAL, INCLUDING REDUCTION OF GROUNDWATER LEVELS, OR SUBSTANTIAL ALTERATION OF SURFACE WATER DRAINAGE PATTERNS.**

Any large-scale excavation that occurs in close proximity to the community or to marginal patches would involve mitigation measures to minimise sedimentation and hydrological impacts. Therefore, the proposed action is considered unlikely to substantially modify or destroy these abiotic factors.

- **CAUSE A SUBSTANTIAL CHANGE IN THE SPECIES COMPOSITION OF AN OCCURRENCE OF AN ECOLOGICAL COMMUNITY, INCLUDING CAUSING A DECLINE OR LOSS OF FUNCTIONALLY IMPORTANT SPECIES, FOR EXAMPLE THROUGH REGULAR BURNING OR FLORA OR FAUNA HARVESTING.**

The proposed action would require the removal and/or disturbance to *Plains mallee box woodland.* This community occurs in a moderate to good state with impacts limited to the edge of the vegetation where there is existing powerline infrastructure. Despite modification at the edge of the community, the vegetation retains a relatively high native species richness and low levels of exotic cover.

Therefore, the proposed action is considered unlikely to substantially change the species composition of an occurrence of this community outside of proposed clearing areas.

- **WILL THE ACTION CAUSE A SUBSTANTIAL REDUCTION IN THE QUALITY OR INTEGRITY OF AN OCCURRENCE OF AN ECOLOGICAL COMMUNITY, INCLUDING, BUT NOT LIMITED TO:**
  - **assisting invasive species, that are harmful to the listed ecological community, to become established**
  - **causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit the growth of species in the ecological community.**

Plains Mallee Box Woodland within the Proposal area are currently subject to or at risk of weed and pest invasion. Additionally, the majority of the proposed action occurs within previously disturbed landscapes. Therefore, it is considered unlikely that the proposed action would substantially reduce the quality or integrity of the community's occurrence or significantly increase the spread of invasive species.

Additionally, mitigation measures recommended in the EIS, such as weed and pest management plans, vegetation clearing protocols, installation vehicle wash stations and sediment and control measures, to minimise the likelihood of spread of weeds or pathogens into the site. These mitigation measures will aid in reducing potential impacts associated with the proposed action that may otherwise result in the further reduction of the community's quality.

- **INTERFERE WITH THE RECOVERY OF AN ECOLOGICAL COMMUNITY**

While no national recovery plan exists was written for *Plains mallee box woodland,* key objectives outlined in the conservation advice (DAWE 2021) include:

- retaining highest level condition examples of the ecological community throughout is geographic distribution
- increasing protection of sites with high recovery potential
- increasing landscape functionality of the ecological community through management and restoration of degraded sites
- increase transitional areas around remnants and linkages between remnants.

The proposed action is likely to remove 5.98 ha of this community, which is likely to not interfere with the recovery of *Plains mallee box woodland.*

- **CONCLUSION**

Approximately 5.98 ha of the EPBC listed ecological community would be removed. The proposed action would result in a reduction of the extent of the *Plains mallee box woodland* within the Proposal study area. However, the Proposal action has been co-located alongside pre-existing power infrastructure to reduce impacts of fragmentation, and it is unlikely the removal of 5.98 ha will interfere with the recovery of this community within the region..

For these reasons, the proposed action is **likely to not have a significant impact** on this community at a local scale.

D-1.2.4.5 NSW Assessment Bilateral requirements

For each of the EPBC Act listed threatened species and communities and migratory species likely to be impacted by the action the EIS must provide a separate*:*

- **DESCRIPTION OF THE HABITAT (INCLUDING IDENTIFICATION AND MAPPING OF SUITABLE BREEDING HABITAT, SUITABLE FORAGING HABITAT, IMPORTANT POPULATIONS AND HABITAT CRITICAL FOR SURVIVAL), WITH CONSIDERATION OF, AND REFERENCE TO, ANY RELEVANT COMMONWEALTH GUIDELINES AND POLICY STATEMENTS INCLUDING LISTING ADVICE, CONSERVATION ADVICE AND RECOVERY PLAN**

A description of habitat for this community, important populations, habitat critical for survival and relevant Commonwealth documents are provided in Section D-1.2.4.2, with a map showing its modelled distribution provided in Figure D-1.4. No recovery plan exists for this community. A map showing the field verified locations of this vegetation within the study area is provided in Appendix D-2.



Figure D-1.4 Current distribution map for Plains Mallee Box Woodland (DAWE 2021)

- **DETAILS OF THE SCOPE, TIMING AND METHODOLOGY FOR STUDIES OR SURVEYS USED AND HOW THEY ARE CONSISTENT WITH (OR JUSTIFICATION FOR DIVERGENCE FROM) PUBLISHED AUSTRALIAN GOVERNMENT GUIDELINES AND POLICY STATEMENTS**

Survey guidelines for *Plains Mallee Box Woodland* are provided in the Conservation Advice for this ecological community (DAWE 2021). Field survey techniques used to undertake surveys were also in general accordance with the *NSW guide for the BAM* (Department of Planning, Industry and Environment, 2020) with a detailed field verification method provided in Section 3.7 of the BDAR. Field data was used to assign condition classes for any given observed patch.

Native vegetation survey methods were undertaken within the study area during the following dates:

- 24–26 May 2019
- 10-18 February 2020
- 19-20 March 2020
- 4-10 September 2020
- 20-28 October 2020
- 23-31 March 2021
- 8-15 April 2021
- 7-8 June 2021
- 5-16 August 2021
- 7 -16 September 2021.

Mapping of native vegetation extent within the Proposal site is required under section 4.1 of the BAM with detailed requirements outlined in section 3.2 of the BAM 2020 Operational Manual.

In determining native vegetation extent within the Proposal study area the following method was employed:

1. Preliminary mapping of vegetation community boundaries was undertaken through analysis of existing vegetation mapping and aerial photograph interpretation.
2. Vegetation within the Proposal study area and locality has been mapped at the regional scale in:
    a. State Vegetation Type Map: Western Region Version v1.0 – VIS_ID 4492 (OEH 2016c)
3. Field verified vegetation mapping was undertaken by WSP during the as part of the BDAR.

- **DESCRIPTION OF THE SPECIFIC IMPACTS AND ITS REGARD TO THE FULL NATIONAL EXTENT OF THE SPECIES OR COMMUNITY'S RANGE**

The direct impacts of the Proposal on *Plains mallee box woodland* include removal of approximately 5.98 ha of habitat. The area of potential impact for *Plains mallee box woodland*. is mapped in Appendix D-2. Figure D-1.4 shows the current known generalised distribution based on state mapping, with 54,000 ha of current extent estimated (DAWE 2020).

- **DESCRIPTION OF THE SPECIFIC PROPOSED AVOIDANCE AND MITIGATION MEASURES TO DEAL WITH RELEVANT IMPACTS OF THE ACTION**

The proposed avoidance and mitigation measures are outlined in Section 8 & 10 of the BDAR. Detailed avoidance description for impacts relating to biodiversity values (including threatened species) are outlined in Section 8. Regarding specific measures for *this community*, the following relevant mitigation measures are recommended for any related residual impacts to the species:

- positioning of the Proposal area to minimise clearance of this community
- establishment of no-go zones to protect mapped patches of habitat during construction.

- **IDENTIFICATION OF SIGNIFICANT RESIDUAL ADVERSE IMPACTS LIKELY TO OCCUR AFTER THE PROPOSED ACTIVITIES TO AVOID AND MITIGATE ALL IMPACTS ARE TAKEN INTO ACCOUNT**

The residual impact to *Plains mallee box woodland* is estimated at 5.98 ha of habitat removal.

- **A DESCRIPTION OF ANY OFFSETS PROPOSED TO ADDRESS RESIDUAL ADVERSE SIGNIFICANT IMPACTS AND HOW THESE OFFSETS WILL BE ESTABLISHED**

Details of offset requirements and obligations for this species as a result of residual impacts due the proposed action is addressed in Section 12 of the BDAR.

- **DETAILS OF HOW THE CURRENT PUBLISHED NSW BIODIVERSITY ASSESSMENT METHOD (BAM) HAS BEEN APPLIED IN ACCORDANCE WITH THE OBJECTS OF THE EPBC ACT TO OFFSET SIGNIFICANT RESIDUAL ADVERSE IMPACTS**

The BDAR specifically addresses Section 11 of the BAM and provides information on the application of the no net loss standard and the Proposal biodiversity offset obligations.

- **DETAILS OF THE OFFSET PACKAGE TO COMPENSATE FOR SIGNIFICANT RESIDUAL IMPACTS INCLUDING DETAILS OF THE CREDIT PROFILES REQUIRED TO OFFSET THE ACTION IN ACCORDANCE WITH THE BAM AND/OR MAPPING AND DESCRIPTIONS OF THE EXTENT AND CONDITION OF THE RELEVANT HABITAT AND/OR THREATENED COMMUNITIES OCCURRING ON PROPOSED OFFSET SITES**

Section 12 of the BDAR outlines the biodiversity offset strategy for the proposal. The offset obligations will be met through implementing a combination of the following offset delivery options, being:

- the purchase and retirement of existing biodiversity credits currently available on the biodiversity credit register
- establishing a biodiversity stewardship site(s) on lands with like for like biodiversity values to those impacted by the proposal
- through making a payment into the Biodiversity Conservation Fund.

D-1.2.5 Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions

Bulloke Woodland is an Endangered Ecological Community listed under the EPBC Act.

D-1.2.5.1 Description

The *Bulloke Woodland* occur substantially and are distributed widely within the two Riverina and Murray-Darling Depression bioregions (ESSS 2000).

- common characteristics of this community include:
  - occurring in tracts or as patches within open forests or woodlands dominated by other species
  - occur in the presence of clayey and/or alkaline sub-soils. In many of the South Australian areas, massive calcrete underlies the sub-soil at depths of less than one metre
  - most examples of the community lack a well-developed tall shrub layer
  - Buloke (*Allocasuarina luehmannii*) is common to all component communities as dominant or co-dominant, but slender cypress-pine (*Callitris gracilis*) and other species may be structurally dominant in some.

D-1.2.5.2 Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- There is no approved Conservation Advice for this ecological community
- Listing Advice for the community (DSEWPAC 2000) in effect under the EPBC Act from 16-Jul-2000
- National recovery plan for the Buloke Woodlands of the Riverina and Murray Darling Depression Bioregions (Cheal et.al. 2011) in effect under the EPBC Act from 10-Feb-2012
- Adopted / Made Threat Abatement Plans: Department of the Environment and Energy (2016). Threat abatement plan for competition and land degradation by rabbits. Canberra, ACT: Commonwealth of Australia. In effect under the EPBC Act from 07-Jan-2017.

D-1.2.5.3 Specific impacts

Bulloke Woodland has been recorded within the Proposal study area, in two distinct areas, with the following vegetation types recorded within the study area considered consistent with the EPBC Act *Bulloke Woodland* listing:

- PCT 22 – Semi-arid shrubby Buloke – Slender Cypress Pine woodland, far south-western NSW.

The proposed action is estimated to impact upon of 2.93 ha of the *Bulloke Woodland*.

D-1.2.5.4 Significant impact criteria

An action is likely to have a significant impact on an Endangered Ecological Community if there is a real chance or possibility that it will:

- **REDUCE THE EXTENT OF AN ECOLOGICAL COMMUNITY.**

Approximately 2.93 ha of this *Bulloke Woodland* would be impacted by the proposed action. This impact is considered to marginally reduce the extent of the community within the region.

- **FRAGMENT OR INCREASE FRAGMENTATION OF AN ECOLOGICAL COMMUNITY, FOR EXAMPLE BY CLEARING VEGETATION FOR ROADS OR TRANSMISSION LINES.**

The proposed action involves the installation of a new transmission line and would require the removal and/or disturbance to 2.93 ha *Bulloke Woodland* within areas already heavily modified and fragmented by power infrastructure. The proposed action would only marginally increase fragmentation of *Bulloke Woodland* within the area.

- **ADVERSELY AFFECT HABITAT CRITICAL TO THE SURVIVAL OF AN ECOLOGICAL COMMUNITY**

No critical habitat has been listed for the *Bulloke Woodland* ecological community under the *Environment Protection and Biodiversity Conservation Act 1999* (Department of Agriculture, Water and the Environment (2020).

Habitat critical to the survival of ecological communities also refers to areas that are necessary:

- for activities such as foraging, breeding, roosting, or dispersal
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
- to maintain genetic diversity and long term evolutionary development, or
- for the reintroduction of populations or recovery of the species or ecological community.

Bulloke Woodland occurs broadly across its distribution and it is unlikely that any one patch plays a critical role in its persistence in the landscape. Areas to be cleared for the proposed action are unlikely to be habitat critical for the community based on the above criteria.

- **MODIFY OR DESTROY ABIOTIC (NON-LIVING) FACTORS (SUCH AS WATER, NUTRIENTS, OR SOIL) NECESSARY FOR AN ECOLOGICAL COMMUNITY'S SURVIVAL, INCLUDING REDUCTION OF GROUNDWATER LEVELS, OR SUBSTANTIAL ALTERATION OF SURFACE WATER DRAINAGE PATTERNS**

The proposed action would require the removal of up to 2.93 ha of *Bulloke Woodland*.

Any large-scale excavation that occurs in close proximity to *Bulloke Woodland* or to marginal patches would involve mitigation measures to minimise sedimentation and hydrological impacts. Therefore, the proposed action is considered unlikely to substantially modify or destroy these abiotic factors.

- **CAUSE A SUBSTANTIAL CHANGE IN THE SPECIES COMPOSITION OF AN OCCURRENCE OF AN ECOLOGICAL COMMUNITY, INCLUDING CAUSING A DECLINE OR LOSS OF FUNCTIONALLY IMPORTANT SPECIES, FOR EXAMPLE THROUGH REGULAR BURNING OR FLORA OR FAUNA HARVESTING**

The proposed action would require the removal and /or disturbance to 2.93 ha Bulloke Woodland within areas of varying existing disturbance. Construction and maintenance-based activities that occurs in close proximity to *Bulloke Woodland* or to marginal patches would involve mitigation measures to minimise impacts to this community.

Therefore, the proposed action is considered unlikely to substantially change the species composition of an occurrence of this community.

- **WILL THE ACTION CAUSE A SUBSTANTIAL REDUCTION IN THE QUALITY OR INTEGRITY OF AN OCCURRENCE OF AN ECOLOGICAL COMMUNITY, INCLUDING, BUT NOT LIMITED TO:**
  - **assisting invasive species, that are harmful to the listed ecological community, to become established**
  - **causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit the growth of species in the ecological community.**

Mitigation measures would be recommended in the EIS to minimise the likelihood of spread of weeds or pathogens into the site and as well as sedimentation and hydrological impacts.

Bulloke Woodland within the Proposal study area is currently subject to or at risk of varying degrees of weed and pest invasion, and it is considered unlikely that the proposed action would substantially reduce the quality or integrity of the community's occurrence or significantly increase the spread of invasive species.

- **INTERFERE WITH THE RECOVERY OF AN ECOLOGICAL COMMUNITY**

Key objectives noted in the recovery plan for this community (Cheal et.al. 2011) include:

- clarify distribution and condition of stands
- improve ecological understanding
- ensure that all stands and their habitat are protected and managed appropriately
- manage threats to stands
- promote regeneration and rehabilitate degraded stands
- build community support for conservation.

A key performance outcome in the plan related to "ensuring that all stands and their habitat are protected and managed appropriately" is to "achieve conservation management of significant stands on private land" (Cheal et.al. 2011). As such a target does not prohibit the clearing of the community, there is no key target in the recovery plan to eliminate clearing altogether.

While the proposed action would result in clearing of this community, it is unlikely that the scale of clearing would interfere substantially with its recovery.

- **CONCLUSION**

Bulloke Woodland occurs as scattered remnants within the locality, with 2.93 ha of area to be impacted by the proposed action. Where possible, the clearing of this community will be avoided, and mitigation measures are recommended in the BDAR such as weed control to reduce impacts.

The proposed action would only marginally increase fragmentation in a patch that is already heavily fragmented by existing power infrastructure and the remove of 2.93ha is unlikely to interfere substantially with the community's recovery. Therefore, it is possible that the proposed action **may not have a significant impact** on *Bulloke Woodland*.

D-1.2.5.5 NSW Assessment Bilateral requirements

For each of the EPBC Act listed threatened species and communities and migratory species likely to be impacted by the action the EIS must provide a separate:

- **DESCRIPTION OF THE HABITAT (INCLUDING IDENTIFICATION AND MAPPING OF SUITABLE BREEDING HABITAT, SUITABLE FORAGING HABITAT, IMPORTANT POPULATIONS AND HABITAT CRITICAL FOR SURVIVAL), WITH CONSIDERATION OF, AND REFERENCE TO, ANY RELEVANT COMMONWEALTH GUIDELINES AND POLICY STATEMENTS INCLUDING LISTING ADVICE, CONSERVATION ADVICE AND RECOVERY PLAN**

A description of habitat for this community, important populations, habitat critical for survival and relevant Commonwealth documents are provided in Section D-1.2.5.2, with a map showing its modelled distribution provided in Figure D-1.5. A map showing the field verified locations of this vegetation within the study area is provided in Appendix D-2.

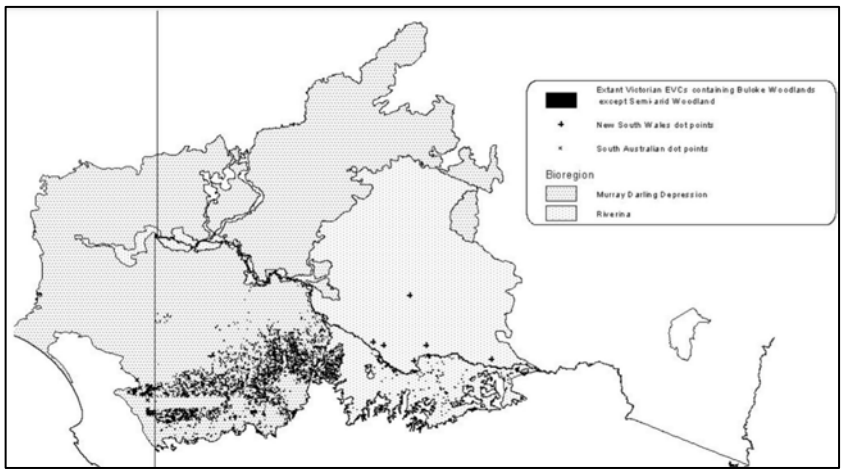


Figure D-1.5 Current distribution map for Bulloke Woodland (Cheal et.al. 2011)

- **DETAILS OF THE SCOPE, TIMING AND METHODOLOGY FOR STUDIES OR SURVEYS USED AND HOW THEY ARE CONSISTENT WITH (OR JUSTIFICATION FOR DIVERGENCE FROM) PUBLISHED AUSTRALIAN GOVERNMENT GUIDELINES AND POLICY STATEMENTS**

Field survey techniques used to undertake surveys were also in general accordance with the *NSW guide for the BAM* (Department of Planning, Industry and Environment, 2020) with a detailed field verification method provided in Section 3.7 of the BDAR. Field data was used to assign condition classes for any given observed patch.

Native vegetation survey methods were undertaken within the study area during the following dates:

- 24–26 May 2019
- 10-18 February 2020
- 19-20 March 2020
- 4-10 September 2020
- 20-28 October 2020
- 23-31 March 2021
- 8-15 April 2021
- 7-8 June 2021
- 5-16 August 2021
- 7 -16 September 2021.

Mapping of native vegetation extent within the Proposal site is required under section 4.1 of the BAM with detailed requirements outlined in section 3.2 of the BAM 2020 Operational Manual.

In determining native vegetation extent within the Proposal study area the following method was employed:

1. Preliminary mapping of vegetation community boundaries was undertaken through analysis of existing vegetation mapping and aerial photograph interpretation.
2. Vegetation within the Proposal study area and locality has been mapped at the regional scale in:
    a. State Vegetation Type Map: Western Region Version v1.0 – VIS_ID 4492 (OEH 2016c)
    b. State Vegetation Type Map: Riverina Region Version v1.2 – VIS_ID 4469 (OEH 2016d)
3. Field verified vegetation mapping was undertaken by WSP during the as part of the BDAR.

- **DESCRIPTION OF THE SPECIFIC IMPACTS AND ITS REGARD TO THE FULL NATIONAL EXTENT OF THE SPECIES OR COMMUNITY'S RANGE**

The direct impacts of the Proposal on *Bulloke Woodland include* removal of approximately 2.93 ha of habitat. The area of potential impact for *Bulloke Woodland.* is mapped in Appendix D-2. Figure D-1.5 shows the current known generalised distribution based on state mapping, with approximately 4,800 ha of current extent estimated (Cheal et.al. 2011).

- **DESCRIPTION OF THE SPECIFIC PROPOSED AVOIDANCE AND MITIGATION MEASURES TO DEAL WITH RELEVANT IMPACTS OF THE ACTION**

The proposed avoidance and mitigation measures are outlined in Section 8 & 10 of the BDAR. Detailed avoidance description for impacts relating to biodiversity values (including threatened species) are outlined in Section 8. Regarding specific measures for *this community*, the following relevant mitigation measures are recommended for any related residual impacts to the species:

- positioning of the Proposal area to minimise clearance of this community
- establishment of no-go zones to protect mapped patches of habitat during construction.

- **IDENTIFICATION OF SIGNIFICANT RESIDUAL ADVERSE IMPACTS LIKELY TO OCCUR AFTER THE PROPOSED ACTIVITIES TO AVOID AND MITIGATE ALL IMPACTS ARE TAKEN INTO ACCOUNT**

The residual impact to *Bulloke Woodland is* estimated at 2.93 ha of habitat removal.

- **A DESCRIPTION OF ANY OFFSETS PROPOSED TO ADDRESS RESIDUAL ADVERSE SIGNIFICANT IMPACTS AND HOW THESE OFFSETS WILL BE ESTABLISHED**

Details of offset requirements and obligations for this species as a result of residual impacts due the proposed action is addressed in Section 12 of the BDAR.

- **DETAILS OF HOW THE CURRENT PUBLISHED NSW BIODIVERSITY ASSESSMENT METHOD (BAM) HAS BEEN APPLIED IN ACCORDANCE WITH THE OBJECTS OF THE EPBC ACT TO OFFSET SIGNIFICANT RESIDUAL ADVERSE IMPACTS**

The BDAR specifically addresses Section 11 of the BAM and provides information on the application of the no net loss standard and the Proposal biodiversity offset obligations.

- **DETAILS OF THE OFFSET PACKAGE TO COMPENSATE FOR SIGNIFICANT RESIDUAL IMPACTS INCLUDING DETAILS OF THE CREDIT PROFILES REQUIRED TO OFFSET THE ACTION IN ACCORDANCE WITH THE BAM AND/OR MAPPING AND DESCRIPTIONS OF THE EXTENT AND CONDITION OF THE RELEVANT HABITAT AND/OR THREATENED COMMUNITIES OCCURRING ON PROPOSED OFFSET SITES**

Section 12 of the BDAR outlines the biodiversity offset strategy for the proposal. The offset obligations will be met through implementing a combination of the following offset delivery options, being:

- the purchase and retirement of existing biodiversity credits currently available on the biodiversity credit register
- establishing a biodiversity stewardship site(s) on lands with like for like biodiversity values to those impacted by the proposal
- through making a payment into the Biodiversity Conservation Fund.

D-1.2.6 Grey Box Grassy Woodlands and Derived Native Grasslands

Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia (*Grey Box Woodlands*) is listed as an Endangered Ecological Community under the EPBC Act.

D-1.2.6.1 Description

Grey Box Woodlands occupy a position in the landscape that is transitional between the temperate woodlands and forests of the lower slopes and tablelands of south-eastern Australia, and the semi-arid communities further inland. The ecological community typically occurs in landscapes of low-relief on productive soils derived from alluvial or colluvial materials but may occur on a range of substrates. The ecological community tends to occupy drier sites of the belt of grassy woodlands in south-eastern Australia, within a rainfall zone of 375–700 mm/year (Department of the Environment 2016).

This community includes those woodlands in which the dominant tree species is *Eucalyptus microcarpa* (Inland Grey Box) and is often found in association with *Eucalyptus populnea* subsp. *bimbil* (Bimble or Poplar Box), *Callitris glaucophylla* (White Cypress Pine), *Brachychiton populneus* (Kurrajong), *Allocasuarina luehmannii* (Bulloak) or *Eucalyptus melliodora* (Yellow Box), and sometimes with *Eucalyptus albens* (White Box). Shrubs are typically sparse or absent, although this component can be diverse and may be locally common, especially in drier western portions of the community. A variable ground layer of grass and herbaceous species is present at most sites. At severely disturbed sites the ground layer may be absent. The community generally occurs as an open woodland 15–25 m tall, but in some locations the overstorey may be absent as a result of past clearing or thinning, leaving only an understorey (Department of the Environment 2016).

D-1.2.6.2 Distribution

Grey Box Woodlands occurs from central-western NSW, through northern and central Victoria into South Australia. Occurring predominantly within the Riverina and South West Slopes regions of NSW down to the Victorian border (Department of the Environment 2016).

D-1.2.6.3 Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- Relevant listing advice: Commonwealth Listing Advice on Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia (DEWHA 2010). In effect under the EPBC Act from 01-Apr-2010
- There is no adopted or made Recovery Plan for this ecological community
- No Threat Abatement Plan has been identified as being relevant for this ecological community.

D-1.2.6.4 Specific impacts

The following vegetation types recorded within the Proposal study area were considered consistent with the EPBC Act *Grey Box Woodlands* listing:

- PCT 76 – Western Grey Box tall grassy woodland on alluvial loan and clay soils in the NSW South Western Slopes and Riverina Bioregion
- PCT 80 – Western Grey Box – White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion
- PCT 110 – Western Grey Box – Cypress Pine shrubby woodland on stony footslopes in the NSW South Western Slopes Bioregion and Riverina Bioregion

Based on these assessments, the proposed action is estimated to impact upon of 15.41 ha of the *Grey Box Woodlands*.

D-1.2.6.5 Significant impact criteria

An action is likely to have a significant impact on a critically endangered or endangered ecological community if there is a real chance or possibility that it will:

- **REDUCE THE EXTENT OF AN ECOLOGICAL COMMUNITY**

This community occurs in between Wagga Wagga to slightly west Urana. The community occurs as small, scattered remnants within the locality. The proposed action would result in a reduction of the extent of the *Grey Box Woodlands*. Approximately 15.41 ha of this community would be impacted by the proposed action. These potential impacts are considered to reduce the extent of the community within the region.

- **FRAGMENT OR INCREASE FRAGMENTATION OF AN ECOLOGICAL COMMUNITY, FOR EXAMPLE BY CLEARING VEGETATION FOR ROADS OR TRANSMISSION LINES**

The proposed action involves the installation of a transmission line and would require the removal and/or disturbance to 15.41 ha *Grey Box Woodlands* within areas of existing disturbance. *Grey Box Woodlands* generally occurs within a fragmented landscape, by other impacts such as agriculture, but the bisection of patches for linear clearing will increase fragmentation of *Grey Box Woodlands* within the Proposal study area and the wider region to a limited degree.

- **ADVERSELY AFFECT HABITAT CRITICAL TO THE SURVIVAL OF AN ECOLOGICAL COMMUNITY**

No critical habitat has been listed for the *Grey Box Woodlands* ecological community under the *Environment Protection and Biodiversity Conservation Act 1999* (Department of Environment and Energy 2017).

Habitat critical to the survival of ecological communities also refers to areas that are necessary:

- for activities such as foraging, breeding, roosting, or dispersal
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
- to maintain genetic diversity and long-term evolutionary development, or
- for the reintroduction of populations or recovery of the species or ecological community.

Grey Box Woodlands recorded within the Proposal study area currently occurs as patches with varying levels of disturbance and resulting condition. Given the extent and distribution of this community, it is unlikely that any areas to be cleared for the proposed action are habitat critical to the survival of this community.

- **MODIFY OR DESTROY ABIOTIC (NON-LIVING) FACTORS (SUCH AS WATER, NUTRIENTS, OR SOIL) NECESSARY FOR AN ECOLOGICAL COMMUNITY'S SURVIVAL, INCLUDING REDUCTION OF GROUNDWATER LEVELS, OR SUBSTANTIAL ALTERATION OF SURFACE WATER DRAINAGE PATTERNS**

The proposed action would require the removal of up to 15.41 ha of *Grey Box Woodlands*.

Any large-scale excavation that occurs in close proximity to *Grey Box Woodlands* or to marginal patches would involve mitigation measures to minimise sedimentation and hydrological impacts. Therefore, the proposed action is considered unlikely to substantially modify or destroy these abiotic factors.

- **CAUSE A SUBSTANTIAL CHANGE IN THE SPECIES COMPOSITION OF AN OCCURRENCE OF AN ECOLOGICAL COMMUNITY, INCLUDING CAUSING A DECLINE OR LOSS OF FUNCTIONALLY IMPORTANT SPECIES, FOR EXAMPLE THROUGH REGULAR BURNING OR FLORA OR FAUNA HARVESTING.**

The proposed action would require the removal and /or disturbance to 15.41 ha *Grey Box Woodlands* within areas of existing disturbance. Additionally, *Grey Box Woodlands* generally occurs in a highly modified condition as a result of existing disturbance practices in the area. This has resulted in the modification of the communities structurally integrity i.e. absence of one or more strata.

Therefore, the proposed action is considered unlikely to substantially change the species composition of an occurrence of this community.

- **WILL THE ACTION CAUSE A SUBSTANTIAL REDUCTION IN THE QUALITY OR INTEGRITY OF AN OCCURRENCE OF AN ECOLOGICAL COMMUNITY, INCLUDING, BUT NOT LIMITED TO:**
  - **assisting invasive species, that are harmful to the listed ecological community, to become established**
  - **causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit the growth of species in the ecological community.**

Grey Box Woodlands within the Proposal study area is currently subject to weed and pest invasion. Additionally, the majority of the proposed action occurs within previously disturbed land. Therefore, it is considered unlikely that the proposed action would substantially reduce the quality or integrity of the *Grey Box Woodland's* occurrence or significantly increase the spread of invasive species.

Additionally, mitigation measures are recommended in the EIS to be implemented during construction to minimise the likelihood of spread of weeds or pathogens into the Proposal study area and minimise sedimentation and hydrological impacts.

- **INTERFERE WITH THE RECOVERY OF AN ECOLOGICAL COMMUNITY**

To date, no recovery plan has been developed by the Department of Agriculture, Water and the Environment for *Grey Box Grassy Woodlands*. Conservation Advice on *Grey Box Woodlands* recognises the main ongoing threats to this EEC to include: incremental clearance of vegetation; inappropriate grazing regimes; fragmentation; loss and/or decline of mature trees; weed invasion; inappropriate use of fertilisers and herbicides (Department of the Environment 2010). The Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-Eastern Australia Conservation Advice (Department of the Environment 2010) also provides a number research priorities, and priority recovery and threat abatement actions. The proposed action would involve clearing of this EEC and therefore the proposed action would interfere with the recovery of this EEC.

- **CONCLUSION**

This community occurs in between Wagga Wagga and Urana. The community occurs as small, scattered remnants within the locality. The proposed action will clear 15.41 ha of habitat and is likely to fragment this community and reduce the extent within the locality. Where possible the clearing of this community will be avoided during detailed design and mitigation measures are recommended in the EIS, such as weed control to reduce impacts.

However, despite these mitigation measures, the proposed action is expected to result in a reduction in the extent of both this TECs within the locality and may marginally increase fragmentation at the local scale. Therefore, it is possible that the proposed action **may have a significant impact** on Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands in the locality.

D-1.2.6.6 NSW Assessment Bilateral requirements

For each of the EPBC Act listed threatened species and communities and migratory species likely to be impacted by the action the EIS must provide a separate:

- **DESCRIPTION OF THE HABITAT (INCLUDING IDENTIFICATION AND MAPPING OF SUITABLE BREEDING HABITAT, SUITABLE FORAGING HABITAT, IMPORTANT POPULATIONS AND HABITAT CRITICAL FOR SURVIVAL), WITH CONSIDERATION OF, AND REFERENCE TO, ANY RELEVANT COMMONWEALTH GUIDELINES AND POLICY STATEMENTS INCLUDING LISTING ADVICE, CONSERVATION ADVICE AND RECOVERY PLAN**

A description of habitat for this community, important populations, habitat critical for survival and relevant Commonwealth documents are provided in Section D-1.2.6.3, with a map showing its modelled distribution provided in Figure D-1.6. A map showing the field verified locations of this vegetation within the study area is provided in Appendix D-2.

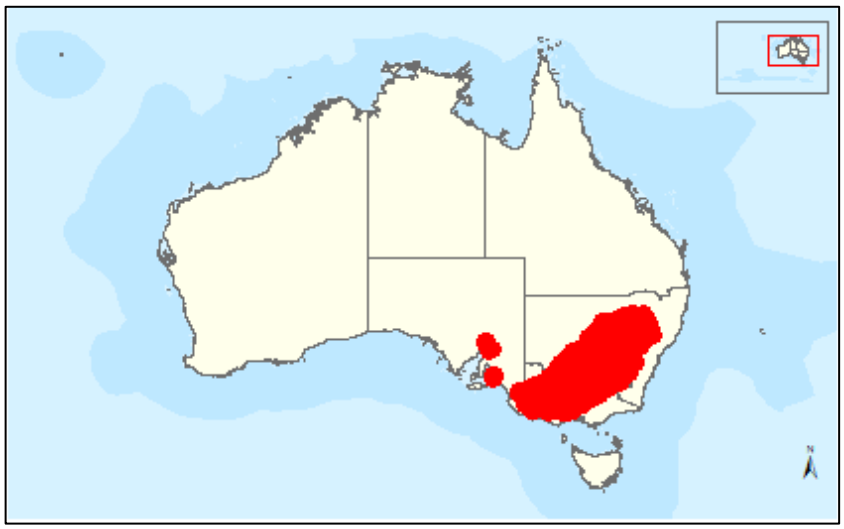


Figure D-1.6 Current distribution map for Grey Box Grassy Woodlands (DEWHA 2010)

- **DETAILS OF THE SCOPE, TIMING AND METHODOLOGY FOR STUDIES OR SURVEYS USED AND HOW THEY ARE CONSISTENT WITH (OR JUSTIFICATION FOR DIVERGENCE FROM) PUBLISHED AUSTRALIAN GOVERNMENT GUIDELINES AND POLICY STATEMENTS**

Key diagnostic characteristics for this community are provided in the listing advice (DEWHA 2010). Field survey techniques used to undertake surveys were also in general accordance with the *NSW guide for the BAM* (Department of Planning, Industry and Environment, 2020) with a detailed field verification method provided in Section 3.7 of the BDAR. Field data was used to assign condition classes for any given observed patch.

Native vegetation survey methods were undertaken within the study area during the following dates:

- 24–26 May 2019
- 10-18 February 2020
- 19-20 March 2020
- 4-10 September 2020
- 20-28 October 2020
- 23-31 March 2021
- 8-15 April 2021
- 7-8 June 2021
- 5-16 August 2021
- 7 -16 September 2021
- 31 October – 1 November 2021

Mapping of native vegetation extent within the Proposal site is required under section 4.1 of the BAM with detailed requirements outlined in section 3.2 of the BAM 2020 Operational Manual.

In determining native vegetation extent within the Proposal study area the following method was employed:

1. Preliminary mapping of vegetation community boundaries was undertaken through analysis of existing vegetation mapping and aerial photograph interpretation.
2. Vegetation within the Proposal study area and locality has been mapped at the regional scale in:
    a. State Vegetation Type Map: Western Region Version v1.0 – VIS_ID 4492 (OEH 2016c)
    b. State Vegetation Type Map: Riverina Region Version v1.2 – VIS_ID 4469 (OEH 2016d)
3. Field verified vegetation mapping was undertaken by WSP during the as part of the BDAR.

- **DESCRIPTION OF THE SPECIFIC IMPACTS AND ITS REGARD TO THE FULL NATIONAL EXTENT OF THE SPECIES OR COMMUNITY'S RANGE**

The direct impacts of the Proposal on *Grey Box Grassy Woodlands include* removal of approximately 15.41 ha of habitat. The area of potential impact for *Grey Box Grassy Woodlands*. is mapped in Appendix D-2. shows the current known generalised distribution, with approximately 28,700 ha of current extent estimated within reserves (DEWHA 2010).

- **DESCRIPTION OF THE SPECIFIC PROPOSED AVOIDANCE AND MITIGATION MEASURES TO DEAL WITH RELEVANT IMPACTS OF THE ACTION**

The proposed avoidance and mitigation measures are outlined in Section 8 & 10 of the BDAR. Detailed avoidance description for impacts relating to biodiversity values (including threatened species) are outlined in Section 8. Regarding specific measures for this community, the following relevant mitigation measures are recommended for any related residual impacts to the species:

- positioning of the Proposal area to minimise clearance of this community
- establishment of no-go zones to protect mapped patches of habitat during construction.

- **IDENTIFICATION OF SIGNIFICANT RESIDUAL ADVERSE IMPACTS LIKELY TO OCCUR AFTER THE PROPOSED ACTIVITIES TO AVOID AND MITIGATE ALL IMPACTS ARE TAKEN INTO ACCOUNT**

The residual impact to *Grey Box Grassy Woodlands* is estimated at 15.41 ha of habitat removal.

- **A DESCRIPTION OF ANY OFFSETS PROPOSED TO ADDRESS RESIDUAL ADVERSE SIGNIFICANT IMPACTS AND HOW THESE OFFSETS WILL BE ESTABLISHED**

Details of offset requirements and obligations for this species as a result of residual impacts due the proposed action is addressed in Section 12 of the BDAR.

- **DETAILS OF HOW THE CURRENT PUBLISHED NSW BIODIVERSITY ASSESSMENT METHOD (BAM) HAS BEEN APPLIED IN ACCORDANCE WITH THE OBJECTS OF THE EPBC ACT TO OFFSET SIGNIFICANT RESIDUAL ADVERSE IMPACTS**

The BDAR specifically addresses Section 11 of the BAM and provides information on the application of the no net loss standard and the Proposal biodiversity offset obligations.

- **DETAILS OF THE OFFSET PACKAGE TO COMPENSATE FOR SIGNIFICANT RESIDUAL IMPACTS INCLUDING DETAILS OF THE CREDIT PROFILES REQUIRED TO OFFSET THE ACTION IN ACCORDANCE WITH THE BAM AND/OR MAPPING AND DESCRIPTIONS OF THE EXTENT AND CONDITION OF THE RELEVANT HABITAT AND/OR THREATENED COMMUNITIES OCCURRING ON PROPOSED OFFSET SITES**

Section 12 of the BDAR outlines the biodiversity offset strategy for the proposal. The offset obligations will be met through implementing a combination of the following offset delivery options, being:

- the purchase and retirement of existing biodiversity credits currently available on the biodiversity credit register
- establishing a biodiversity stewardship site(s) on lands with like for like biodiversity values to those impacted by the proposal
- through making a payment into the Biodiversity Conservation Fund.

D-1.2.7 Weeping Myall Woodlands

Weeping Myall Woodland is an Endangered Ecological Community listed under the EPBC Act.

D-1.2.7.1 Description

The Weeping Myall Woodlands range open woodlands to woodlands, generally 4 to 12 m high. The overstorey is dominated by Weeping Myall (*Acacia pendula*) trees and in some cases this species may be the only tree canopy species. *Weeping Myall Woodlands* typically occurs on textured red or brown alluvial soils that received approximately 375–500 mm mean annual rainfall.

This community occurs as scattered remnants within the alluvial plains of the Murray-Darling river system within the Local Government Areas of Berrigan, Bland, Bogan, Carrathool, Conargo, Coolamon, Coonamble, Corowa, Forbes, Gilgandra, Griffith, Gwydir, Inverell, Jerilderee, Lachlan, Leeton, Lockhart, Moree Plains, Murray, Murrumbidgee, Narrabri, Narranderra, Narromine, Parkes, Urana, Wagga Wagga and Warren.

D-1.2.7.2 Relevant commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- Commonwealth Listing Advice on Weeping Myall Woodlands (TSSC 2009). In effect under the EPBC Act from 07-Jan-2009.
- There is no adopted or made Recovery Plan for this ecological community.

D-1.2.7.3 Specific impacts

The following vegetation types recorded within the study area were considered consistent with the EPBC Act Weeping Myall Woodland listing:

- PCT 26 – Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion.

The proposed action is estimated to impact upon of 101.2 ha of the Weeping Myall Woodland.

D-1.2.7.4 Significant impact criteria

An action is likely to have a significant impact on an Endangered Ecological Community if there is a real chance or possibility that it will:

- **REDUCE THE EXTENT OF AN ECOLOGICAL COMMUNITY.**

This community occurs in between Urana and Oolambeyan National Park. The proposed action would result in a reduction of the extent of the Weeping Myall Woodland. Approximately 101.2 ha of this *Weeping Myall Woodlands* would be impacted by the proposed action. This potential impact is considered to reduce the extent of the community within the region.

- **FRAGMENT OR INCREASE FRAGMENTATION OF AN ECOLOGICAL COMMUNITY, FOR EXAMPLE BY CLEARING VEGETATION FOR ROADS OR TRANSMISSION LINES.**

The proposed action involves the installation of a new transmission line and would require the removal and/or disturbance to 101.2 ha *Weeping Myall Woodland* within areas of existing disturbance. *Weeping Myall Woodland* generally occurs within a fragmented landscape, caused by impacts such as agriculture. The proposed action would increase fragmentation of Weeping Myall Woodland within the area.

- **ADVERSELY AFFECT HABITAT CRITICAL TO THE SURVIVAL OF AN ECOLOGICAL COMMUNITY**

No critical habitat has been listed for the Weeping Myall Woodland ecological community under the *Environment Protection and Biodiversity Conservation Act 1999* (Department of Agriculture, Water and the Environment (2020).

Habitat critical to the survival of ecological communities also refers to areas that are necessary:

- for activities such as foraging, breeding, roosting, or dispersal
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
- to maintain genetic diversity and long term evolutionary development, or
- for the reintroduction of populations or recovery of the species or ecological community.

Weeping Myall Woodland recorded within the survey area currently occurs as highly fragmented. These areas are unlikely to be habitat critical for the community based on the above criteria given the current disturbed condition.

- **MODIFY OR DESTROY ABIOTIC (NON-LIVING) FACTORS (SUCH AS WATER, NUTRIENTS, OR SOIL) NECESSARY FOR AN ECOLOGICAL COMMUNITY'S SURVIVAL, INCLUDING REDUCTION OF GROUNDWATER LEVELS, OR SUBSTANTIAL ALTERATION OF SURFACE WATER DRAINAGE PATTERNS**

The proposed action would require the removal of up to 101.2 ha of *Weeping Myall Woodland.*

Any large-scale excavation that occurs in close proximity to *Weeping Myall Woodland* or to marginal patches would involve mitigation measures to minimise sedimentation and hydrological impacts. Therefore, the proposed action is considered unlikely to substantially modify or destroy these abiotic factors.

- **CAUSE A SUBSTANTIAL CHANGE IN THE SPECIES COMPOSITION OF AN OCCURRENCE OF AN ECOLOGICAL COMMUNITY, INCLUDING CAUSING A DECLINE OR LOSS OF FUNCTIONALLY IMPORTANT SPECIES, FOR EXAMPLE THROUGH REGULAR BURNING OR FLORA OR FAUNA HARVESTING**

The proposed action would require the removal and /or disturbance to 101.2 ha Weeping Myall Woodland within areas of existing disturbance. Furthermore, *Weeping Myall Woodland* generally occurs in a highly modified condition as a result of existing disturbance practices in the area. This has resulted in the modification of the communities structurally integrity i.e. absence of one or more strata.

Therefore, the proposed action is considered unlikely to substantially change the species composition of an occurrence of this community.

- **WILL THE ACTION CAUSE A SUBSTANTIAL REDUCTION IN THE QUALITY OR INTEGRITY OF AN OCCURRENCE OF AN ECOLOGICAL COMMUNITY, INCLUDING, BUT NOT LIMITED TO:**
  - **assisting invasive species, that are harmful to the listed ecological community, to become established**
  - **causing regular mobilisation of fertilisers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit the growth of species in the ecological community.**

Weeping Myall Woodland within the Proposal study area is currently subject to weed and pest invasion. Furthermore, the majority of the proposed action occurs within previously disturbed land. Therefore, it is considered unlikely that the proposed action would substantially reduce the quality or integrity of the community's occurrence or significantly increase the spread of invasive species.

Mitigation measures are recommended in the EIS to minimise the likelihood of spread of weeds or pathogens into the site and as well as sedimentation and hydrological impacts.

- **INTERFERE WITH THE RECOVERY OF AN ECOLOGICAL COMMUNITY**

To date, no recovery plan has been developed by the Department of Agriculture, Water and the Environment for *Weeping Myall Woodlands*. Conservation Advice on *Weeping Myall Woodlands* recognises the main ongoing threats to this EEC to include clearing and ongoing degradation, clearing for cropping, over grazing regimes; weed invasion; and herbivory by caterpillars of the Bag-shelter Moth. (Department of the Environment Water, Heritage and the Arts (2008).

The proposed action would result in clearing 101.2 ha of this Community and therefore would interfere with the recovery of this EEC.

- **CONCLUSION**

This community occurs in between Urana and Oolambeyan National Park. Weeping Myall woodland occurs as scattered remnants within the locality. The proposed action will clear 101.2 ha of this community and is likely to fragment this community and reduce the extent within the locality. Where possible the clearing of this community will be avoided and mitigation measures would be recommended in the EIS such as weed control to reduce impacts.

However, despite these mitigation measures, the proposed action is expected to result in a reduction in the extent of both this TECs within the locality, may marginally increase fragmentation at the local scale and will therefore interfere with the recovery of the community. Therefore, it is possible that the proposed action **may have a significant impact** on *Weeping Myall Woodland*.

D-1.2.7.5 NSW Assessment Bilateral requirements

For each of the EPBC Act listed threatened species and communities and migratory species likely to be impacted by the action the EIS must provide a separate:

- **DESCRIPTION OF THE HABITAT (INCLUDING IDENTIFICATION AND MAPPING OF SUITABLE BREEDING HABITAT, SUITABLE FORAGING HABITAT, IMPORTANT POPULATIONS AND HABITAT CRITICAL FOR SURVIVAL), WITH CONSIDERATION OF, AND REFERENCE TO, ANY RELEVANT COMMONWEALTH GUIDELINES AND POLICY STATEMENTS INCLUDING LISTING ADVICE, CONSERVATION ADVICE AND RECOVERY PLAN**

A description of habitat for this community, important populations, habitat critical for survival and relevant Commonwealth documents are provided in Section D-1.2.7.2, with a map showing its modelled distribution provided in Figure D-1.7. A map showing the field verified locations of this vegetation within the study area is provided in Appendix D-2.

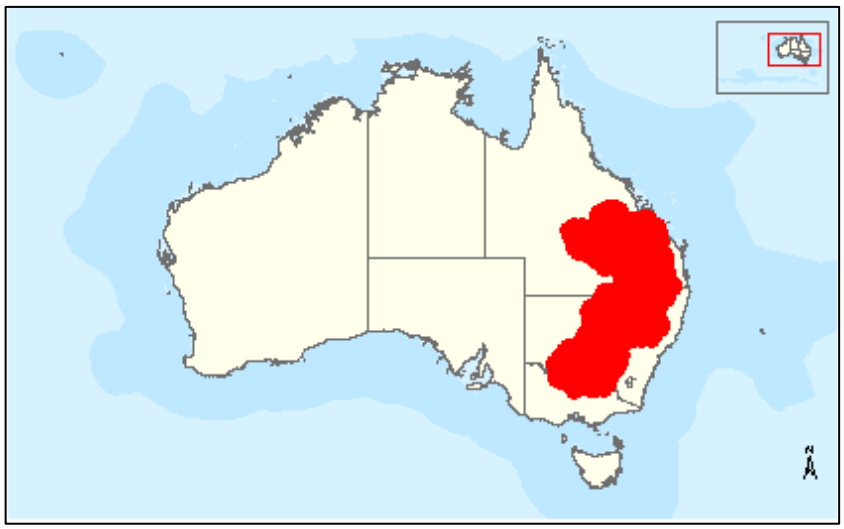


Figure D-1.7 Current distribution map for Weeping Myall Woodland (DAWE 2021)

- **DETAILS OF THE SCOPE, TIMING AND METHODOLOGY FOR STUDIES OR SURVEYS USED AND HOW THEY ARE CONSISTENT WITH (OR JUSTIFICATION FOR DIVERGENCE FROM) PUBLISHED AUSTRALIAN GOVERNMENT GUIDELINES AND POLICY STATEMENTS**

Key diagnostic characteristics for this community are provided in the listing advice (TSSC 2009). Field survey techniques used to undertake surveys were also in general accordance with the *NSW guide for the BAM* (Department of Planning, Industry and Environment, 2020) with a detailed field verification method provided in Section 3.7 of the BDAR. Field data was used to assign condition classes for any given observed patch.

Native vegetation survey methods were undertaken within the study area during the following dates:

- 24–26 May 2019
- 10-18 February 2020
- 19-20 March 2020
- 4-10 September 2020
- 20-28 October 2020
- 23-31 March 2021
- 8-15 April 2021
- 7-8 June 2021
- 5-16 August 2021
- 7 -16 September 2021
- 30 October 2021.

Mapping of native vegetation extent within the Proposal site is required under section 4.1 of the BAM with detailed requirements outlined in section 3.2 of the BAM 2020 Operational Manual.

In determining native vegetation extent within the Proposal study area the following method was employed:

1. Preliminary mapping of vegetation community boundaries was undertaken through analysis of existing vegetation mapping and aerial photograph interpretation.
2. Vegetation within the Proposal study area and locality has been mapped at the regional scale in:
    a. State Vegetation Type Map: Riverina Region Version v1.2 – VIS_ID 4469 (OEH 2016d)
3. Field verified vegetation mapping was undertaken by WSP during the as part of the BDAR.

- **DESCRIPTION OF THE SPECIFIC IMPACTS AND ITS REGARD TO THE FULL NATIONAL EXTENT OF THE SPECIES OR COMMUNITY'S RANGE**

The direct impacts of the Proposal on *Weeping Myall Woodland include* removal of approximately 101.2 ha of habitat. The area of potential impact for *Weeping Myall Woodland*. is mapped in Appendix D-2. Figure D-1.7 shows the current known generalised distribution, with approximately 220 000 to 361 000 ha current extent estimated (TSSC 2009).

- **DESCRIPTION OF THE SPECIFIC PROPOSED AVOIDANCE AND MITIGATION MEASURES TO DEAL WITH RELEVANT IMPACTS OF THE ACTION**

The proposed avoidance and mitigation measures are outlined in Section 8 & 10 of the BDAR. Detailed avoidance description for impacts relating to biodiversity values (including threatened species) are outlined in Section 8. Regarding specific measures for this community, the following relevant mitigation measures are recommended for any related residual impacts to the species:

- positioning of the Proposal area to minimise clearance of this community
- establishment of no-go zones to protect mapped patches of habitat during construction.

- **IDENTIFICATION OF SIGNIFICANT RESIDUAL ADVERSE IMPACTS LIKELY TO OCCUR AFTER THE PROPOSED ACTIVITIES TO AVOID AND MITIGATE ALL IMPACTS ARE TAKEN INTO ACCOUNT**

The residual impact to *Weeping Myall Woodland is* estimated at 101.2 ha of habitat removal.

- **A DESCRIPTION OF ANY OFFSETS PROPOSED TO ADDRESS RESIDUAL ADVERSE SIGNIFICANT IMPACTS AND HOW THESE OFFSETS WILL BE ESTABLISHED**

Details of offset requirements and obligations for this species as a result of residual impacts due the proposed action is addressed in Section 12 of the BDAR.

- **DETAILS OF HOW THE CURRENT PUBLISHED NSW BIODIVERSITY ASSESSMENT METHOD (BAM) HAS BEEN APPLIED IN ACCORDANCE WITH THE OBJECTS OF THE EPBC ACT TO OFFSET SIGNIFICANT RESIDUAL ADVERSE IMPACTS**

The BDAR specifically addresses Section 11 of the BAM and provides information on the application of the no net loss standard and the Proposal biodiversity offset obligations.

- **DETAILS OF THE OFFSET PACKAGE TO COMPENSATE FOR SIGNIFICANT RESIDUAL IMPACTS INCLUDING DETAILS OF THE CREDIT PROFILES REQUIRED TO OFFSET THE ACTION IN ACCORDANCE WITH THE BAM AND/OR MAPPING AND DESCRIPTIONS OF THE EXTENT AND CONDITION OF THE RELEVANT HABITAT AND/OR THREATENED COMMUNITIES OCCURRING ON PROPOSED OFFSET SITES**

Section 12 of the BDAR outlines the biodiversity offset strategy for the proposal. The offset obligations will be met through implementing a combination of the following offset delivery options, being:

- the purchase and retirement of existing biodiversity credits currently available on the biodiversity credit register
- establishing a biodiversity stewardship site(s) on lands with like for like biodiversity values to those impacted by the proposal
- through making a payment into the Biodiversity Conservation Fund.

D-1.2.8 *Brachyscome papillosa* (Mosgiel Daisy)

Brachyscome papillosa is listed as Vulnerable under the EPBC Act.

D-1.2.8.1 Description

The Mossgiel Daisy is a multi-stemmed, perennial herb that grows to 40 centimetres tall. Recorded primarily in clay soils on Bladder Saltbush (*Atriplex vesicaria*) and Leafless Bluebush (*Maireana aphylla*) plains, but also in grassland and in Inland Grey Box (*Eucalyptus microcarpa*) – Cypress Pine (*Callitris spp.*) woodland. The Mossgiel Daisy is endemic to NSW and chiefly occurs within the Riverina Bioregion, from Mossgiel in the north, Murrumbidgee Valley (Yanga) National Park in the south west to Urana in the south east. Flowers from June to December.

D-1.2.8.2 Specific impacts

Mossgiel Daisy was recorded within the following vegetation units within the study area:

- PCT 17 – Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
- PCT 24 – Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
- PCT 160 – Nitre Goosefoot shrubland wetland on clays of the inland floodplains
- PCT 163 – Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
- PCT 164 – Cotton Bush open shrubland of the semi-arid (warm) zone.

Additionally, the Mossgiel Daisy is predicted to occur within the following vegetation units:

- PCT 17 – Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
- PCT 24 – Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
- PCT 160 – Nitre Goosefoot shrubland wetland on clays of the inland floodplains
- PCT 164 – Cotton Bush open shrubland of the semi-arid (warm) zone.

Impacts to this species will be clearing of individual plants and suitable surrounding habitat. Based on this assessment, a total of approximately 71.17 ha of Mossgiel Daisy will be impacted by the proposed action.

D-1.2.8.3 Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

Relevant Commonwealth documentation relevant to this species include:

- Department of the Environment, Water, Heritage and the Arts (2008). Approved Conservation Advice for *Brachyscome papillosa* (Mossgiel Daisy) (DEWHA 2008). In effect under the EPBC Act from 03-Jul-2008. Conservation advice is contained within the listing advice.

There is no adopted or made Recovery Plan or relevant Threat Abatement Plan identified as being relevant for this species.

D-1.2.8.4 Is this part of an important population?

Under the Act, important populations are:

- likely to be key source populations either for breeding or dispersal
- likely to be necessary for maintaining genetic diversity
- at or near the limit of the species range.

There are no previous records for this species within the proposal study area. However, there are scattered records across much of the Hay Plain and locations of recorded and assumed presence does not occur at the limit of this species range.

Targeted seasonal field studies in the proposal study area determined that the species was in isolated habitats throughout the study area.

The recorded populations are not at the limit of the species known range. However, most populations recorded were large and could be necessary for maintaining genetic diversity or dispersal across the region. Therefore for the purposes of this assessment, any individuals or population of this species recorded within the study area (if present) are considered to form part of an important population.

D-1.2.8.5 Significant impact criteria

An action is likely to have a significant impact on a Vulnerable species if there is a real chance or possibility that it will:

- **LEAD TO A LONG-TERM DECREASE IN THE SIZE OF AN IMPORTANT POPULATION**

Given the extent of the recorded presence and assumed habitat for *Brachyscome papillosa* within the study area, it is likely to be necessary for maintaining genetic diversity or dispersal across the region and is assumed to form part of an important population. While the proposed action will directly impact on a small proportion of the total extant of the local population, it is unlikely to lead to a long-term decrease in the size of an important population of *Brachyscome papillosa*.

- **REDUCE THE AREA OF OCCUPANCY OF AN IMPORTANT POPULATION**

While proposed action will directly impact on only a small proportion of the total extant of the local population, it is likely to reduce the area of occupancy of an important population of *Brachyscome papillosa*.

- **FRAGMENT AN EXISTING IMPORTANT POPULATION INTO TWO OR MORE POPULATIONS**

The proposed action is limited to a linear disturbance footprint that is unlikely to disrupt the ecological processes and functions of the species that would result in the fragmentation of an important population into two or more populations.

- **ADVERSELY AFFECT HABITAT CRITICAL TO THE SURVIVAL OF A SPECIES**

There is no approved important populations for this species contained within the critical habitat register. Given the isolated occurrences of known habitat in the study area, it is unlikely that proposed impacts are within habitat critical to the survival of the species.

- **DISRUPT THE BREEDING CYCLE OF AN IMPORTANT POPULATION**

The proposed action is limited to a linear disturbance footprint that is unlikely to disrupt the ecological processes and functions of the species that would disrupt the breeding cycle of an important population.

- **MODIFY, DESTROY, REMOVE OR ISOLATE OR DECREASE THE AVAILABILITY OR QUALITY OF HABITAT TO THE EXTENT THAT THE SPECIES IS LIKELY TO DECLINE**

Recorded individuals or populations of this species within the proposal study area, are to be avoided as best possible during design refinement. Habitat impacts total 71.17 ha and given the disjunct nature of known patches, it is possible such impacts will cause the species to decline.

As a precautionary measure, **there is moderate likelihood that the proposed action may modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.**

- **RESULT IN INVASIVE SPECIES THAT ARE HARMFUL TO A VULNERABLE SPECIES BECOMING ESTABLISHED IN THE VULNERABLE SPECIES' HABITAT**

Mitigation measures would be recommended in the EIS to limit the spread of weeds, pathogens and disease and minimise sedimentation and hydrological impacts.

- **INTRODUCE DISEASE THAT MAY CAUSE THE SPECIES TO DECLINE**

There are no known diseases causing potential species decline to *Brachyscome papillosa.*

- **INTERFERE SUBSTANTIALLY WITH THE RECOVERY OF THE SPECIES**

No Recovery plan has been prepared for this species at this stage. The proposed action would not interfere with the Saving Our Species program, and no key management areas occur within the proposal study area.

- **CONCLUSION**

While the proposed action will directly impact on only a small proportion of the total extant, it is likely to reduce the area of occupancy of an important population of *Brachyscome papillosa* and may modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline. Therefore the proposed action **may significantly impact** *Brachyscome papillosa*.

D-1.2.8.6 NSW Assessment Bilateral requirements

For each of the EPBC Act listed threatened species and communities and migratory species likely to be impacted by the action the EIS must provide a separate*:*

- **DESCRIPTION OF THE HABITAT (INCLUDING IDENTIFICATION AND MAPPING OF SUITABLE BREEDING HABITAT, SUITABLE FORAGING HABITAT, IMPORTANT POPULATIONS AND HABITAT CRITICAL FOR SURVIVAL), WITH CONSIDERATION OF, AND REFERENCE TO, ANY RELEVANT COMMONWEALTH GUIDELINES AND POLICY STATEMENTS INCLUDING LISTING ADVICE, CONSERVATION ADVICE AND RECOVERY PLAN**

A description of habitat for this species, important populations, habitat critical for survival and relevant Commonwealth documents are provided in Section D-1.2.8, with a map showing its modelled distribution provided in Figure D-1.8. A map showing the field verified locations of this vegetation within the study area is provided in Appendix D-2.

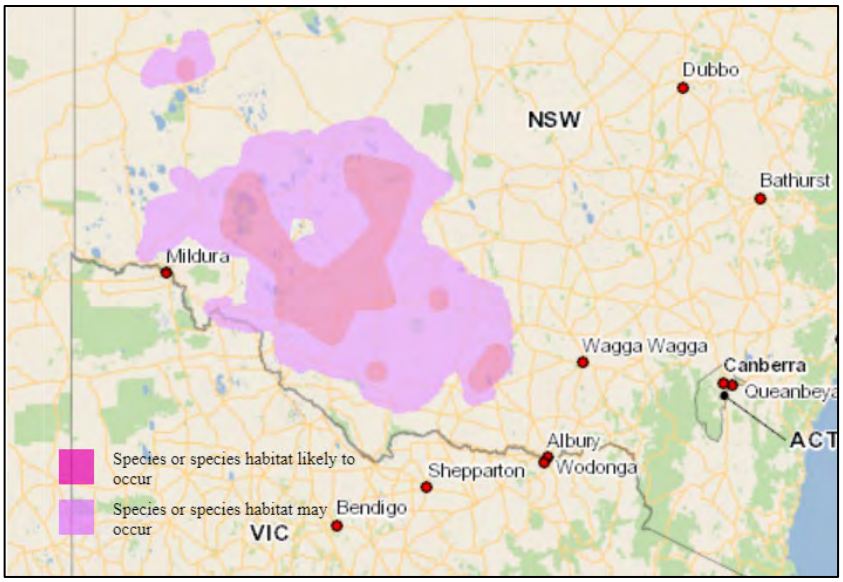


Figure D-1.8 Current distribution map for *Brachyscome papillosa* (DAWE 2021)

- **DETAILS OF THE SCOPE, TIMING AND METHODOLOGY FOR STUDIES OR SURVEYS USED AND HOW THEY ARE CONSISTENT WITH (OR JUSTIFICATION FOR DIVERGENCE FROM) PUBLISHED AUSTRALIAN GOVERNMENT GUIDELINES AND POLICY STATEMENTS**

Field survey techniques used to undertake surveys were also in general accordance with the *NSW guide for the BAM* (Department of Planning, Industry and Environment, 2020) with a detailed field verification method provided in Section 5.2 of the BDAR. Mapping of native vegetation and habitat extent within the proposal site is required under section 4.1 of the BAM, with detailed requirements outlined in section 3.2 of the BAM 2020 Operational Manual. Field data was used to assign condition classes for any given observed habitat patch, where relevant.

Specific search methodologies, relevant surveyed habitats and survey effort for this species include:

- Representative parallel field traverses (PCT 13, 15, 17, 24, 46, 80, 157, 160, 163, 164 & 216)
  - 4-10 Sept 2020
  - 22-29 & 28 Oct 2020
- Two-phase grid-based systematic survey (PCT 13, 15, 17, 24, 44, 45, 46, 80, 157, 160, 163, 164 & 216)
  - 7-16 Sept 2021
  - 30 October 2021
- Active searches during BAM vegetation integrity surveys and opportunistic surveys:
  - 21 Oct 2020.

- **DESCRIPTION OF THE SPECIFIC IMPACTS AND ITS REGARD TO THE FULL NATIONAL EXTENT OF THE SPECIES OR COMMUNITY'S RANGE**

The direct impacts of the proposal on *Brachyscome papillosa* include removal of approximately 71.17 ha of habitat. The area of potential impact for *Brachyscome papillosa* is mapped in Appendix D-3. Figure D-1.8 shows the current known generalised distribution, with the estimated habitat extent unknown (DEWHA 2008).

- **DESCRIPTION OF THE SPECIFIC PROPOSED AVOIDANCE AND MITIGATION MEASURES TO DEAL WITH RELEVANT IMPACTS OF THE ACTION**

The proposed avoidance and mitigation measures are outlined in Section 8 & 10 of the BDAR. Detailed avoidance description for impacts relating to biodiversity values (including threatened species) are outlined in Section 8. Regarding specific measures for this community, the following relevant mitigation measures are recommended for any related residual impacts to the species:

- positioning of the indicative Proposal area to minimise clearance of this species' habitat
- establishment of no-go zones to protect mapped patches of habitat during construction.

- **IDENTIFICATION OF SIGNIFICANT RESIDUAL ADVERSE IMPACTS LIKELY TO OCCUR AFTER THE PROPOSED ACTIVITIES TO AVOID AND MITIGATE ALL IMPACTS ARE TAKEN INTO ACCOUNT**

The residual impact to *Brachyscome papillosa* is estimated at 71.17 ha of habitat removal.

- **A DESCRIPTION OF ANY OFFSETS PROPOSED TO ADDRESS RESIDUAL ADVERSE SIGNIFICANT IMPACTS AND HOW THESE OFFSETS WILL BE ESTABLISHED**

Details of offset requirements and obligations for this species as a result of residual impacts due the proposed action is addressed in Section 12 of the BDAR.

- **DETAILS OF HOW THE CURRENT PUBLISHED NSW BIODIVERSITY ASSESSMENT METHOD (BAM) HAS BEEN APPLIED IN ACCORDANCE WITH THE OBJECTS OF THE EPBC ACT TO OFFSET SIGNIFICANT RESIDUAL ADVERSE IMPACTS**

The BDAR specifically addresses Section 11 of the BAM and provides information on the application of the no net loss standard and the project biodiversity offset obligations.

- **DETAILS OF THE OFFSET PACKAGE TO COMPENSATE FOR SIGNIFICANT RESIDUAL IMPACTS INCLUDING DETAILS OF THE CREDIT PROFILES REQUIRED TO OFFSET THE ACTION IN ACCORDANCE WITH THE BAM AND/OR MAPPING AND DESCRIPTIONS OF THE EXTENT AND CONDITION OF THE RELEVANT HABITAT AND/OR THREATENED COMMUNITIES OCCURRING ON PROPOSED OFFSET SITES**

Section 12 of the BDAR outlines the biodiversity offset strategy for the proposal. The offset obligations will be met through implementing a combination of the following offset delivery options, being:

- the purchase and retirement of existing biodiversity credits currently available on the biodiversity credit register
- establishing a biodiversity stewardship site(s) on lands with like for like biodiversity values to those impacted by the proposal
- through making a payment into the Biodiversity Conservation Fund.

D-1.2.9 *Maireana cheelii* (Chariot Wheels)

Maireana cheelii is listed as Vulnerable under the EPBC Act.

D-1.2.9.1 Description

Maireana cheelii is a perennial forb to about 20 cm high, with slender striped woolly stems and a fleshy swollen taproot. Restricted to the southern Riverina region of NSW, mainly in the area between Deniliquin and Hay. Usually found on heavier, grey clay soils with *Atriplex vesicaria* (Bladder Saltbush). Soils include heavy brown to red-brown clay-loams, hard cracking red clay, other heavy texture-contrast soils. Tends to grow in shallow depressions, often on eroded or scalded surfaces, and does not extend to the higher soils in the habitat. Flowering time is mostly spring to summer. Bears fruits mostly from September to November.

D-1.2.9.2 Specific impacts

Impacts to this species will be clearing of individual plants and suitable surrounding habitat.

The following vegetation types have been field verified as providing habitat to Chariot Wheels:

- PCT 17 – Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
- PCT 28 – White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zones
- PCT 44 – Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion
- PCT 46 – Curly Windmill Grass – speargrass – wallaby grass grassland on alluvial clay and loam on the Hay plain, Riverina Bioregion
- PCT 58 – Black Oak – Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
- PCT 157 – Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
- PCT 163 – Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
- PCT 164 – Cotton Bush open shrubland of the semi-arid (warm) zone
- PCT 216 – Black Roly Poly low open shrubland of the Riverina.

In addition to known habitats containing this species, the following habitats (not field verified) are predicted to contain Chariot Wheels:

- PCT 17 – Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
- PCT 28 – White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zones
- PCT 44 – Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion
- PCT 46 – Curly Windmill Grass – speargrass – wallaby grass grassland on alluvial clay and loam on the Hay plain, Riverina Bioregion
- PCT 157 – Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
- PCT 164 – Cotton Bush open shrubland of the semi-arid (warm) zone

The total amount of confirmed and predicted habitat impact to Chariot Wheels habitat is 109.68 ha.

D-1.2.9.3 Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

The relevant recovery plan for this species is "National Recovery Plan for the Chariot Wheels *Maireana cheelii*" (Victoria Department of Sustainability and Environment, 2010).

There is no approved Conservation Advice or Listing Advice for this species.

D-1.2.9.4 Is this part of an important population?

Under the Act, important populations are:

- likely to be key source populations either for breeding or dispersal
- likely to be necessary for maintaining genetic diversity
- at or near the limit of the species range.

There are species records within the proposal locality at the intersection of Maude Road and Booroorban – Tchelery Road, as well as numerous locations across the Hay Plain, near Cobb Highway and South West woodland Nature Reserve.

Field-verified locations of this species and its habitats are located in a variety of isolated habitats along the study area length.

The proposal study area is not at the limit of this species known home range, however given the extent of the recorded population within the study area it is likely to be key source populations for dispersal or for maintaining genetic diversity given the plants biology.

Given these characteristics, individuals and mapped habitats are likely to form part of a larger important population.

D-1.2.9.5 Significant impact criteria

An action is likely to have a significant impact on a Vulnerable species if there is a real chance or possibility that it will:

- **LEAD TO A LONG-TERM DECREASE IN THE SIZE OF AN IMPORTANT POPULATION**

Given the extent of the recorded presence and assumed habitat for *Maireana cheelii* within the study area, it is likely to be necessary for maintaining genetic diversity or dispersal across the region and is assumed to form part of an important population. While the proposed action will directly impact on a small proportion of the total extant of the local population, it is unlikely to lead to a long-term decrease in the size of an important population of *Maireana cheelii*.

- **REDUCE THE AREA OF OCCUPANCY OF AN IMPORTANT POPULATION**

While proposed action will directly impact on only a small proportion of the total extant of the local population, it is likely to reduce the area of occupancy of an important population of *Maireana cheelii*.

- **FRAGMENT AN EXISTING IMPORTANT POPULATION INTO TWO OR MORE POPULATIONS**

The proposed action is limited to a linear disturbance footprint that is unlikely to disrupt the ecological processes and functions of the species that would result in the fragmentation of an important population of *Maireana cheelii* into two or more populations.

- **ADVERSELY AFFECT HABITAT CRITICAL TO THE SURVIVAL OF A SPECIES**

There are no approved important populations for this species contained within the critical habitat register. Given the isolated, sporadic occurrences of known habitat in the study area, it is unlikely that proposed impacts are within habitat critical to the survival of the species.

- **DISRUPT THE BREEDING CYCLE OF AN IMPORTANT POPULATION**

The proposed action is limited to a linear disturbance footprint that is unlikely to disrupt the ecological processes and functions of the species that would disrupt the breeding cycle of an important population of *Maireana cheelii*.

- **MODIFY, DESTROY, REMOVE OR ISOLATE OR DECREASE THE AVAILABILITY OR QUALITY OF HABITAT TO THE EXTENT THAT THE SPECIES IS LIKELY TO DECLINE**

Recorded individuals or populations of this species within the proposal study area, are be avoided as best possible during design refinement. Habitat impacts total 109.68 ha and given the disjunct nature of known patches; it is difficult to discern if such impacts will cause the species to decline.

As a precautionary measure, there is **moderate likelihood** that the proposed action may modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

- **RESULT IN INVASIVE SPECIES THAT ARE HARMFUL TO A VULNERABLE SPECIES BECOMING ESTABLISHED IN THE VULNERABLE SPECIES' HABITAT**

Mitigation measures are recommended in the EIS to limit the spread of weeds, pathogens and disease and minimise sedimentation and hydrological impacts, with the proposed action unlikely to result in significant impacts associated with the introduction of invasive species.

- **INTRODUCE DISEASE THAT MAY CAUSE THE SPECIES TO DECLINE**

There are no known diseases causing potential species decline to *Maireana cheelii*, with the proposed action unlikely to result in significant impacts associated with the introduction of invasive species.

- **INTERFERE SUBSTANTIALLY WITH THE RECOVERY OF THE SPECIES**

National Recovery Plan for the Chariot Wheels *Maireana cheelii* (Victoria Department of Sustainability and Environment, 2010) identifies recovery objectives. The proposed action would impact with Objective 4; which is manage threats to populations (i.e. land clearing), and thereby interfere with the recovery of the species.

- **CONCLUSION**

While the proposed action will directly impact on only a small proportion of the total extant, it is likely to reduce the area of occupancy of an important population of *Maireana cheelii* and interfere with the recovery of the species. Therefore the proposed action **may significantly impact** *Maireana cheelii*.

D-1.2.9.6 NSW Assessment Bilateral requirements

For each of the EPBC Act listed threatened species and communities and migratory species likely to be impacted by the action the EIS must provide a separate:

- **DESCRIPTION OF THE HABITAT (INCLUDING IDENTIFICATION AND MAPPING OF SUITABLE BREEDING HABITAT, SUITABLE FORAGING HABITAT, IMPORTANT POPULATIONS AND HABITAT CRITICAL FOR SURVIVAL), WITH CONSIDERATION OF, AND REFERENCE TO, ANY RELEVANT COMMONWEALTH GUIDELINES AND POLICY STATEMENTS INCLUDING LISTING ADVICE, CONSERVATION ADVICE AND RECOVERY PLAN**

A description of habitat for this species, important populations, habitat critical for survival and relevant Commonwealth documents are provided in Section D-1.2.9.3, with a map showing its modelled distribution provided in Figure D-1.9. A map showing the field verified locations of this vegetation within the study area is provided in Appendix D-2.

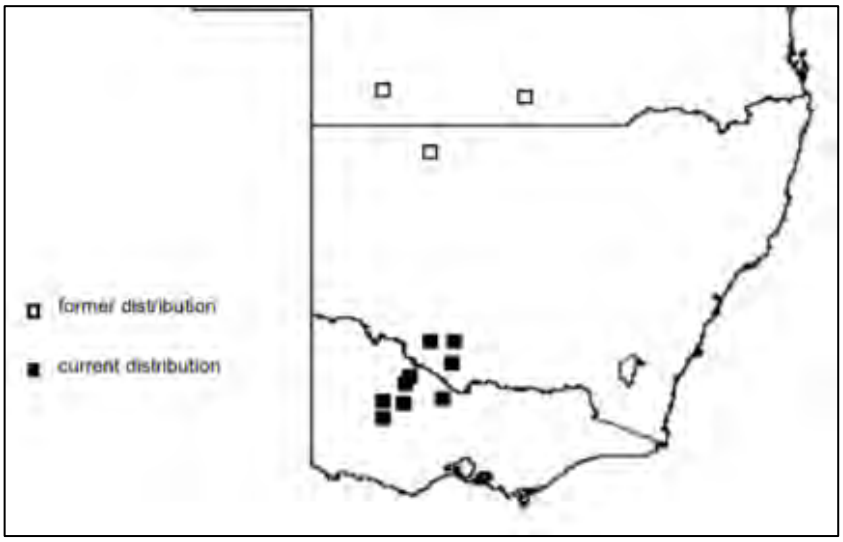


Figure D-1.9 Current distribution map for *Maireana cheelii* ((Victoria Department of Sustainability and Environment, 2010)

- **DETAILS OF THE SCOPE, TIMING AND METHODOLOGY FOR STUDIES OR SURVEYS USED AND HOW THEY ARE CONSISTENT WITH (OR JUSTIFICATION FOR DIVERGENCE FROM) PUBLISHED AUSTRALIAN GOVERNMENT GUIDELINES AND POLICY STATEMENTS**

Field survey techniques used to undertake surveys were also in general accordance with the *NSW guide for the BAM* (Department of Planning, Industry and Environment, 2020) with a detailed field verification method provided in Section 5.2 of the BDAR. Mapping of native vegetation and habitat extent within the proposal site is required under section 4.1 of the BAM, with detailed requirements outlined in section 3.2 of the BAM 2020 Operational Manual. Field data was used to assign condition classes for any given observed habitat patch, where relevant.

Specific search methodologies, relevant surveyed habitats and survey effort for this species include:

- Regular inspections of Maireana sp. with similar growth habits occurred to ensure positive identification of any M. cheelii populations
- Representative parallel field traverses (PCT 26, 44, 46, 157, 163 & 164)
  - 4-10 Sept 2020
  - 6 Sept 2020 in PCT 163
  - 8 Sept 2020 in PCT 163
  - 10 Sept 2020 in PCT 44, PCT 46 & PCT 216
  - 22-23 & 28 Oct 2020
- Two-phase grid-based systematic survey (PCT 26, 44, 46, 157, 163 & 164)
  - 7-14 Sept 2021
  - 7 & 8 Sept 2021
  - 9 & 10 Sept 2021
  - 23-31 March 2021
  - 8-10 April 2021
  - 4 & 13 Aug 2021
  - 30 Oct 2021

- **DESCRIPTION OF THE SPECIFIC IMPACTS AND ITS REGARD TO THE FULL NATIONAL EXTENT OF THE SPECIES OR COMMUNITY'S RANGE**

The direct impacts of the proposal on *Maireana cheelii* include removal of approximately 109.68 ha of habitat. The area of potential impact for *Maireana cheelii* is mapped in Appendix D-3. Figure D-1.9 shows the current known generalised distribution, with the estimated habitat extent unknown (Victoria Department of Sustainability and Environment, 2010).

- **DESCRIPTION OF THE SPECIFIC PROPOSED AVOIDANCE AND MITIGATION MEASURES TO DEAL WITH RELEVANT IMPACTS OF THE ACTION**

The proposed avoidance and mitigation measures are outlined in Section 8 & 10 of the BDAR. Detailed avoidance description for impacts relating to biodiversity values (including threatened species) are outlined in Section 8. Regarding specific measures for this community, the following relevant mitigation measures are recommended for any related residual impacts to the species:

- positioning of the indicative Proposal area to minimise clearance of this species' habitat
- establishment of no-go zones to protect mapped patches of habitat during construction.

- **IDENTIFICATION OF SIGNIFICANT RESIDUAL ADVERSE IMPACTS LIKELY TO OCCUR AFTER THE PROPOSED ACTIVITIES TO AVOID AND MITIGATE ALL IMPACTS ARE TAKEN INTO ACCOUNT**

The residual impact to *Maireana cheelii* is estimated at 109.68 ha of habitat removal.

- **A DESCRIPTION OF ANY OFFSETS PROPOSED TO ADDRESS RESIDUAL ADVERSE SIGNIFICANT IMPACTS AND HOW THESE OFFSETS WILL BE ESTABLISHED**

Details of offset requirements and obligations for this species as a result of residual impacts due the proposed action is addressed in Section 12 of the BDAR.

- **DETAILS OF HOW THE CURRENT PUBLISHED NSW BIODIVERSITY ASSESSMENT METHOD (BAM) HAS BEEN APPLIED IN ACCORDANCE WITH THE OBJECTS OF THE EPBC ACT TO OFFSET SIGNIFICANT RESIDUAL ADVERSE IMPACTS**

The BDAR specifically addresses Section 11 of the BAM and provides information on the application of the no net loss standard and the project biodiversity offset obligations.

- **DETAILS OF THE OFFSET PACKAGE TO COMPENSATE FOR SIGNIFICANT RESIDUAL IMPACTS INCLUDING DETAILS OF THE CREDIT PROFILES REQUIRED TO OFFSET THE ACTION IN ACCORDANCE WITH THE BAM AND/OR MAPPING AND DESCRIPTIONS OF THE EXTENT AND CONDITION OF THE RELEVANT HABITAT AND/OR THREATENED COMMUNITIES OCCURRING ON PROPOSED OFFSET SITES**

Section 12 of the BDAR outlines the biodiversity offset strategy for the proposal. The offset obligations will be met through implementing a combination of the following offset delivery options, being:

- the purchase and retirement of existing biodiversity credits currently available on the biodiversity credit register
- establishing a biodiversity stewardship site(s) on lands with like for like biodiversity values to those impacted by the proposal
- through making a payment into the Biodiversity Conservation Fund.

D-1.2.10 Swainsona murrayana (Slender Darling Pea)

D-1.2.10.1 Conservation status

Swainsona murrayana is listed as Vulnerable under the EPBC Act.

D-1.2.10.2 Description

Swainsona murrayana is a prostrate, ascending to erect perennial herb growing up to 25 cm tall with densely pubescent stems. It is found throughout NSW and has been recorded in the Jerilderie and Deniliquin areas of the southern riverine plain, the Hay plain as far north as Willandra National Park, near Broken Hill as well as various localities between Dubbo and Moree (OEH, 2019).

This species has been collected from clay-based soils, ranging from grey, red and brown cracking clays to red-brown earths and loams. It grows in a variety of vegetation types including bladder saltbush, black box and grassland communities on level plains, floodplains and depressions and is often found with Maireana species. The species has also been found in remnant native grasslands or grassy woodlands that have been intermittently grazed or cultivated. Plants produce winter-spring growth, flower in spring to early summer and then die back after flowering. They re-shoot readily and often carpet the landscape after good cool-season rains. It is thought that *Swainsona murrayana* may require some disturbance and has been known to occur in paddocks that have been moderately grazed or occasionally cultivated (OEH, 2019).

D-1.2.10.3 Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

The relevant conservation advice for this species is “Approved Conservation Advice for *Swainsona murrayana* (Slender Darling-pea)” (DEWHA 2008). In effect under the EPBC Act from 01-Oct-2008.

There is no approved Recovery Plan or Listing Advice for this species.

D-1.2.10.4 Is this part of an important population?

Under the Act, important populations are:

1. likely to be key source populations either for breeding or dispersal
2. likely to be necessary for maintaining genetic diversity
3. at or near the limit of the species range.

This species has been recorded, during targeted spring surveys, across the proposal study area from the western end of Boorooban-Tchilery road to the Gums TSR near the Federation highway. Targeted seasonal field surveys confirmed that this species mainly occurs as disjunct patches in the west and as large continual patches in the east. *Swainsona murranaya* at the eastern edge of where it was recorded forms one large continuous patch starting in Bundure Siding TSR and finishing in The Gums TSR. Population estimates would be well into the thousands.

These locations are not at the limit of this species known home range, however given the extent of the species distribution through the study area, it is likely to be key source populations for dispersal or for maintaining genetic diversity given the plants biology.

D-1.2.10.5 Specific impacts

Slender Darling Pea was recorded in the following habitats:

- PCT 17 – Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
- PCT 24 – Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
- PCT 26 – Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
- PCT 44 – Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion
- PCT 45 – Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion
- PCT 46 – Curly Windmill Grass – speargrass – wallaby grass grassland on alluvial clay and loam on the Hay plain, Riverina Bioregion
- PCT 47 – Swamp grassland wetland of the Riverine Plain
- PCT 157 – Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
- PCT 160 – Nitre Goosefoot shrubland wetland on clays of the inland floodplains
- PCT 163 – Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
- PCT 164 – Cotton Bush open shrubland of the semi-arid (warm) zone
- PCT 216 – Black Roly Poly low open shrubland of the Riverina.

For areas not field verified, the following vegetation communities have been assigned as having the potential to contain Slender Darling Pea on a precautionary basis:

- PCT 17 – Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
- PCT 24 – Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
- PCT 26 – Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
- PCT 44 – Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion
- PCT 45 – Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion
- PCT 46 – Curly Windmill Grass – speargrass – wallaby grass grassland on alluvial clay and loam on the Hay plain, Riverina Bioregion
- PCT 47 – Swamp grassland wetland of the Riverine Plain
- PCT 157 – Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
- PCT 160 – Nitre Goosefoot shrubland wetland on clays of the inland floodplains
- PCT 164 – Cotton Bush open shrubland of the semi-arid (warm) zone.

Based on this assessment, approximately 232.35 ha of Slender Darling Pea habitat will be impacted by the proposed action, with key impacts being clearing of individuals and removal or modification of habitat.

D-1.2.10.6 Significant impact criteria

An action is likely to have a significant impact on a Vulnerable species if there is a real chance or possibility that it will:

- **LEAD TO A LONG-TERM DECREASE IN THE SIZE OF AN IMPORTANT POPULATION**

Given the extent of the recorded presence and assumed habitat for *Swainsona murrayana* within the study area, it is likely to be necessary for maintaining genetic diversity or dispersal across the region and is assumed to form part of an important population. While the proposed action will directly impact on a small proportion of the total extant of the local population, it is unlikely to lead to a long-term decrease in the size of an important population of *Swainsona murrayana*

- **REDUCE THE AREA OF OCCUPANCY OF AN IMPORTANT POPULATION**

While proposed action will directly impact on only a small proportion of the total extant of the local population, it is likely to reduce the area of occupancy of an important population of *Swainsona murrayana*.

- **FRAGMENT AN EXISTING IMPORTANT POPULATION INTO TWO OR MORE POPULATIONS**

The proposed action is limited to a linear disturbance footprint that is unlikely to disrupt the ecological processes and functions of the species that would result in the fragmentation of an important population of *Swainsona murrayana* into two or more populations.

- **ADVERSELY AFFECT HABITAT CRITICAL TO THE SURVIVAL OF A SPECIES**

There are no approved important populations for this species contained within the critical habitat register. Given the isolated, sporadic occurrences of known habitat in the study area, it is unlikely that proposed impacts are within habitat critical to the survival of the species.

- **DISRUPT THE BREEDING CYCLE OF AN IMPORTANT POPULATION**

The proposed action is limited to a linear disturbance footprint that is unlikely to disrupt the ecological processes and functions of the species that would disrupt the breeding cycle of an important population of *Swainsona murrayana*.

- **MODIFY, DESTROY, REMOVE OR ISOLATE OR DECREASE THE AVAILABILITY OR QUALITY OF HABITAT TO THE EXTENT THAT THE SPECIES IS LIKELY TO DECLINE**

Habitat impacts total 232.35 ha and given the disjunct nature of known patches; it is difficult to discern if such impacts will cause the species to decline in the broader landscape.

As a precautionary measure, there is **moderate likelihood** that the proposed action may modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

- **RESULT IN INVASIVE SPECIES THAT ARE HARMFUL TO A VULNERABLE SPECIES BECOMING ESTABLISHED IN THE VULNERABLE SPECIES' HABITAT**

Mitigation measures are recommended in the EIS to limit the spread of weeds, pathogens and disease and the proposed action is unlikely to introduce invasive species not currently present in surrounding areas.

- **INTRODUCE DISEASE THAT MAY CAUSE THE SPECIES TO DECLINE**

There are no known diseases causing potential species decline to *Swainsona murrayana.*

- **INTERFERE SUBSTANTIALLY WITH THE RECOVERY OF THE SPECIES**

No Recovery plan has been prepared for this species at this stage. The proposed action could however interfere with the Saving Our Species program due to the removal of 232.35 ha of habitat containing known populations of individuals.

- **CONCLUSION**

While the proposed action will directly impact on only a small proportion of the total extant, it is likely to reduce the area of occupancy of an important population of *Swainsona murrayana* and interfere with the recovery of the species. Therefore the proposed action **may significantly impact** *Swainsona murrayana*.

D-1.2.10.7 NSW Assessment Bilateral requirements

For each of the EPBC Act listed threatened species and communities and migratory species likely to be impacted by the action the EIS must provide a separate*:*

- **DESCRIPTION OF THE HABITAT (INCLUDING IDENTIFICATION AND MAPPING OF SUITABLE BREEDING HABITAT, SUITABLE FORAGING HABITAT, IMPORTANT POPULATIONS AND HABITAT CRITICAL FOR SURVIVAL), WITH CONSIDERATION OF, AND REFERENCE TO, ANY RELEVANT COMMONWEALTH GUIDELINES AND POLICY STATEMENTS INCLUDING LISTING ADVICE, CONSERVATION ADVICE AND RECOVERY PLAN**

A description of habitat for this species, important populations, habitat critical for survival and relevant Commonwealth documents are provided in Section D-1.2.10.3, with a map showing its modelled distribution provided in Figure D-1.10. A map showing the field verified locations of this vegetation within the study area is provided in Appendix D-2.

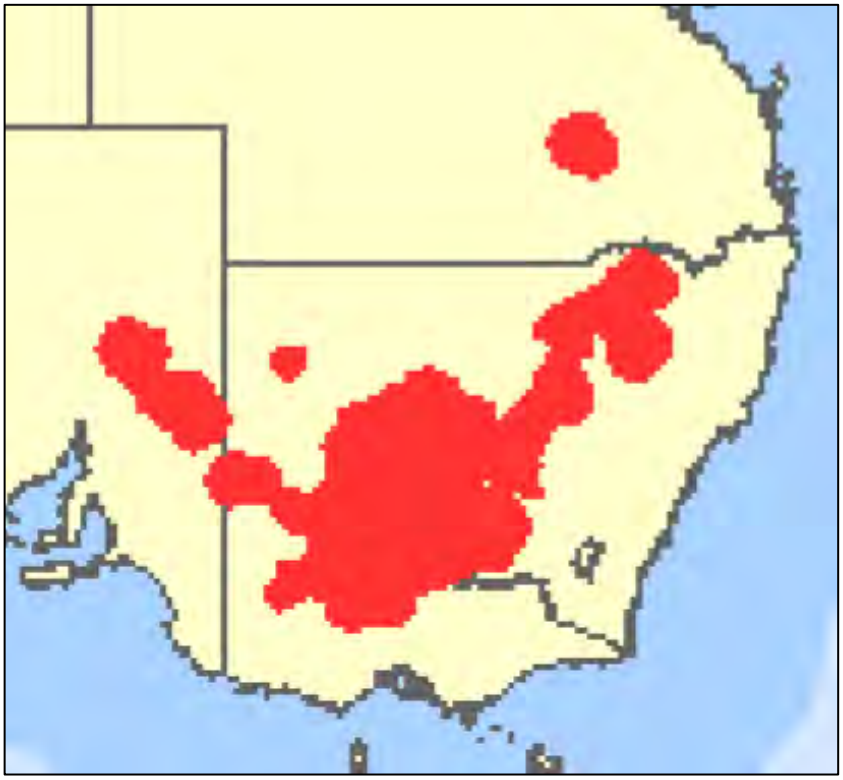


Figure D-1.10 Current distribution map for *Swainsona murrayana* (DAWE 2021)

- **DETAILS OF THE SCOPE, TIMING AND METHODOLOGY FOR STUDIES OR SURVEYS USED AND HOW THEY ARE CONSISTENT WITH (OR JUSTIFICATION FOR DIVERGENCE FROM) PUBLISHED AUSTRALIAN GOVERNMENT GUIDELINES AND POLICY STATEMENTS**

Field survey techniques used to undertake surveys were in general accordance with the *NSW guide for the BAM* (Department of Planning, Industry and Environment, 2020) with a detailed field verification method provided in Section 5.2 of the BDAR. Mapping of native vegetation and habitat extent within the proposal site is required under section 4.1 of the BAM, with detailed requirements outlined in section 3.2 of the BAM 2020 Operational Manual. Field data was used to assign condition classes for any given observed habitat patch, where relevant.

Specific search methodologies, relevant surveyed habitats and survey effort for this species include:

- Representative parallel field traverses (PCT 15, 23, 26, 28, 44, 46, 157, 163, 164 & 216)
  - 4-10 Sept 2020
- 2-phase grid-based systematic survey (PCT 15, 23, 26, 28, 44, 45, 46, 76, 80, 157, 163, 164 & 216)
  - 7-16 Sept 2021
  - 30 Oct 2021

- **DESCRIPTION OF THE SPECIFIC IMPACTS AND ITS REGARD TO THE FULL NATIONAL EXTENT OF THE SPECIES OR COMMUNITY'S RANGE**

The direct impacts of the proposal on *Swainsona murrayana* include removal of approximately 232.35 ha of habitat. The area of potential impact for *Swainsona murrayana* is mapped in Appendix D-3. Figure D-1.10 shows the current known generalised distribution, with the estimated habitat extent unknown (Victoria Department of Sustainability and Environment, 2010).

- **DESCRIPTION OF THE SPECIFIC PROPOSED AVOIDANCE AND MITIGATION MEASURES TO DEAL WITH RELEVANT IMPACTS OF THE ACTION**

The proposed avoidance and mitigation measures are outlined in Section 8 & 10 of the BDAR. Detailed avoidance description for impacts relating to biodiversity values (including threatened species) are outlined in Section 8. Regarding specific measures for this community, the following relevant mitigation measures are recommended for any related residual impacts to the species:

- positioning of the indicative Proposal area to minimise clearance of this species' habitat
- establishment of no-go zones to protect mapped patches of habitat during construction.

- **IDENTIFICATION OF SIGNIFICANT RESIDUAL ADVERSE IMPACTS LIKELY TO OCCUR AFTER THE PROPOSED ACTIVITIES TO AVOID AND MITIGATE ALL IMPACTS ARE TAKEN INTO ACCOUNT**

The residual impact to *Swainsona murrayana* is estimated at 232.35 ha of habitat removal.

- **A DESCRIPTION OF ANY OFFSETS PROPOSED TO ADDRESS RESIDUAL ADVERSE SIGNIFICANT IMPACTS AND HOW THESE OFFSETS WILL BE ESTABLISHED**

Details of offset requirements and obligations for this species as a result of residual impacts due the proposed action is addressed in Section 12 of the BDAR.

- **DETAILS OF HOW THE CURRENT PUBLISHED NSW BIODIVERSITY ASSESSMENT METHOD (BAM) HAS BEEN APPLIED IN ACCORDANCE WITH THE OBJECTS OF THE EPBC ACT TO OFFSET SIGNIFICANT RESIDUAL ADVERSE IMPACTS**

The BDAR specifically addresses Section 11 of the BAM and provides information on the application of the no net loss standard and the project biodiversity offset obligations.

- **DETAILS OF THE OFFSET PACKAGE TO COMPENSATE FOR SIGNIFICANT RESIDUAL IMPACTS INCLUDING DETAILS OF THE CREDIT PROFILES REQUIRED TO OFFSET THE ACTION IN ACCORDANCE WITH THE BAM AND/OR MAPPING AND DESCRIPTIONS OF THE EXTENT AND CONDITION OF THE RELEVANT HABITAT AND/OR THREATENED COMMUNITIES OCCURRING ON PROPOSED OFFSET SITES**

Section 12 of the BDAR outlines the biodiversity offset strategy for the proposal. The offset obligations will be met through implementing a combination of the following offset delivery options, being:

- the purchase and retirement of existing biodiversity credits currently available on the biodiversity credit register
- establishing a biodiversity stewardship site(s) on lands with like for like biodiversity values to those impacted by the proposal
- through making a payment into the Biodiversity Conservation Fund.

D-1.2.11 Lepidium monoplocoides (Winged Peppercress)

D-1.2.11.1 Conservation status

Lepidium monoplocoides is listed as Endangered under the EPBC Act.

D-1.2.11.2 Description

Lepidium monoplocoides is a threatened annual herb listed as Endangered under the EPBC act. The plant occurs as a 15-20 cm high, erect herb with angular and striped stems roughened with smart worts. Fruit occurs as a circular pod about 5 mm long and 44 mm wide with pointed wings extending to narrow notch at the tip.

Lepidium monoplocoides was historically widespread with a large number of records across semi-arid NSW and Victoria but has few recent collections. This species has previously been recorded from localities including Bourke, Cobar, Urana, Balranald and Deniliquin with more recent samples collected from the Hay Plain, south-eastern Riverina and from near Pooncarie.

D-1.2.11.3 Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

There is no approved conservation advice for this species.

Relevant adopted/made recovery plans include:

- National Recovery Plan for the Winged Peppercress Lepidium monoplocoides (Department of Sustainability and Environment, VIC, 2010)

Relevant adopted/made threat abatement plans include:

- Threat abatement plan for competition and land degradation by rabbits (Department of the Environment and Energy, 2016a).
- Threat abatement plan for predation, habitat degradation, competition and disease transmission by feral pigs (Sus scrofa) (Department of the Environment and Energy, 2017).

D-1.2.11.4 Is this part of an important population?

Under the Act, important populations are:

1. likely to be key source populations either for breeding or dispersal
2. likely to be necessary for maintaining genetic diversity
3. at or near the limit of the species range.

This species was tentatively collected from one location along the Riverina Plain within the study area but assumed presence does not occur at the limit of this species range. Species was recorded during the targeted field surveys which determined that the species was in isolated habitats throughout the study area.

This location is not at the limit of the species known range, nor would any population if present be necessary for maintaining genetic diversity or dispersal. Therefore, for the purposes of this assessment, any individuals or population of this species recorded within the study area (if present) are not considered to form part of an important population.

D-1.2.11.5 Specific impacts

Winged Peppercress was recorded in the following habitats:

- PCT 44 – Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion

For areas not field verified, the following vegetation communities have been assigned as having the potential to contain Winged Peppercress on a precautionary basis:

- PCT 44 – Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion

Based on this assessment, approximately 7.00 ha of Winged Peppercress Pea habitat will be impacted by the proposed action, with key impacts being clearing of individuals and removal or modification of habitat.

D-1.2.11.6 Significant impact criteria

An action is likely to have a significant impact on an Endangered species if there is a real chance or possibility that it will:

- **LEAD TO A LONG-TERM DECREASE IN THE SIZE OF AN IMPORTANT POPULATION**

Not applicable. There is no known important population of *Lepidium monoplocoides* identified within the proposal study area.

- **REDUCE THE AREA OF OCCUPANCY OF AN IMPORTANT POPULATION**

Not applicable. There is no known important population of *Lepidium monoplocoides* identified within the proposal study area.

- **FRAGMENT AN EXISTING IMPORTANT POPULATION INTO TWO OR MORE POPULATIONS**

Not applicable. There is no known important population of *Lepidium monoplocoides* identified within the proposal study area.

- **ADVERSELY AFFECT HABITAT CRITICAL TO THE SURVIVAL OF A SPECIES**

There are no approved important populations for this species contained within the critical habitat register. Given the limited occurrences of known habitat in the study area, it is unlikely that proposed impacts are within habitat critical to the survival of the species.

- **DISRUPT THE BREEDING CYCLE OF AN IMPORTANT POPULATION**

Not applicable. There is no important population of *Lepidium monoplocoides* identified within the proposal study area.

- **MODIFY, DESTROY, REMOVE OR ISOLATE OR DECREASE THE AVAILABILITY OR QUALITY OF HABITAT TO THE EXTENT THAT THE SPECIES IS LIKELY TO DECLINE**

Recorded individuals or populations of this species within the proposal study area, are to be avoided as best possible during design refinement. Habitat impacts total 7.0 ha which is considered <0.0.1 of this species predicted habitat and given the disjunct nature of known patches, it is unlikely such impacts will cause the species to decline.

- **RESULT IN INVASIVE SPECIES THAT ARE HARMFUL TO A VULNERABLE SPECIES BECOMING ESTABLISHED IN THE VULNERABLE SPECIES' HABITAT**

Mitigation measures are recommended in the EIS to limit the spread of weeds, pathogens and disease and the proposed action is unlikely to introduce invasive species not currently present in surrounding areas.

- **INTRODUCE DISEASE THAT MAY CAUSE THE SPECIES TO DECLINE**

There are no known diseases causing potential species decline to *Lepidium monoplocoides.*

- **INTERFERE SUBSTANTIALLY WITH THE RECOVERY OF THE SPECIES**

National Recovery Plan for the Winged Peppercress *Lepidium monoplocoides* (Victoria Department of Sustainability and Environment, 2010) identified recovery objectives. The proposed action would impact with Objective 3; which is manage threats to populations (i.e. land clearing), and thereby interfere with the recovery of the species.

- **CONCLUSION**

The action is **unlikely to cause significantly impact** *Lepidium monoplocoides* due to the removal of only 7.00 ha of habitat containing one recorded individual.

D-1.2.11.7 NSW Assessment Bilateral requirements

For each of the EPBC Act listed threatened species and communities and migratory species likely to be impacted by the action the EIS must provide a separate*:*

- **DESCRIPTION OF THE HABITAT (INCLUDING IDENTIFICATION AND MAPPING OF SUITABLE BREEDING HABITAT, SUITABLE FORAGING HABITAT, IMPORTANT POPULATIONS AND HABITAT CRITICAL FOR SURVIVAL), WITH CONSIDERATION OF, AND REFERENCE TO, ANY RELEVANT COMMONWEALTH GUIDELINES AND POLICY STATEMENTS INCLUDING LISTING ADVICE, CONSERVATION ADVICE AND RECOVERY PLAN**

A description of habitat for this species, important populations, habitat critical for survival and relevant Commonwealth documents are provided in Section D-1.2.10.3, with a map showing its modelled distribution provided below. A map showing the field verified locations of this vegetation within the study area is provided in Appendix D-2.

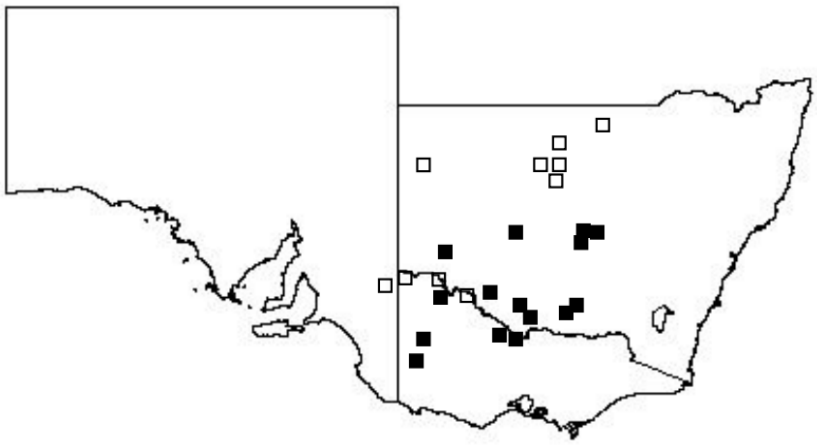


Figure D-1.11 Current distribution map for *Lepidium monoplocoides* (Victoria DSE 2010)

- **DETAILS OF THE SCOPE, TIMING AND METHODOLOGY FOR STUDIES OR SURVEYS USED AND HOW THEY ARE CONSISTENT WITH (OR JUSTIFICATION FOR DIVERGENCE FROM) PUBLISHED AUSTRALIAN GOVERNMENT GUIDELINES AND POLICY STATEMENTS**

Field survey techniques used to undertake surveys were in general accordance with the *NSW guide for the BAM* (Department of Planning, Industry and Environment, 2020) with a detailed field verification method provided in Section 5.2 of the BDAR. Mapping of native vegetation and habitat extent within the proposal site is required under section 4.1 of the BAM, with detailed requirements outlined in section 3.2 of the BAM 2020 Operational Manual. Field data was used to assign condition classes for any given observed habitat patch, where relevant.

Specific search methodologies, relevant surveyed habitats and survey effort for this species include:

Representative parallel field traverses (PCT 13, 15, 24, 26, 160, 163, 170 & 216)

- 4-10 Sept 2020
- 22-29 & 28 Oct 2020

Two-phase grid-based systematic survey (13, 15, 24, 26, 45, 46, 47, 80, 160, 163 & 216)

- 7-16 Sept 2021
- 6-8, 11-13 & 18-20 Oct 2021
- 30 Oct 2021 (a potential *Lepidium monoplocoides* was recorded on property H104)

Active searches during BAM plots & opportunistic surveys

- 19-20 Mar 2020: Species not recorded.
- 22-23 & 26-28 Oct 2020
- 24-31 Mar 2021
- 8-13 Apr 2021
- 7-8 June 2021
- 4-5 & 8-13 Aug 2021
- 31 Oct – 1 Nov 2021

- **DESCRIPTION OF THE SPECIFIC IMPACTS AND ITS REGARD TO THE FULL NATIONAL EXTENT OF THE SPECIES OR COMMUNITY'S RANGE**

The direct impacts of the proposal on *Lepidium monoplocoides* include removal of approximately 7.00 ha of habitat. The area of potential impact for *Lepidium monoplocoides* is mapped in Appendix D-3. Figure D-1.11 shows the current known generalised distribution, with the estimated habitat extent unknown (Victoria Department of Sustainability and Environment, 2010).

- **DESCRIPTION OF THE SPECIFIC PROPOSED AVOIDANCE AND MITIGATION MEASURES TO DEAL WITH RELEVANT IMPACTS OF THE ACTION**

The proposed avoidance and mitigation measures are outlined in Section 8 & 10 of the BDAR. Detailed avoidance description for impacts relating to biodiversity values (including threatened species) are outlined in Section 8. Regarding specific measures for this community, the following relevant mitigation measures are recommended for any related residual impacts to the species:

- positioning of the indicative Proposal area to minimise clearance of this species' habitat
- establishment of no-go zones to protect mapped patches of habitat during construction.

- **IDENTIFICATION OF SIGNIFICANT RESIDUAL ADVERSE IMPACTS LIKELY TO OCCUR AFTER THE PROPOSED ACTIVITIES TO AVOID AND MITIGATE ALL IMPACTS ARE TAKEN INTO ACCOUNT**

The residual impact to *Lepidium monoplocoides* is estimated at 7.00 ha of habitat removal.

- **A DESCRIPTION OF ANY OFFSETS PROPOSED TO ADDRESS RESIDUAL ADVERSE SIGNIFICANT IMPACTS AND HOW THESE OFFSETS WILL BE ESTABLISHED**

Details of offset requirements and obligations for this species as a result of residual impacts due the proposed action is addressed in Section 12 of the BDAR.

- **DETAILS OF HOW THE CURRENT PUBLISHED NSW BIODIVERSITY ASSESSMENT METHOD (BAM) HAS BEEN APPLIED IN ACCORDANCE WITH THE OBJECTS OF THE EPBC ACT TO OFFSET SIGNIFICANT RESIDUAL ADVERSE IMPACTS**

The BDAR specifically addresses Section 11 of the BAM and provides information on the application of the no net loss standard and the project biodiversity offset obligations.

- **DETAILS OF THE OFFSET PACKAGE TO COMPENSATE FOR SIGNIFICANT RESIDUAL IMPACTS INCLUDING DETAILS OF THE CREDIT PROFILES REQUIRED TO OFFSET THE ACTION IN ACCORDANCE WITH THE BAM AND/OR MAPPING AND DESCRIPTIONS OF THE EXTENT AND CONDITION OF THE RELEVANT HABITAT AND/OR THREATENED COMMUNITIES OCCURRING ON PROPOSED OFFSET SITES**

Section 12 of the BDAR outlines the biodiversity offset strategy for the proposal. The offset obligations will be met through implementing a combination of the following offset delivery options, being:

- the purchase and retirement of existing biodiversity credits currently available on the biodiversity credit register
- establishing a biodiversity stewardship site(s) on lands with like for like biodiversity values to those impacted by the proposal
- through making a payment into the Biodiversity Conservation Fund.

D-1.2.12 Golden Sun Moth (*Synemon plana*)

The Golden Sun Moth is listed as Critically Endangered under the EPBC Act and Endangered under the BC Act.

D-1.2.12.1 Description

Golden Sun Moths were historically distributed throughout south-eastern Australia with distribution corresponding with native temperate grasslands across NSW, the ACT, Victoria and South Australia. These grasslands covered approximately 20,000 km^2 over south eastern Australia. Historically Golden Sun Moths were considered to occur wherever there were high quantities of wallaby grasses. Currently, less than 1% of these native temperate grasslands remain and as a result, the Golden Sun Moth populations are highly reduced and fragmented. Today the species is found in native grasslands from Bathurst, NSW through to the Victoria-South Australia border. In NSW, the species has been recorded from 48 sites, though areas of potential habitat have not been comprehensively mapped or surveyed (Department of the Environment 2013).

This species occurs in Natural Temperate Grasslands and grassy Box-Gum Woodlands in which the groundlayer is dominated by wallaby grasses (*Austrodanthonia* spp). Grasslands dominated by wallaby grasses are typically low and open - the bare ground between the tussocks is thought to be an important microhabitat feature for the Golden Sun Moth, as it is typically these areas on which the females are observed displaying to attract males. Habitat may contain several wallaby grass species, which are typically associated with other grasses particularly spear-grasses. Previously, the species was thought to prefer grasslands which have a greater than 40% coverage of wallaby grass, however more recent studies show a broader tolerance for other species compositions, including degraded grasslands dominated by exotic Chilean Needlegrass (*Nassella neesiana*) (Department of Agriculture Water and the Environment 2021).

The flight period is relatively short, typically lasting from six to eight weeks. Males fly only in bright sunshine during the warmest part of the day (1000 - 1400 hrs). Adults emerge continuously throughout the flying season. Golden Sun Moth adult males will not fly more than 100 m away from suitable habitat and females have reduced hind wings and are reluctant to fly (only doing so when disturbed), spending their adult life laying eggs within clumps of Wallaby Grass. Populations separated by distances greater than 200 m can be considered effectively isolated, and sites from which the species has gone extinct are highly unlikely to be recolonised (Department of Agriculture Water and the Environment 2021).

D-1.2.12.2 Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- The *Approved Conservation Advice for* Synemon plana *(Golden Sun Moth)* (Department of the Environment 2013). In effect under the EPBC Act from 17-Dec-2013.
- There is no adopted or made Recovery Plan for this species

Relevant adopted/made threat abatement plans include:

- *Threat abatement plan for competition and land degradation by rabbits* (Department of Environment and Energy 2016).

Relevant survey guidelines for this species include:

- *Significant Impact Guidelines for the Critically Endangered Golden Sun Moth (*Synemon plana*)* (Department of the Environment Water Heritage and the Arts 2009).

D-1.2.12.3 Specific impacts

A PCT (PCT 277) that contains habitat elements suited to the Golden Sun Moth occurs in the study area within the Inland Slopes bioregion. However, only a small proportion of this habitat (3.49 ha) is likely to be cleared for the proposal. Impacts to the species are very unlikely as the presence of the Golden Sun Moth in the Wagga Wagga area has not been confirmed from data bases searches (Atlas of Living Australia, 13 December 2021) or credibly predicted. The species' distribution in NSW is centred around Canberra. The most westerly outlying record located at Tumut, occurs more than 78 km to the east of the study area, and the most westerly of records from the distribution associated with Canberra is 120 km from the study area (Department of Agriculture Water and the Environment 2021). The species is known to be very limited in its movements at known locations, with movement capacity limited to well less than a few hundred metres. From the known range of this species it is very unlikely that this species occurs in the vicinity of the study area. Specific habitats within PCT 277 were surveyed and assessed on 9 December 2021. Some areas (at least five) were shaded from overhead trees, some patches were grazed very shortly by pasture stock, while other sites were depauperate of *Austrodanthonia* spp. or surrogate weed species. No potential habitat areas within the study area were without impacts, which are reducing their suitability for the Golden Sun Moth. Furthermore, although the Proposal will remove trees within the 3.49 ha of mapped potential habitat for this species in the Proposal area, the transmission line footprint will be managed as grassland, which will retain and may somewhat improve the suitability of those patches for this species. It is likely that the majority of the sites will continue to be degraded by stock as all except one occur in private lands being intensively grazed by sheep and alpacas. From the distribution and ecological requirements of this species, the Proposal will not diminish the potential for the Golden Sun Moth to occur within the study, as it is highly unlikely that the species is extant within the vicinity of the Proposal's Proposal area.

D-1.2.12.4 Significant impact criteria

An action is likely to have a significant impact on a Critically Endangered Species if there is a real chance or possibility that it will:

- **LEAD TO A LONG-TERM DECREASE IN THE SIZE OF A POPULATION**

Through investigation into the distribution and ecological requirements of this species, the Proposal will not diminish the potential for the Golden Sun Moth to occur within the study, as it is highly unlikely that the species is extant within the vicinity of the Proposal's Proposal area. Therefore, the Proposal will not lead to a long-term decrease in the size of a Golden Sun Moth population. Nevertheless, the Proposal will retain grassland habitats, which contain habitat elements that are favoured by this species.

- **REDUCE THE AREA OF OCCUPANCY OF THE SPECIES**

Through investigation into the distribution and ecological requirements of this species, the Proposal will not diminish the potential for the Golden Sun Moth to occur within the study, as it is highly unlikely that the species is extant within the vicinity of the Proposal's Proposal area. Therefore, the Proposal will not reduce the area of occupancy of a Golden Sun Moth population. Nevertheless, the Proposal will retain grassland habitats, which contain habitat elements that are favoured by this species.

- **FRAGMENT AN EXISTING POPULATION INTO TWO OR MORE POPULATIONS**

Through investigation into the distribution and ecological requirements of this species, the Proposal will not diminish the potential for the Golden Sun Moth to occur within the study, as it is highly unlikely that the species is extant within the vicinity of the Proposal's Proposal area. Therefore, the Proposal will not fragment an existing population into two or more populations of the Golden Sun Moth. Nevertheless, the Proposal will retain grassland habitats, which contain habitat elements that are favoured by this species and will not fragment grassland habitats.

- **ADVERSELY AFFECT HABITAT CRITICAL TO THE SURVIVAL OF A SPECIES**

Habitat critical to the survival of a species refers to areas that are necessary:

- for activities such as foraging, breeding, roosting, or dispersal
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
- to maintain genetic diversity and long-term evolutionary development, or
- for the reintroduction of populations or recovery of the species or ecological community. (Department of the Environment Water Heritage and the Arts 2013)

No critical habitat for this species is currently listed under the EPBC Act (Department of Agriculture Water and the Environment 2021).

Through investigation into the distribution and ecological requirements of this species, the Proposal will not diminish the potential for the Golden Sun Moth to occur within the study, as it is highly unlikely that the species is extant within the vicinity of the Proposal's Proposal area. Therefore, the Proposal does adversely impact habitat which might be functionally critical to the Golden Sun Moth.

- **DISRUPT THE BREEDING CYCLE OF A POPULATION**

Through investigation into the distribution and ecological requirements of this species, the Proposal will not diminish the potential for the Golden Sun Moth to occur within the study, as it is highly unlikely that the species is extant within the vicinity of the Proposal's Proposal area. Therefore, the Proposal disrupt the breeding cycle of a Golden Sun Moth population. Nevertheless, the Proposal will retain grassland habitats, which contain habitat elements that are favoured by this species.

- **MODIFY, DESTROY, REMOVE OR ISOLATE OR DECREASE THE AVAILABILITY OR QUALITY OF HABITAT TO THE EXTENT THAT THE SPECIES IS LIKELY TO DECLINE**

Through investigation into the distribution and ecological requirements of this species, the Proposal will not diminish the potential for the Golden Sun Moth to occur within the study, as it is highly unlikely that the species is extant within the vicinity of the Proposal's Proposal area. Therefore, the Proposal will not modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the Golden Sun Moth is likely to decline. Nevertheless, the Proposal will retain and diminish the quality of grassland habitats, which contain habitat elements that are favoured by this species.

- **RESULT IN INVASIVE SPECIES THAT ARE HARMFUL TO A CRITICALLY ENDANGERED OR ENDANGERED SPECIES BECOMING ESTABLISHED IN THE ENDANGERED OR CRITICALLY ENDANGERED SPECIES' HABITAT**

Through investigation into the distribution and ecological requirements of this species, the Proposal will not diminish the potential for the Golden Sun Moth to occur within the study, as it is highly unlikely that the species is extant within the vicinity of the Proposal's Proposal area and grassland habitats will be retained. Therefore, the Proposal will not modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the Golden Sun Moth is likely to decline.

- **INTRODUCE DISEASE THAT MAY CAUSE THE SPECIES TO DECLINE**

Through investigation into the distribution and ecological requirements of this species, the Proposal will not diminish the potential for the Golden Sun Moth to occur within the study, as it is highly unlikely that the species is extant within the vicinity of the Proposal's Proposal area. Therefore, the Proposal will not introduce disease that may cause the Golden Sun Moth to decline.

- **INTERFERE SUBSTANTIALLY WITH THE RECOVERY OF THE SPECIES**

A recovery plan for the species is yet to be developed. A Conservation Advice instrument has been developed for the species within the ACT (ACT Government 2020) which outlines broad conservation priorities for the species survival which are considered likely to be applicable for NSW populations. These priorities include:

- conserve larger populations on larger sites
- conserve optimal habitat quality, particularly through an appropriate herbage mass management regime
- establish relevant monitoring and research for adaptive management of habitat
- manage adjacent grassland to increase habitat area and connect populations or establish/re-establish populations
- identify opportunities and collaborate with research institutions and non-government organisations, especially citizen science and volunteer efforts.

Through investigation into the distribution and ecological requirements of this species, the Proposal will not diminish the potential for the Golden Sun Moth to occur within the study, as it is highly unlikely that the species is extant within the vicinity of the Proposal's Proposal area. Therefore, the Proposal will not interfere with Golden Sun Moth recovery. Nevertheless, the Proposal will retain grassland habitats, which contain habitat elements that are favoured by this species.

- **CONCLUSION**

The proposed action will result in the removal of 3.49 ha of habitat containing elements that are known food plant species of the Golden Sun Moth. However, through investigation into the distribution and ecological requirements of this species, the Proposal will not diminish the potential for the Golden Sun Moth to occur within the study, as it is highly unlikely that the species is extant within the vicinity of the Proposal's Proposal area. Nevertheless, the Proposal will retain grassland habitats, which contain habitat elements that are favoured by this species. Therefore, the Proposal will not interfere with the ecological requirements of the Golden Sun Moth. Consequently, the proposed action is **considered unlikely to have a significant impact** on the Golden Sun Moth.

D-1.2.12.5 NSW Assessment Bilateral requirements

- **DESCRIPTION OF THE HABITAT (INCLUDING IDENTIFICATION AND MAPPING OF SUITABLE BREEDING HABITAT, SUITABLE FORAGING HABITAT, IMPORTANT POPULATIONS AND HABITAT CRITICAL FOR SURVIVAL), WITH CONSIDERATION OF, AND REFERENCE TO, ANY RELEVANT COMMONWEALTH GUIDELINES AND POLICY STATEMENTS INCLUDING LISTING ADVICE, CONSERVATION ADVICE AND RECOVERY PLAN**

Relevant Commonwealth guidelines for this species including listing advice, conservation advice and recovery plan are identified in Section D-1.2.12.2. There is no specific critical habitat listed for Golden Sun Moth. The *Significant Impact Guidelines for the Critically Endangered Golden Sun Moth (*Synemon plana*)* (Department of the Environment Water Heritage and the Arts 2009) identifies some definitions of important habitat which may trigger significant impact thresholds if removed.

Table D-1.3 Significant impact thresholds for the Golden Sun Moth

ECOLOGICAL ELEMENT AFFECTED	IMPACT THRESHOLD	THRESHOLD NOTES	ASSOCIATED PROPOSAL IMPACT
Large or continuous habitat area (>10 ha)	Habitat loss, degradation or fragmentation >0.5 ha	Habitat is similar or connected area within which the Golden sun Moth is found during surveys or known from records. The function of the area may include, but is not limited to: feeding, breeding, dispersal.	No impact as this species is very unlikely to occur within the locality of the Proposal's Proposal area, and suitable grasslands will be retained.
Small or fragmented habitat area (<10 ha)	Any habitat loss, degradation or fragmentation	Small areas of habitat are more likely to suffer significant impacts from loss, degradation and fragmentation than larger areas. The limited dispersal ability of the Golden Sun Moth means habitat areas are separated by >200 m are effectively isolated and should be considered as separate habitat areas. Extremely small, isolated and degraded habitat patches (for example <0.25 ha) may support population of Golden Sun Moth but are unlikely to contribute to the overall ecological health of the species.	No impact as this species is very unlikely to occur within the locality of the Proposal's Proposal area, and suitable grasslands will be retained.
Habitat connectivity	Fragmentation of a population through the introduction of a barrier to dispersal	Barriers to dispersal could include: breaks in habitat of >200 m; structures that prohibit movement (for example buildings, solid fences)	No impact as this species is very unlikely to occur within the locality of the Proposal's Proposal area, and suitable grasslands will be retained.

The Golden Sun Moth has potential to occur in the Inland Slopes bioregion within 277 (Western Slopes Grassy Woodlands). This species has not been recorded within the Proposal study area or its wider locality, the closest records being more than 78 km from the Proposal's study area and onsite habitat elements were observed to be in poor condition. Only a small area (3.49 ha) of low-quality habitat for this species occurs within the Proposal area and the species, is considered very unlikely to occur in the Wagga region. Nevertheless, the Proposal will retain grassland habitats, which contain habitat elements that are favoured by this species. Consequently, no significant impact is expected.

- **DETAILS OF THE SCOPE, TIMING AND METHODOLOGY FOR STUDIES OR SURVEYS USED AND HOW THEY ARE CONSISTENT WITH (OR JUSTIFICATION FOR DIVERGENCE FROM) PUBLISHED AUSTRALIAN GOVERNMENT GUIDELINES AND POLICY STATEMENTS**

A habitat assessment survey was completed within the Proposal study area while surveys were carried out in accordance with the *Significant Impact Guidelines for the Critically Endangered Golden Sun Moth (*Synemon plana*)* (Department of the Environment Water Heritage and the Arts 2009).

Habitat assessments were undertaken to assess the likelihood of threatened species of animal (those species known or predicted to occur within the locality from the literature and database review) occurring within the Proposal study area. Fauna habitat assessments were the primary assessment tool in assessing whether threatened species were likely to occur within the Proposal study area. The survey effort for Golden Sun Moth is outlined in Table D-1.4.

Table D-1.4 Summary of survey effort for Golden Sun Moth

FAUNA GROUP	SURVEY TECHNIQUE	SURVEY EFFORT	OPTIMUM SURVEY PERIOD	DATES SURVEYED
PCT 277				
Golden Sun Moth	Transects walked through mapped potential habitat areas	12-person hours of targeted surveys across 7 patches of potential habitat	Late Oct – early Jan	9 Dec 2021

- **DESCRIPTION OF THE SPECIFIC IMPACTS AND ITS REGARD TO THE FULL NATIONAL EXTENT OF THE SPECIES OR COMMUNITY'S RANGE**

There is habitat containing suitable elements for Golden Sun Moth within the Inland Slopes bioregion within PCT 277. Due to the minimal quality and size of available habitat within the Proposal area in comparison to the surrounding locality and region, the presence of this species is considered unlikely, and habitat impacts are not likely to be significant, as the Proposal will retain grassland habitats, which contain habitat elements that are favoured by this species..

There is no current mapped distribution under the Commonwealth profile for this species. Figure D-1.12 shows the current generalised historical distribution from the NSW Threatened Biodiversity Database which is an indicative distribution map covering the historical and present distribution of the species based on best available knowledge.

The Proposal occurs on the boundary of the area of historical NSW distribution of the species, but not the currently known distribution, which occurs between Queanbeyan, Gunning, Young and Tumut (Department of Planning industry and Environment 2021). There are no recent records (Atlas of Living Australia) within 10km of Wagga Wagga and the Proposal area is not likely to significantly impact habitat used by this species as grassland habitats will be conserved within the Proposal's alignment. Nevertheless, the Proposal will retain grassland habitats, which contain habitat elements that are favoured by this species.



Figure D-1.12 Current distribution map for Golden Sun Moth taken from the NSW Threatened Biodiversity Data Collection (Department of Planning industry and Environment 2021)

- **DESCRIPTION OF THE SPECIFIC PROPOSED AVOIDANCE AND MITIGATION MEASURES TO DEAL WITH RELEVANT IMPACTS OF THE ACTION**

The proposed avoidance and mitigation measures are outlined in Section 8 & 10 of the BDAR. Detailed avoidance description for impacts relating to biodiversity values (including threatened species) are outlined in Section 8. Mitigation measures to be implemented are outlined in Section 11. No specific measures for Golden Sun Moth are identified, but the Proposal will continue to retain grassland habitats throughout its life, and the removal of canopy vegetation from the small areas of PCT277 is likely to enhance the suitability of this PCT for the Golden Sun Moth, although grazing pressures are expected to continue at those sites.

- **IDENTIFICATION OF SIGNIFICANT RESIDUAL ADVERSE IMPACTS LIKELY TO OCCUR AFTER THE PROPOSED ACTIVITIES TO AVOID AND MITIGATE ALL IMPACTS ARE TAKEN INTO ACCOUNT**

No residual impact to the Golden Sun Moth is expected, due to its low chance of occurrence and the retention of habitat containing preferred habitat features for this species.

- **A DESCRIPTION OF ANY OFFSETS PROPOSED TO ADDRESS RESIDUAL ADVERSE SIGNIFICANT IMPACTS AND HOW THESE OFFSETS WILL BE ESTABLISHED**

Details of offset requirements and obligations for this species as a result of residual impacts due the proposed action is addressed in Section 12 of the BDAR.

- **DETAILS OF HOW THE CURRENT PUBLISHED NSW BIODIVERSITY ASSESSMENT METHOD (BAM) HAS BEEN APPLIED IN ACCORDANCE WITH THE OBJECTS OF THE EPBC ACT TO OFFSET SIGNIFICANT RESIDUAL ADVERSE IMPACTS**

The BDAR specifically addresses Section 11 of the BAM and provides information on the application of the no net loss standard and the Proposal biodiversity offset obligations. Credit calculations were quantified using the BAM-C Version 1.3.0.00.

- **DETAILS OF THE OFFSET PACKAGE TO COMPENSATE FOR SIGNIFICANT RESIDUAL IMPACTS INCLUDING DETAILS OF THE CREDIT PROFILES REQUIRED TO OFFSET THE ACTION IN ACCORDANCE WITH THE BAM AND/OR MAPPING AND DESCRIPTIONS OF THE EXTENT AND CONDITION OF THE RELEVANT HABITAT AND/OR THREATENED COMMUNITIES OCCURRING ON PROPOSED OFFSET SITES**

Section 12 of the BDAR outlined the biodiversity offset strategy for the proposal. The offset obligations will be met through implementing a combination of the following offset delivery options, being:

- the purchase and retirement of existing biodiversity credits currently available on the biodiversity credit register
- establishing a biodiversity stewardship site(s) on lands with like for like biodiversity values to those impacted by the proposal
- through making a payment into the Biodiversity Conservation Fund.

D-1.2.13 Sloane's Froglet (*Crinia sloanei*)

The Sloane's Froglet is listed as Endangered under the EPBC Act and Vulnerable under the BC Act.

D-1.2.13.1 Description

Sloane's Froglet is a small ground-dwelling frog, easily identified by call and its physical features. Sloane's Froglets have less variation in back-patterning than other Crinia species. They are mustard yellow or greyish in colour with large patches of darker pigment over the body and a grey/green throat in males (Department of Planning Industry and Environment 2019). The species is endemic to the Murray Darling Basin, occurring from the Victorian to the Queensland border, with the majority of records in the Darling Riverine Plains, NSW South Western Slopes and Riverina bioregions in New South Wales. Sloane's Froglet numbers have declined over time, with few recent records in the north and south of its range. In more recent surveys, the species has not been detected at a number of previous known sites in NSW (e.g. Holbrook, Nyngan, Wagga Wagga and Tocumwal). Sloane's Froglets inhabit and breed in both temporary and permanent waterbodies including oxbows off creeks and rivers, farm dams, large and small natural wetlands, constructed frog ponds and temporary puddles, preferring wetlands that contain riparian and aquatic vegetation (Threatened Species Scientific Committee 2019). Ninety five percent of the species records since 2000 have been made in rural residential or peri-urban areas in the Albury – Thurgoona, Howlong and Corowa - Wahgunyah and Rutherglen areas (Threatened Species Scientific Committee 2019).

D-1.2.13.2 Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- The approved *Conservation Advice* for *Crinia sloanei* (Sloane's Froglet) was consulted as part of this assessment (Threatened Species Scientific Committee 2019).
- There is no Listing Advice for this species.
- There is no recovery plan for this species. As outlined in the Commonwealth species profile (Department of Agriculture Water and the Environment 2021), a recovery plan is not required as 'Sloane's Froglet is located in a relatively small area on the border between two jurisdictions and the Conservation Advice sufficiently outlines the priority research and conservation actions needed to support the recovery of this species (20/06/2019).'

No threat abatement plan has been identified for this species.

Relevant survey guidelines for this species include:

- Survey Guidelines for Australia's Threatened Frogs. EPBC Act survey guidelines 6.3 (Department of the Environment Water Heritage and the Arts 2010).

D-1.2.13.3 Specific impacts

Sloane's Froglet has potential habitat within the Proposal study area in the Murrumbidgee, Lower Slopes and Inland Slopes subregions in the form of associated PCTs: 5, 74, 76, 80, 249 and water bodies recorded. Habitat within and around waterbodies in the Proposal area will generally be avoided, with the maximum impact limited to the removal or trimming of tree canopy on riverbanks to facilitate the construction and operation of the powerlines spanning riparian areas. Nevertheless, this assessment has been completed as a precautionary measure as a few scattered records occur within the locality (though none within the Proposal boundary).

D-1.2.13.4 Significant impact criteria

An action is likely to have a significant impact on an Endangered or Critically Endangered Species if there is a real chance or possibility that it will:

- **LEAD TO A LONG-TERM DECREASE IN THE SIZE OF A POPULATION**

This species has not been recorded within the Proposal study area, despite targeted surveys. Potential habitat for the species exists within the Proposal study area within recorded water bodies, however, these habitats within the study area were generally in poor condition for this species and there will be no direct impacts to permanent water bodies that are likely to provide suitable habitat. Consequently, the Proposal is considered unlikely to significantly decrease the size of any population of the species, if present. Mitigation measures will be implemented to prevent indirect impacts to retained habitat.

- **REDUCE THE AREA OF OCCUPANCY OF THE SPECIES**

This species has not been recorded within the Proposal study area. Sloane's froglet has potential habitat within associated PCTs: 5, 74, 76, 80, 249 and a number of waterbodies presenting suitable, though degraded habitat for the species, were recorded within the Proposal study area. However, any aquatic habitat, inclusive of these waterbodies is unlikely to be directly impacted by the proposal, while indirect impacts to habitat would be controlled through mitigation measures. Due to the paucity of records within the locality, and low quality of habitat in comparison to that available within the broader region, the presence of this species is considered unlikely and habitat would not be anticipated to have any direct impact from the proposed action. As such, the Proposal is considered unlikely to reduce the area of the occupancy of the species.

- **FRAGMENT AN EXISTING POPULATION INTO TWO OR MORE POPULATIONS**

Marginal low-quality habitat (waterbodies) was recorded within the Proposal area. These habitats have the potential to be used by Sloane's Froglet, however, the species is generally considered unlikely to occur within the Proposal study area and has no records within the immediate boundary. Further, no fragmentation of water bodies or adjacent terrestrial habitats would occur, and the maximum aquatic impact likely would be the removal or trimming of tree canopy on riverbanks to facilitate the construction and operation of the powerlines spanning riparian areas. Any potential indirect impacts would be managed through mitigation measures. Consequently, any population, if present, would not be fragmented into two or more populations.

- **ADVERSELY AFFECT HABITAT CRITICAL TO THE SURVIVAL OF A SPECIES**

Habitat critical to the survival of a species refers to areas that are necessary:

- for activities such as foraging, breeding, roosting, or dispersal
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
- to maintain genetic diversity and long-term evolutionary development, or
- for the reintroduction of populations or recovery of the species or ecological community. (Department of the Environment Water Heritage and the Arts 2013)

No critical habitat has been listed for this species under the EPBC Act (Department of Agriculture Water and the Environment 2021). Sloane's Froglet has a number of important habitat elements that it uses, as defined by the approved conservation advice. The species prefers wetlands containing riparian and aquatic vegetation and is typically found in waterbodies that contain grasses and reeds of medium height, which the species requires to attach its eggs for breeding. Sloane's Froglets (like most amphibians) require some connection between breeding and refuge sites (i.e. roadside drains, table drains, irrigation channels and inundated grasslands). In addition, the majority of habitats in which the species has been recorded include two Critically Endangered and one Endangered Ecological Communities - Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains listed Critically Endangered under the EPBC Act; White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland listed Critically Endangered under the EPBC Act; Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and the Derived Native Grasslands of South-eastern Australia listed Endangered under the EPBC Act (Threatened Species Scientific Committee 2019).

The Proposal study area contains only a few waterbodies presenting low-quality habitat for this species, while areas of higher quality habitat are available elsewhere within the locality and broader region. Consequently, the habitat within the Proposal study area is not considered critical to the survival of this species.

- **DISRUPT THE BREEDING CYCLE OF A POPULATION**

Sloane's Froglets lay only a small number of eggs (can be fewer than 30 eggs in total), which hatch 10 days after laying and metamorphosis may occur in late spring to autumn if breeding takes place in winter or spring). The number of annual clutches is unknown. Preferred breeding sites are shallow natural or constructed pools to 20 cm depth containing emergent vegetation (Threatened Species Scientific Committee 2019).

No waterbodies containing breeding habitat are likely to be directly impacted so it is considered unlikely that the action would adversely disrupt the breeding cycle of a population, if present. Mitigation measures will be implemented to prevent indirect impacts to retained habitat within the Proposal study area.

- **MODIFY, DESTROY, REMOVE OR ISOLATE OR DECREASE THE AVAILABILITY OR QUALITY OF HABITAT TO THE EXTENT THAT THE SPECIES IS LIKELY TO DECLINE**

Habitat within the Proposal study area is not likely to be directly impacted by the Proposal and the Proposal is considered unlikely to result in the modification, removal, isolation, or decreased availability or quality of habitat to the extent that the species is likely to decline. Mitigation measures will be implemented to prevent indirect impacts to retained areas of habitat.

- **RESULT IN INVASIVE SPECIES THAT ARE HARMFUL TO A CRITICALLY ENDANGERED OR ENDANGERED SPECIES BECOMING ESTABLISHED IN THE ENDANGERED OR CRITICALLY ENDANGERED SPECIES' HABITAT**

The only invasive species known to threaten Sloane's Froglet is pigs (*Sus scrofa*) which can damage habitat and potentially cause adult mortality. Mitigation measures will be put in place for the Proposal which would aim to prevent further enabling of pigs or other feral species into potential Sloane's Froglet habitat.

The Proposal largely occurs within an agricultural landscape containing existing weeds and pests. The Proposal is unlikely to have any direct impact on habitat for the species and would not be likely to significantly increase the presence of pests or weeds above those currently present in the landscape. There is potential for indirect impacts from construction on retained habitat areas, however, mitigation measures such as weed and pathogen controls would be put in place to minimise the likelihood of invasive species becoming established during construction.

- **INTRODUCE DISEASE THAT MAY CAUSE THE SPECIES TO DECLINE**

This species is susceptible to Amphibian Chytrid Fungus (*Batrachochytrium dendrobatidis*), which has been identified as the cause of population decline for this species and many others along the eastern ranges. Mitigation measures will be implemented as part of the Proposal including wash down areas and hygiene protocols to prevent contamination and minimising the spread of disease.

- **INTERFERE SUBSTANTIALLY WITH THE RECOVERY OF THE SPECIES**

There is no adopted or made recovery plans for this species. The conservation advice for the species outlines the key conservation action is to 'identify important extant populations and ensure suitable habitat for this species is being maintained and restored.' A number of conservation and management priorities are identified to assist with this objective (Threatened Species Scientific Committee 2019).

Given that no extant populations are currently known from the Proposal study area, and habitat within the study area (which is unlikely to be directly impacted by the proposal) is not considered critical for the survival of the species the action is unlikely to interfere with any of the recovery actions that have been identified to meet the specific objective outlined above.

- **CONCLUSION**

Sloane's Froglet was not recorded within the Proposal study area. Potential habitat in the form of PCT 5,74, 76, 80, 249 and various waterbodies occur within the study area, though these were generally degraded in quality. In addition, greater quality habitat is available to this species in the surrounding locality. Overall, the Proposal is considered unlikely to impact upon habitats in which this species is most likely to occur - habitat within and around waterbodies in the Proposal area will generally be avoided, with the maximum impact limited to the removal or trimming of tree canopy on riverbanks to facilitate the construction and operation of the powerlines spanning riparian areas.

Given that there would be no direct impact to waterbodies and mitigation measures will be implemented to prevent indirect impacts to habitat it is unlikely that the proposed action would have significant impact on the species.

D-1.2.13.5 NSW Assessment Bilateral requirements

- **DESCRIPTION OF THE HABITAT (INCLUDING IDENTIFICATION AND MAPPING OF SUITABLE BREEDING HABITAT, SUITABLE FORAGING HABITAT, IMPORTANT POPULATIONS AND HABITAT CRITICAL FOR SURVIVAL), WITH CONSIDERATION OF, AND REFERENCE TO, ANY RELEVANT COMMONWEALTH GUIDELINES AND POLICY STATEMENTS INCLUDING LISTING ADVICE, CONSERVATION ADVICE AND RECOVERY PLAN**

There is no adopted or made recovery plans or Listing Advice for this species. The *Conservation Advice for Crinia sloanei (Sloane's Froglet)* (Threatened Species Scientific Committee 2019) indicates that important habitat for Sloane's Froglet includes wetlands containing riparian and aquatic vegetation especially waterbodies that contain grasses and reeds of medium height and small stems (such as couch (*Elymus repens*), watercouch (*Paspalum paspaloides*) or the Common Spikerush (*Eleocharis acuta*). Sloane's Froglets use this vegetation to attach eggs for breeding. Sloane's Froglets (like most amphibians) require some connection between breeding and refuge sites (i.e. roadside drains, table drains, irrigation channels and inundated grasslands). In addition, the majority of habitats in which the species has been recorded include two Critically Endangered and one Endangered Ecological Communities - Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains listed Critically Endangered under the EPBC Act; White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland listed Critically Endangered under the EPBC Act; Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and the Derived Native Grasslands of South-eastern

Australia listed Endangered under the EPBC Act (Threatened Species Scientific Committee 2019). The key ecological requirements for this species are outlined in this approved conservation advice.

This species has not been recorded within the Proposal study area. Marginal poor-quality potential habitat occurs in the form of waterbodies within the Proposal area; however, the species was not recorded during any amphibian surveys of the Proposal study area. No direct impact to potential habitat for this species is anticipated from the Proposal and indirect impacts will be managed through mitigation measures. Consequently, the presence of this species is considered unlikely and no significant impact is expected.

- **DETAILS OF THE SCOPE, TIMING AND METHODOLOGY FOR STUDIES OR SURVEYS USED AND HOW THEY ARE CONSISTENT WITH (OR JUSTIFICATION FOR DIVERGENCE FROM) PUBLISHED AUSTRALIAN GOVERNMENT GUIDELINES AND POLICY STATEMENTS**

Threatened frog surveys completed within the Proposal study area were carried out in accordance with the *Survey Guidelines for Australia's Threatened Frogs. EPBC Act survey guidelines* 6.3 (Department of the Environment Water Heritage and the Arts 2010). Habitat assessments were undertaken to assess the likelihood of threatened species of animal (those species known or predicted to occur within the locality from the literature and database review) occurring within the Proposal study area. Fauna habitat assessments were the primary assessment tool in assessing whether threatened species were likely to occur within the Proposal study area. Available habitat was very limited in terms of aquatic resources, though targeted surveys occurred when opportunities were available which included spotlighting transects when conditions were optimal (i.e. after moderate rainfall events). The survey effort for Sloane's Froglet is outlined in Table D-1.5.

Table D-1.5 Summary of survey effort for Sloane's Toadlet

FAUNA GROUP	SURVEY TECHNIQUE	SURVEY EFFORT	OPTIMUM SURVEY PERIOD	DATES SURVEYED
Grassy Woodlands PCT74, PCT76, PCT80,				
Amphibians	Assessment of wetland habitats.	Assessment of wetland habitat. (4 person hrs) Frog call playback, targeted survey (1 site – 2 person hrs) Spotlighting (1 site – 8 person hrs) Assessment of wetland habitats. Frog call playback and spotlighting/ targeted survey (4 person hrs)	All year, with increased breeding activity in July and August	22 July 2020 22 July 2020 22 July 2020 23 – 24 Aug 2021
Riverine Woodlands/wetlands – PCT5, PCT249				
Amphibians	Targeted surveys and call playback during suitable conditions	Assessment of riparian/wetland habitat. (60 person hrs) Frog call playback, targeted survey (4 sites – 6 person hrs) Spotlighting (5 sites – 8 person hrs)	All year, with increased breeding activity in July and August	20 – 22 July 2020 21 – 22 July 2020 20 – 22 July 2020

- **DESCRIPTION OF THE SPECIFIC IMPACTS AND ITS REGARD TO THE FULL NATIONAL EXTENT OF THE SPECIES OR COMMUNITY'S RANGE**

Sloane's Froglet has potential habitat within the Proposal study area in the form of recorded waterbodies. The mapped extent of the species' range does not significantly enter the footprint of the predictive Proposal area. In Figure D-1.13 below it can be seen that Wagga Wagga only occurs at the extremity of the area mapped where *C. sloanei* may occur and not where it is likely to occur. However, surveys were undertaken throughout eastern sections of the Proposal alignment, where targeted surveys for the species failed to locate any individuals. Overall the Proposal is considered unlikely to impact upon habitat within and around waterbodies, with the maximum impact limited to the removal or trimming of tree canopy on riverbanks to facilitate the construction and operation of the powerlines spanning riparian areas. Due to the paucity of records within the locality, the minimal quality and size of available habitat in the study area, in comparison to the surrounding locality and region, the presence of this species is considered unlikely, and no direct impact to the habitat is expected from the proposal.

Figure D-1.13 shows the current known generalised distribution from the Departments Species of National Environmental Significance dataset which is an indicative distribution map of the present distribution of the species based on best available knowledge. The Proposal occurs through the area of likely distribution of the species but is not likely to impact on habitat used by this species. Potential habitat for Sloane's Froglet is widespread but high-quality habitat is uncommon and known occurrences of the species in recent years have been restricted to only a small geographic area.

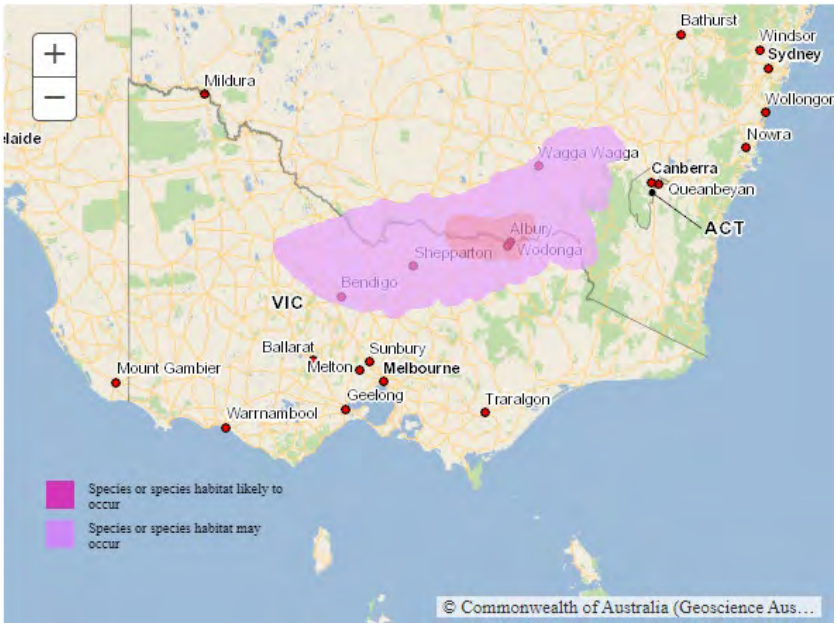


Figure D-1.13 Current distribution map for Sloane's Froglet taken from the SPRAT

- **DESCRIPTION OF THE SPECIFIC PROPOSED AVOIDANCE AND MITIGATION MEASURES TO DEAL WITH RELEVANT IMPACTS OF THE ACTION**

The proposed avoidance and mitigation measures are outlined in Section 8 & 10 of the BDAR. Detailed avoidance description for impacts relating to biodiversity values (including threatened species) are outlined in Section 8. Mitigation measures to be implemented are outlined in Section 11. No specific measures for Sloane's Froglet are identified.

- **IDENTIFICATION OF SIGNIFICANT RESIDUAL ADVERSE IMPACTS LIKELY TO OCCUR AFTER THE PROPOSED ACTIVITIES TO AVOID AND MITIGATE ALL IMPACTS ARE TAKEN INTO ACCOUNT**

No residual impact to the Sloane's Froglet is expected.

- **A DESCRIPTION OF ANY OFFSETS PROPOSED TO ADDRESS RESIDUAL ADVERSE SIGNIFICANT IMPACTS AND HOW THESE OFFSETS WILL BE ESTABLISHED**

Details of offset requirements and obligations for this species as a result of residual impacts due the proposed action is addressed in Section 12 of the BDAR.

- **DETAILS OF HOW THE CURRENT PUBLISHED NSW BIODIVERSITY ASSESSMENT METHOD (BAM) HAS BEEN APPLIED IN ACCORDANCE WITH THE OBJECTS OF THE EPBC ACT TO OFFSET SIGNIFICANT RESIDUAL ADVERSE IMPACTS**

The BDAR specifically addresses Section 11 of the BAM and provides information on the application of the no net loss standard and the Proposal biodiversity offset obligations. Credit calculations were quantified using the BAM-C Version 1.3.0.00.

- **DETAILS OF THE OFFSET PACKAGE TO COMPENSATE FOR SIGNIFICANT RESIDUAL IMPACTS INCLUDING DETAILS OF THE CREDIT PROFILES REQUIRED TO OFFSET THE ACTION IN ACCORDANCE WITH THE BAM AND/OR MAPPING AND DESCRIPTIONS OF THE EXTENT AND CONDITION OF THE RELEVANT HABITAT AND/OR THREATENED COMMUNITIES OCCURRING ON PROPOSED OFFSET SITES**

Section 12 of the BDAR outlined the biodiversity offset strategy for the proposal. The offset obligations will be met through implementing a combination of the following offset delivery options, being:

- the purchase and retirement of existing biodiversity credits currently available on the biodiversity credit register
- establishing a biodiversity stewardship site(s) on lands with like for like biodiversity values to those impacted by the proposal
- through making a payment into the Biodiversity Conservation Fund.

D-1.2.14 Booroolong Frog (*Litoria Booroolongensis*)

The Booroolong Frog is listed as Endangered under the EPBC Act and BC Act.

D-1.2.14.1 Description

Booroolong Frog is restricted to NSW and north-eastern Victoria, occurring predominantly along the western-flowing streams of the Great Dividing Range (Office of Environment & Heritage 2017). Previously, the species was predominantly found along these streams and their headwaters at elevations from 200–1300 though now only occupies a small part of this distribution in low abundance and has mostly disappeared from high elevation streams. Large areas of modified and unsuitable habitat separate subpopulations.

The species lives exclusively along rocky sections of permanent streams in wet and dry forest, woodland, and cleared grazed land. Habitat typically have some fringing vegetation cover such as ferns, sedges or grasses. Adults occur on or near cobble banks and other rock structures within stream margins and shelter under rocks or amongst vegetation near the ground on the stream edge.

Booroolong Frogs breed from October to January and have high fecundity. Females lay around 1300 eggs in rock crevices in shallow, slow-flowing sections of streams or isolated rock pools along stream margins (Threatened Species Scientific Committee 2021).

D-1.2.14.2 Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- The approved *Conservation Advice for* Litoria booroolongensis *Booroolong Frog* (Threatened Species Scientific Committee 2021) was reviewed as part of this assessment.
- There is no Listing Advice for this species.
- A recovery plan is required however the *National Recovery Plan for Booroolong Frog* (Litoria booroolongensis) (Office of Environment and Heritage 2012) is being considered for adoption once completed. This was reviewed as part of this assessment.

Relevant adopted/made threat abatement plans include:

- Threat abatement plan for infection of amphibians with chytrid fungus resulting in chytridiomycosis (Commonwealth of Australia 2016)

Relevant survey guidelines for this species include:

- Survey Guidelines for Australia's Threatened Frogs. EPBC Act survey guidelines 6.3 (Department of the Environment Water Heritage and the Arts 2010).

D-1.2.14.3 Specific impacts

Booroolong Frog is considered to have a moderate potential to occur within the Inland Slopes subregion section of the Proposal study area based on the availability of potential habitat in the form of associated PCT 277 (3.49 ha), rivers and streams. However, only two small patches of this habitat within the Proposal area have water features, and these areas were not considered to be highly suitable habitat for this species within the Proposal area and the Proposal occurs outside of the species known range (with no records from within the locality). Nevertheless, this assessment has been completed as a precautionary measure.

D-1.2.14.4 Significant impact criteria

An action is likely to have a significant impact on an Endangered or Critically Endangered Species if there is a real chance or possibility that it will:

- **LEAD TO A LONG-TERM DECREASE IN THE SIZE OF A POPULATION**

This species has not been recorded within the Proposal study area, despite targeted survey. However, potential habitat for the species exists within the Proposal study within associated PCT 277. Aquatic habitats within the study area were generally in poor condition for this species and there will be no direct impacts to permanent water bodies that are likely to provide suitable habitat. Furthermore, the Proposal area is outside of the species known range, so potential occurrence is unlikely. Consequently, the Proposal is considered unlikely to significantly decrease the size of any population of the species. Mitigation measures will be implemented to prevent indirect impacts to any areas of retained habitat.

- **REDUCE THE AREA OF OCCUPANCY OF THE SPECIES**

This species has not been recorded within the Proposal study area. Potential habitat in the form of associated PCT 277 (3.49 ha) was mapped within the study area, although only two small sections were identified as containing rivers or streams within the Proposal study area. Those sites were assessed as not containing sufficient micro-habitat features for this species, due to deep erosion at one site and still ponds with grazed surrounds of the second site. However, any rivers or streams, representing potential habitat for this species are unlikely to be directly impacted by the proposal, while indirect impacts to habitat would be controlled through mitigation measures. Due to the lack of records within the locality, the presence of this species is considered unlikely and habitat would not be anticipated to have any direct impact from the proposed action. As such, the Proposal is considered unlikely to reduce the area of the occupancy of the species.

- **FRAGMENT AN EXISTING POPULATION INTO TWO OR MORE POPULATIONS**

Marginal low-quality habitat (permanent rivers/streams) were recorded within the Proposal area. These habitats were assessed as unsuitable for Booroolong Frogs, and the species is generally considered unlikely to occur within the Proposal study area, as there are no records for the species within the locality. Further, no fragmentation of water bodies or adjacent terrestrial habitats would occur, and the maximum aquatic impact likely to occur would be the removal or trimming of tree canopy on riverbanks to facilitate the construction and operation of the powerlines spanning riparian areas. Potential indirect impacts will be managed through mitigation measures. Consequently, any population, if present, would not be fragmented into two or more populations.

- **ADVERSELY AFFECT HABITAT CRITICAL TO THE SURVIVAL OF A SPECIES**

Habitat critical to the survival of a species refers to areas that are necessary:

- for activities such as foraging, breeding, roosting, or dispersal
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
- to maintain genetic diversity and long-term evolutionary development, or
- for the reintroduction of populations or recovery of the species or ecological community. (Department of the Environment Water Heritage and the Arts 2013).

No critical habitat has been listed for this species under the EPBC Act (Department of Agriculture Water and the Environment 2021). The *National Recovery Plan for Booroolong Frog* (Litoria booroolongensis) (Office of Environment and Heritage 2012) indicates that habitat critical to the survival of the Booroolong Frog is rocky sections of permanent streams occupied by the species. Consequently, any action that reduces stream permanency (e.g. pumping water) or results in loss of rock crevices (e.g. smothering by weeds or sedimentation), is likely to threaten the persistence of local populations of this species.

The Proposal study area aquatic habitats associated with PCT277 do not contain micro-habitat features that would are considered important for this species, which are more likely to occur in higher quality habitat to the east of the region. Further, no populations are known to occur within the Proposal study area which is outside of the known range of the species (no records within the locality). Consequently, the habitat within the Proposal study area is not considered critical to the survival of this species.

- **DISRUPT THE BREEDING CYCLE OF A POPULATION**

Booroolong Frogs are seasonal breeders and have a generalised breeding strategy which allows them to persist in unpredictable environments. Male frogs begin calling in August, from exposed rocks or rock crevices, near shallow pools or runs and breeding occurs during spring and early summer (from October to early January). Females lay around 1300 eggs in submerged rock crevices and tadpoles metamorphose in late summer to early autumn. Tadpoles grow in slow flowing connected or isolated pools (Department of Agriculture Water and the Environment 2021, Threatened Species Scientific Committee 2021).

No waterbodies containing potential breeding habitat are likely to be directly impacted so it is considered unlikely that the action would adversely disrupt the breeding cycle of a population. Mitigation measures will be implemented to prevent indirect impacts to retained habitat within the Proposal study area.

- **MODIFY, DESTROY, REMOVE OR ISOLATE OR DECREASE THE AVAILABILITY OR QUALITY OF HABITAT TO THE EXTENT THAT THE SPECIES IS LIKELY TO DECLINE**

The limited potential habitat which occurs within the Proposal study area is not likely to be directly impacted by the Proposal and the Proposal is considered unlikely to result in the modification, removal, isolation, or decreased availability or quality of habitat to the extent that the species is likely to decline. Mitigation measures will be implemented to prevent indirect impacts to retained areas of habitat.

- **RESULT IN INVASIVE SPECIES THAT ARE HARMFUL TO A CRITICALLY ENDANGERED OR ENDANGERED SPECIES BECOMING ESTABLISHED IN THE ENDANGERED OR CRITICALLY ENDANGERED SPECIES' HABITAT**

Nearly all streams currently occupied by the Booroolong Frog are also inhabited by a range of exotic fish species including Brown Trout (*Salmo trutta*), Rainbow Trout (*Oncorhynchus mykiss*), European Carp (*Cyprinus carpio*), Goldfish (*Carassius auratus*), Redfin Perch (*Perca fluviatilis*) and Mosquito Fish (*Gambusia holbrooki*) which all have potential to prey on the tadpoles and eggs of Booroolong Frogs. Mitigation measures will be put in place for the Proposal which would aim to control and prevent the introduction of fish species into water features within PCT277.

The Proposal largely occurs within an agricultural landscape containing existing weeds and pests. The Proposal is unlikely to have any direct impact on habitat for the species and would not be likely to significantly increase the presence pests or weeds above that currently present in the landscape. There is potential for indirect impacts from construction on retained habitat areas, however, mitigation measures such as weed and pathogen controls would be put in place to minimise the likelihood of invasive species becoming established during construction.

- **INTRODUCE DISEASE THAT MAY CAUSE THE SPECIES TO DECLINE**

This species is susceptible to Amphibian Chytrid Fungus (*Batrachochytrium dendrobatidis*), which has been identified as the cause of population decline for this species and many others along the eastern ranges. Mitigation measures will be implemented as part of the Proposal including wash down areas and hygiene protocols to prevent contamination and minimising the spread of disease.

- **INTERFERE SUBSTANTIALLY WITH THE RECOVERY OF THE SPECIES**

The *National Recovery Plan for Booroolong Frog* Litoria booroolongensis (Office of Environment and Heritage 2012) outlines the following specific objectives for recovery of the Booroolong Frog:

- determine the species distribution in areas that have not been the focus of targeted surveys
- determine the taxonomic status of northern and southern Booroolong Frog populations and identify further genetic sub-division within these populations
- reduce the impact of known or perceived threats contributing to the ongoing decline of the Booroolong Frog
- determine population trends across the species range, and in areas subject to different management regimes
- identify the potential impacts of climate change and determine management responses to reduce these impacts
- identify other potentially threatening processes
- increase community awareness and involvement in the Booroolong Frog recovery program
- achieve the effective implementation of the recovery plan.

The proposed action is unlikely to interfere with any of the recovery actions that have been identified for the recovery of the species.

- **CONCLUSION**

Booroolong Frog was not recorded within the Proposal study area despite targeted surveys. Potential habitat was identified in the form of PCT 277 (3.49 ha), although only two small areas of PCT277 contain habitat that is consistent with rivers and stream type habitats. However, the potential habitat for the species is low in quality and the Proposal study area does not occur within the species known range. In additional the Proposal is considered unlikely to impact upon habitats in which this species is most likely to occur - habitat within and around waterbodies in the Proposal area will generally be avoided, with the maximum impact limited to the removal or trimming of tree canopy on riverbanks to facilitate the construction and operation of the powerlines spanning riparian areas.

Considering the species is unlikely to occur in the Proposal study area, that onsite habitats lack suitable habitat features, and that there would be no direct or indirect impacts to aquatic habitats, it is very unlikely that the proposed action would have significant impact on the species.

D-1.2.14.5 NSW Assessment Bilateral requirements

- **DESCRIPTION OF THE HABITAT (INCLUDING IDENTIFICATION AND MAPPING OF SUITABLE BREEDING HABITAT, SUITABLE FORAGING HABITAT, IMPORTANT POPULATIONS AND HABITAT CRITICAL FOR SURVIVAL), WITH CONSIDERATION OF, AND REFERENCE TO, ANY RELEVANT COMMONWEALTH GUIDELINES AND POLICY STATEMENTS INCLUDING LISTING ADVICE, CONSERVATION ADVICE AND RECOVERY PLAN**

There is no listing advice available for this species. The *National Recovery Plan for Booroolong Frog* (Litoria booroolongensis) (Office of Environment and Heritage 2012) indicates that habitat critical to the survival of the Booroolong Frog is rocky sections of permanent streams occupied by the species and any action that reduces stream permanency (e.g. pumping water) or results in loss of rock crevices (e.g. smothering by weeds or sedimentation), is likely to threaten the persistence of local populations. Further, preferred habitat, in accordance with the approved conservation advice for the species, includes headwater streams of 350–700 m elevation. Streams important for habitat include those with gravel and rock rapids, riffles, and pools and frogs typically occur in the shallow sections of rocky streams (10–20 cm depth). Sites with high sunlight exposure, through the absence or limited number of riparian trees, are also preferred (Threatened Species Scientific Committee 2021). The majority of those habitat features which are important for the occurrence of this species in the landscape are not present in riparian habitats within the Proposal area.

This species was not recorded within the Proposal study area despite targeted survey, and habitat available within the study area was low in quality for this species. The Proposal study area is outside of the known range and occurrences of the species. No direct impact to potential habitat for this species is anticipated from the Proposal and indirect impacts will be managed through mitigation measures. Consequently, the presence of this species is considered unlikely and no significant impact is expected.

- **DETAILS OF THE SCOPE, TIMING AND METHODOLOGY FOR STUDIES OR SURVEYS USED AND HOW THEY ARE CONSISTENT WITH (OR JUSTIFICATION FOR DIVERGENCE FROM) PUBLISHED AUSTRALIAN GOVERNMENT GUIDELINES AND POLICY STATEMENTS**

Threatened frog surveys completed within the Proposal study area were carried out in accordance with the *Survey Guidelines for Australia's Threatened Frogs. EPBC Act survey guidelines* 6.3 (Department of the Environment Water Heritage and the Arts 2010). Frog surveys were undertaken where habitat appraisal assessed the likelihood of threatened species of animal (those species known or predicted to occur within the locality from the literature and database review) was remotely possible within the Proposal study area's habitat features. Fauna habitat assessments for specific habitat features required by individual fauna species were the primary tool in assessing whether threatened species were likely to occur within the Proposal study area.

In regards to habitat for the Booroolong Frog, there was only 3.49 ha of PCT277 within the Proposal alignment to the south of Wagga Wagga. Only two small patches of PCT277 totalling less than 1.5 ha were associated with riparian habitats and both were highly fragmented and isolated from extensive patches of this PCT. Habitat assessments found these two patches of vegetation to be either, highly ephemeral, or reduced to pools within paddocks running sheep and alpacas. There were no rocky banks or substrates preferred by this species and understorey strata exhibited low structural complexity and plant species diversity suitable to supporting this species. No habitats within the Proposal area were considered to be of sufficient quality or containing habitat elements preferred by this species. Habitat visitation and assessment effort/dates are contained in Table D-1.6 below.

Table D-1.6 Summary of survey effort for Booroolong Frog

FAUNA GROUP	SURVEY TECHNIQUE	SURVEY EFFORT	OPTIMUM SURVEY PERIOD	DATES SURVEYED
Riverine Woodlands/wetlands – PCT277				
Amphibians	Habitat assessment	Habitat assessments 4 person hrs	Oct – Feb or during significant rainfall events	9 Dec 2021

- **DESCRIPTION OF THE SPECIFIC IMPACTS AND ITS REGARD TO THE FULL NATIONAL EXTENT OF THE SPECIES OR COMMUNITY'S RANGE**

Booroolong Frogs have potential habitat mapped within the Proposal area, in the form of 3.49 ha of PCT 277. This habitat can contain rivers and streams suitable for this species. However, field assessments did not locate any habitats containing suitable habitat required by this species. Only two small patches of PCT277 totalling less than 1.5 ha were associated with riparian habitats and both were highly fragmented and isolated from extensive patches of this PCT containing no drainage line habitat. Habitat assessments found these two patches of vegetation to be either, highly ephemeral, or reduced to pools within paddocks running sheep and alpacas. There were no rocky banks or substrates preferred by this species and understorey strata exhibited low structural complexity and plant species diversity suitable to supporting this species. Overall, the Proposal is considered unlikely to impact upon habitat within and around waterbodies, with the maximum impact limited to the removal or trimming of tree canopy on riverbanks to facilitate the construction and operation of the powerlines spanning riparian areas. Due to the lack of records within the locality, and the lack of habitat in the study area, the presence of this species is considered unlikely, and no direct impact to the habitat is expected from the proposal.

Figure D-1.14 shows the current known generalised distribution from the Departments Species of National Environmental Significance dataset which is an indicative distribution map of the present distribution of the species based on best available knowledge. The Proposal does not occur within the likely distribution of the species as it terminates at Wagga Wagga and is therefore not likely to impact on habitat areas mapped for this species. Potential habitat for Booroolong Frog is only predicted to the east of the study area and known occurrences of the species are currently within small geographic areas of this distribution, that are fragmented from one another.

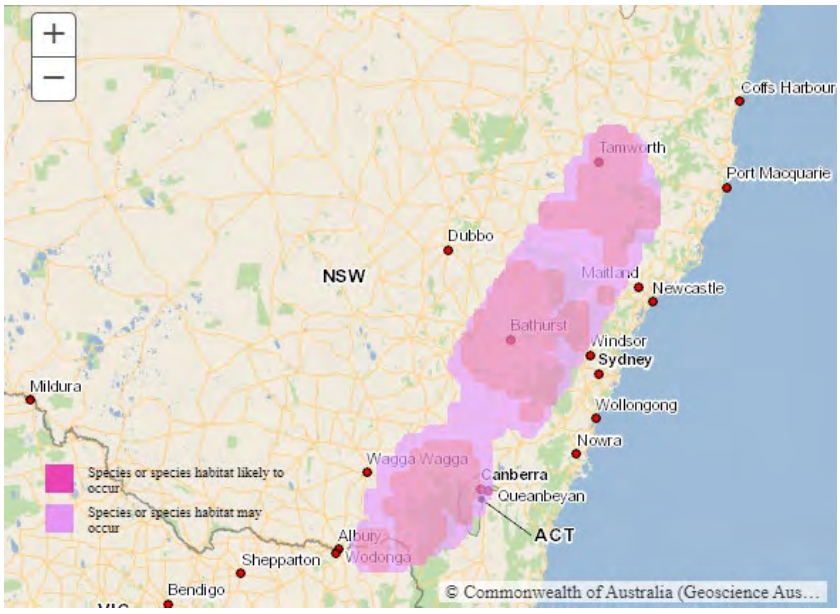


Figure D-1.14 Current distribution map for Booroolong Frog taken from the SPRAT

- **DESCRIPTION OF THE SPECIFIC PROPOSED AVOIDANCE AND MITIGATION MEASURES TO DEAL WITH RELEVANT IMPACTS OF THE ACTION**

The proposed avoidance and mitigation measures are outlined in Section 8 & 10 of the BDAR. Detailed avoidance description for impacts relating to biodiversity values (including threatened species) are outlined in Section 8. Mitigation measures to be implemented are outlined in Section 11. No specific measures for Booroolong Frog are identified.

- **IDENTIFICATION OF SIGNIFICANT RESIDUAL ADVERSE IMPACTS LIKELY TO OCCUR AFTER THE PROPOSED ACTIVITIES TO AVOID AND MITIGATE ALL IMPACTS ARE TAKEN INTO ACCOUNT**

No residual impact to the Booroolong Frog is expected.

- **A DESCRIPTION OF ANY OFFSETS PROPOSED TO ADDRESS RESIDUAL ADVERSE SIGNIFICANT IMPACTS AND HOW THESE OFFSETS WILL BE ESTABLISHED**

Details of offset requirements and obligations for this species as a result of residual impacts due the proposed action is addressed in Section 12 of the BDAR.

- **DETAILS OF HOW THE CURRENT PUBLISHED NSW BIODIVERSITY ASSESSMENT METHOD (BAM) HAS BEEN APPLIED IN ACCORDANCE WITH THE OBJECTS OF THE EPBC ACT TO OFFSET SIGNIFICANT RESIDUAL ADVERSE IMPACTS**

The BDAR specifically addresses Section 11 of the BAM and provides information on the application of the no net loss standard and the Proposal biodiversity offset obligations. Credit calculations were quantified using the BAM-C Version 1.3.0.00.

- **DETAILS OF THE OFFSET PACKAGE TO COMPENSATE FOR SIGNIFICANT RESIDUAL IMPACTS INCLUDING DETAILS OF THE CREDIT PROFILES REQUIRED TO OFFSET THE ACTION IN ACCORDANCE WITH THE BAM AND/OR MAPPING AND DESCRIPTIONS OF THE EXTENT AND CONDITION OF THE RELEVANT HABITAT AND/OR THREATENED COMMUNITIES OCCURRING ON PROPOSED OFFSET SITES**

Section 12 of the BDAR outlined the biodiversity offset strategy for the proposal. The offset obligations will be met through implementing a combination of the following offset delivery options, being:

- the purchase and retirement of existing biodiversity credits currently available on the biodiversity credit register
- establishing a biodiversity stewardship site(s) on lands with like for like biodiversity values to those impacted by the proposal
- through making a payment into the Biodiversity Conservation Fund.

D-1.2.15 Southern Bell Frog (*Litoria raniformis*)

The Southern Bell Frog is listed as Vulnerable under the EPBC Act and Endangered under the BC Act.

D-1.2.15.1 Description

Southern Bell Frog is one of the largest frog species in Australia. Currently, the species is known to exist only in isolated populations in the Coleambally Irrigation Area, the Lowbidgee floodplain and around Lake Victoria. This species is usually found in or around permanent or ephemeral Black Box/Lignum/Nitre Goosefoot swamps, Lignum/Typha swamps and River Red Gum swamps or billabongs along floodplains and river valleys. They are also found in irrigated rice crops, particularly where there is no available natural habitat.

Breeding occurs during the warmer months and is triggered by flooding or a significant rise in water levels. The species has been known to breed anytime from early spring through to late summer/early autumn (Sept to April) following a rise in water levels.

D-1.2.15.2 Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- There is no approved Conservation Advice for this species.
- There is no Listing Advice for this species.
- The *National Recovery Plan for the Southern Bell Frog Litoria raniformis* (Clemann and Gillespie 2012) was reviewed as part of this assessment.
- The Background Paper to the EPBC Act Policy Statement 3.14: Significant Impact Guidelines for the vulnerable growling grass frog (*Litoria raniformis*) (Department of the Environment Water Heritage and the Arts 2009) was reviewed as part of this assessment.
- The *EPBC Act Policy Statement 3.14: Significant impact guidelines for the vulnerable growling grass frog (Litoria raniformis)* (Department of the Environment Water Heritage and the Arts 2009) was reviewed as part of this assessment.

Relevant adopted/made threat abatement plans include:

- Threat abatement plan for infection of amphibians with chytrid fungus resulting in chytridiomycosis (Commonwealth of Australia 2016)

Relevant survey guidelines for this species include:

- Survey Guidelines for Australia's Threatened Frogs. EPBC Act survey guidelines 6.3 (Department of the Environment Water Heritage and the Arts 2010).

D-1.2.15.3 Specific impacts

Southern Bell Frog has potential habitat within the Proposal study area in the form of associated PCTs 7, 8, 11, 13, 17, 24, 53, 249 and lakes, swamps and rivers, a total potential habitat footprint of 56.33 ha. Survey located marginal habitat for this species within the Proposal study area at the Murrumbidgee crossing and Colombo Creek. However targeted surveys for the species failed to locate any individuals, and, overall, the Proposal is considered unlikely to impact upon habitats in which this species is most likely to occur. Habitat within and around waterbodies in the Proposal area will generally be avoided, with the maximum impact limited to the removal or trimming of tree canopy on riverbanks to facilitate the construction and operation of the powerlines spanning riparian areas. Nevertheless, this assessment has been completed as a precautionary measure as scattered records do occur within the locality.

Importantly, the Proposal will not exceed any of the identified significant impact thresholds as outlined in the *EPBC Act Policy Statement 3.14: Significant impact guidelines for the vulnerable growling grass frog (*Litoria raniformis*)* (Department of the Environment Water Heritage and the Arts 2009) as follows:

- The Proposal will not result in the permanent removal or degradation of terrestrial habitat that would result in the loss of dispersal or overwintering opportunities for an important population. The current dispersal or overwintering opportunities will still exist in adjacent habitat once the Proposal has been built.
- There would be no alteration of aquatic vegetation diversity or structure.
- There would be no alteration to wetland hydrology, diversity and structure.
- There would be no introduction of predatory fish and/or disease agents due to implementation of mitigation measures.
- There would be no net reduction in the number and/or diversity of water bodies available to an important population.
- There would be no removal or alteration of available terrestrial or aquatic habitat corridors (including alteration of connectivity during flood events).
- There would be no construction of physical barriers to movement between water bodies, such as roads or buildings. Existing access tracks will be used.

D-1.2.15.4 Is this part of an important population?

In accordance with the *Matters of National Environmental Significance - Significant Impact Guidelines 1.1* (Department of the Environment Water Heritage and the Arts 2013), the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the Significant Impact Guidelines as a population that is necessary for a species' long-term survival and recovery. Under the Act, important populations are:

- likely to be key source populations either for breeding or dispersal
- likely to be necessary for maintaining genetic diversity
- at or near the limit of the species range.

Scattered records for the species exist within the locality (Department of Planning Industry and Environment 2021) . Currently, this species is known only to exist in isolated populations in the Coleambally Irrigation Area, the Lowbidgee floodplain and around Lake Victoria. There are five priority Saving our Species management sites that have been identified in NSW for this species. If recorded within the Proposal study area, this species would not be at the limit of its known range. However, any breeding population in NSW would be likely be considered important for breeding and maintaining genetic diversity. Therefore, the population subject to this assessment is part of an important population given the limited range and the fragility of the species.

As such, if a population is recorded using the habitat within the Proposal study area, it should be assumed to be an important population.

D-1.2.15.5 Significant impact criteria

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- **LEAD TO A LONG-TERM DECREASE IN THE SIZE OF AN IMPORTANT POPULATION**

This species has not been recorded within the Proposal study area. However, potential habitat for the species exists within the Proposal study area in the form of associated PCTs 7, 8, 11, 13, 17, 24, 53, 249 (totalling 56.33 ha) and lakes, swamps and rivers, and marginal habitat for this species was recorded within the impact area at the Murrumbidgee crossing and Colombo Creek. However, no direct impact is expected, and the Proposal will not occur within areas in which this species is most likely to inhabit. However, this assessment has been completed as a precautionary measure as records do occur throughout the locality. As there will be no direct impacts to permanent water bodies that are likely to provide suitable habitat for this species the Proposal is considered unlikely to significantly decrease the size of any important population. Mitigation measures will be implemented to prevent indirect impacts to retained habitat.

- **REDUCE THE AREA OF OCCUPANCY OF AN IMPORTANT POPULATION**

This species has not been recorded within the Proposal study area. Associated PCTs 7, 8, 11, 13, 17, 24, 53, 249, lakes, swamps and rivers, and marginal habitat areas for this species was recorded within the Proposal study area. However, individuals were recorded within the Proposal area despite targeted surveys and only marginal habitat was recorded (unlikely to be directly impacted by the proposal). Consequently, the presence of this species is considered unlikely and habitat would not be anticipated to have any direct impact from the proposed action. As such, the Proposal is considered unlikely to reduce the area of the occupancy of any important population.

- **FRAGMENT AN EXISTING IMPORTANT POPULATION INTO TWO OR MORE POPULATIONS**

Marginal habitat was recorded at the Murrumbidgee crossing and Colombo Creek within the Proposal area. These habitats have the potential to be used by Southern Bell Frogs, however, the species is generally considered more likely to use higher quality habitats within the surrounding locality. No fragmentation of water bodies or adjacent terrestrial habitats would occur, and the maximum aquatic impact likely to occur would be the removal or trimming of tree canopy on riverbanks to facilitate the construction and operation of the powerlines spanning riparian areas, with any potential indirect impacts managed through mitigation measures. Consequently, any population, if present, would not be fragmented into two or more populations.

- **ADVERSELY AFFECT HABITAT CRITICAL TO THE SURVIVAL OF A SPECIES**

Habitat critical to the survival of a species refers to areas that are necessary:

- for activities such as foraging, breeding, roosting, or dispersal
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
- to maintain genetic diversity and long-term evolutionary development, or
- for the reintroduction of populations or recovery of the species or ecological community. (Department of the Environment Water Heritage and the Arts 2013).

No critical habitat has been listed for this species under the EPBC Act (Department of Agriculture Water and the Environment 2021). Habitat critical to the survival of the Southern Bell Frog differs throughout its range and the species is known to inhabit a wide range of still waterbodies including lagoons, swamps, lakes, ponds, farm dams, irrigation channels and quarries. In disturbed areas it commonly occurs in artificial waterbodies such as farm dams, irrigation channels, irrigated rice crops and disused quarries; particularly where natural habitat is no longer available (Department of the Environment Water Heritage and the Arts 2009). The Proposal study area contains marginal habitat for this species; however this habitat is not likely to be directly impacted by the Proposal and larger, higher quality habitat is available within the locality. Consequently, the habitat within the Proposal study area is not considered critical to the survival of this species.

- **DISRUPT THE BREEDING CYCLE OF AN IMPORTANT POPULATION**

Southern Bell Frogs generally breed between November and March, following local flooding and a marked rise in water levels from rain, which triggers calling in breeding males. Breeding usually occurs in still or slow-moving water. Most breeding sites located in recent surveys in NSW are overflow areas, for example, billabongs or levee swamps.

No overflow areas will be directly impacted so it is considered unlikely that the action would adversely disrupt the breeding cycle of any important population of the species. Mitigation measures will be implemented to prevent indirect impacts to retained habitat within the Proposal study area.

- **MODIFY, DESTROY, REMOVE OR ISOLATE OR DECREASE THE AVAILABILITY OR QUALITY OF HABITAT TO THE EXTENT THAT THE SPECIES IS LIKELY TO DECLINE**

The Proposal study area provides marginal habitat for this species, however this habitat is not likely to be directly impacted by the Proposal and larger, higher quality habitat is available within the locality. Additionally, there will be no direct impacts to permanent water bodies that are likely to provide suitable habitat for this species and as a consequence the Proposal is considered unlikely to result in the modification, removal, isolation, or decreased availability or quality of habitat to the extent that the species is likely to decline. Mitigation measures will be implemented to prevent indirect impacts to retained areas of habitat.

- **RESULT IN INVASIVE SPECIES THAT ARE HARMFUL TO A VULNERABLE SPECIES BECOMING ESTABLISHED IN THE VULNERABLE SPECIES' HABITAT**

This species is susceptible to predation from Plague Minnow (*Gambusia holbrooki*), mitigation measures will aim at controlling and preventing the introduction of exotic fish species into in Southern Bell Frog habitat.

The Proposal largely occurs within an agricultural landscape containing existing weeds and pests. The Proposal is unlikely to have any direct impact on habitat for the species and would not be likely to significantly increase the presence pests or weeds above that currently present in the landscape. There is potential for indirect impacts from construction on retained habitat areas, however, mitigation measures such as weed and pathogen controls would be put in place to minimise the likelihood of invasive species becoming established during construction.

- **INTRODUCE DISEASE THAT MAY CAUSE THE SPECIES TO DECLINE**

This species is susceptible to Amphibian Chytrid Fungus (*Batrachochytrium dendrobatidis*), which has been identified as the cause of population decline for this species and many others along the eastern ranges. Mitigation measures will be implemented as part of the Proposal works, including wash down areas and hygiene protocols to prevent contamination and minimising the spread of disease.

- **INTERFERE SUBSTANTIALLY WITH THE RECOVERY OF THE SPECIES**

The *National Recovery Plan for the Southern Bell Frog Litoria raniformis* (Clemann and Gillespie 2012) outlines the following specific objectives for recovery of the Southern Bell Frog:

- secure extant populations of Southern Bell Frogs, particularly those occurring in known breeding habitats, and improve their viability through increases in size and/or area of occurrence
- determine distribution, biology and ecology of the Southern Bell Frog, and identify causes of the decline of the species across its geographic range
- address known or predicted threatening processes and implement appropriate management practices where possible to ensure that land use activities do not threaten the survival of the Southern Bell Frog
- increase community awareness of and support for Southern Bell Frog conservation.

The Proposal will not interfere with any of the recovery actions that have been identified to meet the specific objectives outlined above.

- **CONCLUSION**

Southern Bell Frog was not recorded within the Proposal study area despite targeted surveys of identified habitat. The species has associated PCTs within the study area including PCTs 7, 8, 11, 13, 17, 24, 53, 249 (totally 56.33 ha) and potential habitat in the form of lakes, swamps and rivers. Survey within the study impact area identified marginal habitat for this species at the Murrumbidgee crossing and Colombo Creek, however larger and greater quality habitat is present in the surrounding locality. Overall, the Proposal is considered unlikely to impact upon habitats in which this species is most likely to occur. Habitat within and around waterbodies in the Proposal area will generally be avoided, with the maximum impact limited to the removal or trimming of tree canopy on riverbanks to facilitate the construction and operation of the powerlines spanning riparian areas.

Given that there would be no direct impact to waterbodies and mitigation measures will be implemented to prevent indirect impacts to habitat on the Murray River it is unlikely that the proposed action would have significant impact on the species. Importantly, the Proposal will not exceed any of the identified significant impact thresholds as outlined in the *EPBC Act Policy Statement 3.14: Significant impact guidelines for the vulnerable growling grass frog (Litoria raniformis)* (Department of the Environment Water Heritage and the Arts 2009).

D-1.2.15.6 NSW Assessment Bilateral requirements

- **DESCRIPTION OF THE HABITAT (INCLUDING IDENTIFICATION AND MAPPING OF SUITABLE BREEDING HABITAT, SUITABLE FORAGING HABITAT, IMPORTANT POPULATIONS AND HABITAT CRITICAL FOR SURVIVAL), WITH CONSIDERATION OF, AND REFERENCE TO, ANY RELEVANT COMMONWEALTH GUIDELINES AND POLICY STATEMENTS INCLUDING LISTING ADVICE, CONSERVATION ADVICE AND RECOVERY PLAN**

There is no approved Conservation Advice for this species. There is no Listing Advice for this species. The *National Recovery Plan for the Southern Bell Frog Litoria raniformis* (Clemann and Gillespie 2012) indicates that habitat critical to the survival of the Southern Bell Frog differs throughout its range. Populations from the north and west occur in swamps dominated by River Red Gums *Eucalyptus camaldulensis*, Lignum and Typha, and Black Box (*Eucalyptus largiflorens*)/ Lignum/Nitre Goosefoot (*Chenopodium nitrari*aceum) and will also occur in irrigated rice crops (Clemann and Gillespie 2012). Critical features of these latter habitat types appear to be that they are large, continuous areas containing both permanent and ephemeral waterbodies that undergo regular flooding and are surrounded by areas containing suitable refugia in the form of ground debris, vegetation cover and cracking soils (Clemann and Gillespie

2012). The key ecological requirements of the species are outlined in the *Background Paper to the EPBC Act Policy Statement 3.14: Significant Impact Guidelines for the vulnerable growling grass frog (*Litoria raniformis*)* (Department of the Environment Water Heritage and the Arts 2009) and the *EPBC Act Policy Statement 3.14: Significant impact guidelines for the vulnerable growling grass frog (Litoria raniformis)* (Department of the Environment Water Heritage and the Arts 2009).

This species has not been recorded within the Proposal study area. The species has marginal habitat within the Proposal area at the Murrumbidgee crossing and Colombo Creek, however the species was not recorded during targeted surveys. No direct impact to potential habitat for this species is anticipated from the Proposal and indirect impacts will be managed through mitigation measures. Consequently, the presence of this species is considered unlikely and no significant impact is expected.

- **DETAILS OF THE SCOPE, TIMING AND METHODOLOGY FOR STUDIES OR SURVEYS USED AND HOW THEY ARE CONSISTENT WITH (OR JUSTIFICATION FOR DIVERGENCE FROM) PUBLISHED AUSTRALIAN GOVERNMENT GUIDELINES AND POLICY STATEMENTS**

Threatened frog surveys completed within the Proposal study area were carried out in accordance with the *Survey Guidelines for Australia's Threatened Frogs. EPBC Act survey guidelines* 6.3 (Department of the Environment Water Heritage and the Arts 2010). Habitat assessments were undertaken to assess the likelihood of threatened species of animal (those species known or predicted to occur within the locality from the literature and database review) occurring within the Proposal study area. Fauna habitat assessments were the primary assessment tool in assessing whether threatened species were likely to occur within the Proposal study area. Available habitat was very limited in terms of aquatic resources, though targeted surveys occurred when opportunities were available which included spotlighting transects when conditions were optimal (i.e. after moderate rainfall events). The survey effort for Southern Bell Frog is outlined in Table D-1.7.

Table D-1.7 Summary of survey effort for Southern Bell Frog

FAUNA GROUP	SURVEY TECHNIQUE	SURVEY EFFORT	OPTIMUM SURVEY PERIOD	DATES SURVEYED
Wetlands – Miscellaneous ecosystem may include PCT11 during times of inundation.				
Amphibians	Assessment of wetland habitats.	Assessment of wetland habitat. (4 person hrs) Frog call playback, targeted survey (1 site – 2 person hrs) Spotlighting (1 site – 8 person hrs) Assessment of wetland habitats. Frog call playback and spotlighting/ targeted survey (4 person hrs)	All year, with increased water , greatest breeding activity Oct - Feb	22 July 2020 22 July 2020 22 July 2020 23 – 24 Aug 2021
Riverine Woodlands/wetlands – PCT7, PCT8, PCT11, PCT13, PCT15, PCT17, PCT53, PCT249				
Amphibians	Assessment of wetland habitats.	Assessment of riparian/wetland habitat. (60 person hrs) Frog call playback, targeted survey (4 sites – 6 person hrs) Spotlighting (5 sites – 8 person hrs)	All year, with increased breeding activity in July and August	20 – 22 July 2020 21 – 22 July 2020 20 – 22 July 2020

- **DESCRIPTION OF THE SPECIFIC IMPACTS AND ITS REGARD TO THE FULL NATIONAL EXTENT OF THE SPECIES OR COMMUNITY'S RANGE**

Southern Bell Frog has potential habitat within the Proposal study area in the form of associated PCTs 7, 8, 11, 13, 17, 24, 53, 249 (totally 56.33 ha) and lakes, swamps and rivers. Survey located marginal habitat for this species within the Proposal study area at the Murrumbidgee crossing and Colombo Creek. However targeted surveys for the species failed to locate any individuals, and, overall, the Proposal is considered unlikely to impact upon habitats in which this species is most likely to occur. Habitat within and around waterbodies in the Proposal area will generally be avoided, with the maximum impact limited to the removal or trimming of tree canopy on riverbanks to facilitate the construction and operation of the powerlines spanning riparian areas. Due to the minimal quality and size of this habitat in comparison to the surrounding locality, he presence of this species is considered unlikely, and no direct impact to the habitat is expected from the proposal.

Figure D-1.15 shows the current known generalised distribution from the Departments Species of National Environmental Significance dataset which is an indicative distribution map of the present distribution of the species based on best available knowledge. The Proposal area occurs through the area of likely distribution of the species but is not likely to impact on habitat used by this species. Potential habitat for Southern Bell Frog is widespread but known occurrences of the species are rare.

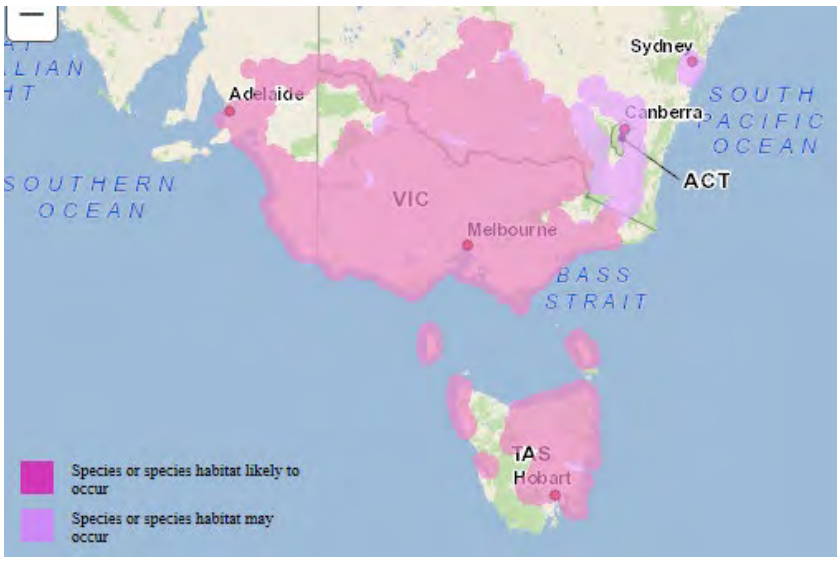


Figure D-1.15 Current distribution map for Southern Bell Frog taken from the SPRAT

- **DESCRIPTION OF THE SPECIFIC PROPOSED AVOIDANCE AND MITIGATION MEASURES TO DEAL WITH RELEVANT IMPACTS OF THE ACTION**

The proposed avoidance and mitigation measures are outlined in Section 8 & 10 of the BDAR. Detailed avoidance description for impacts relating to biodiversity values (including threatened species) are outlined in Section 8. Mitigation measures to be implemented are outlined in Section 11. No specific measures for Southern Bell Frog are identified.

- **IDENTIFICATION OF SIGNIFICANT RESIDUAL ADVERSE IMPACTS LIKELY TO OCCUR AFTER THE PROPOSED ACTIVITIES TO AVOID AND MITIGATE ALL IMPACTS ARE TAKEN INTO ACCOUNT**

No residual impact to the Southern Bell Frog is expected.

- **A DESCRIPTION OF ANY OFFSETS PROPOSED TO ADDRESS RESIDUAL ADVERSE SIGNIFICANT IMPACTS AND HOW THESE OFFSETS WILL BE ESTABLISHED**

Details of offset requirements and obligations for this species as a result of residual impacts due the proposed action is addressed in Section 12 of the BDAR.

- **DETAILS OF HOW THE CURRENT PUBLISHED NSW BIODIVERSITY ASSESSMENT METHOD (BAM) HAS BEEN APPLIED IN ACCORDANCE WITH THE OBJECTS OF THE EPBC ACT TO OFFSET SIGNIFICANT RESIDUAL ADVERSE IMPACTS**

The BDAR specifically addresses Section 11 of the BAM and provides information on the application of the no net loss standard and the Proposal biodiversity offset obligations. Credit calculations were quantified using the BAM-C Version 1.3.0.00.

- **DETAILS OF THE OFFSET PACKAGE TO COMPENSATE FOR SIGNIFICANT RESIDUAL IMPACTS INCLUDING DETAILS OF THE CREDIT PROFILES REQUIRED TO OFFSET THE ACTION IN ACCORDANCE WITH THE BAM AND/OR MAPPING AND DESCRIPTIONS OF THE EXTENT AND CONDITION OF THE RELEVANT HABITAT AND/OR THREATENED COMMUNITIES OCCURRING ON PROPOSED OFFSET SITES**

Section 12 of the BDAR outlined the biodiversity offset strategy for the proposal. The offset obligations will be met through implementing a combination of the following offset delivery options, being:

- the purchase and retirement of existing biodiversity credits currently available on the biodiversity credit register
- establishing a biodiversity stewardship site(s) on lands with like for like biodiversity values to those impacted by the proposal
- through making a payment into the Biodiversity Conservation Fund.

D-1.2.16 Pink-tailed Worm Lizard (*Aprasia parapulchella*)

The Pink-tailed Worm Lizard is listed as Vulnerable under the EPBC Act and Vulnerable under the BC Act.

D-1.2.16.1 Description

The Pink-tailed Worm Lizard (also known as the Pink-tailed Worm-lizard) is worm-like, with a dark-brown head and nape, gradually merging with the pale grey or grey-brown body.

The Pink-tailed Worm Lizard (PTWL) is only known from the Central and Southern Tablelands, and the South Western Slopes. There is a concentration of populations in the Canberra/Queanbeyan Region. Inhabits sloping, open woodland areas with predominantly native grassy groundlayers, particularly those dominated by Kangaroo Grass (*Themeda australis*). Sites are typically well-drained, with rocky outcrops or scattered, partially-buried rocks (Department of Environment and Energy 2017).

D-1.2.16.2 Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- Conservation Advice (TSSC 2015) in effect under the EPBC Act from 01-Oct-2015
- No specific listing advice, listing assessment information may be available in the approved Conservation Advice
- There is no adopted or made Recovery Plan for this species.

Relevant adopted/made threat abatement plans include:

- Threat abatement plan for competition and land degradation by rabbits (DoEE 2016).

Relevant survey guidelines for this species include:

- Survey guidelines for Australia's threatened reptiles, EPBC Act survey guidelines 6.6 (DSEWPaC 2011).

D-1.2.16.3 Specific impacts

Pink-tailed Worm Lizard has potential habitat within the Proposal study area in the form of including 3.75 ha of associated PCTs 267, 277 & 319.

However targeted surveys for the species failed to locate any individuals, and overall the Proposal is considered unlikely to impact upon habitats in which this species is most likely to occur. Nevertheless, this assessment has been completed as a precautionary measure as records do occur within localities associated with the Study Area.

D-1.2.16.4 Is this part of an important population?

In accordance with the *Matters of National Environmental Significance - Significant Impact Guidelines 1.1* (Department of the Environment Water Heritage and the Arts 2013), the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the Significant Impact Guidelines as a population that is necessary for a species' long-term survival and recovery. Under the Act, important populations are:

- likely to be key source populations either for breeding or dispersal
- likely to be necessary for maintaining genetic diversity
- at or near the limit of the species range.

There are no records of this species within the Proposal study area or within the wider locality. Although this species was not recorded during the field surveys, potential habitat for this species would be impacted by the proposed action within PCT's 267, 277, 319 (totalling 33.06 ha). Potential habitat for this species occurred within the survey area as disjunct remnant patches of highly modified woodland/grassland with the presence of bush rock. Potential habitat has been previously disturbed by agricultural cropping and grazing.

The PTWL has a wide but patchy distribution within NSW along the western slopes and Great Dividing Range. Its main stronghold is known to be located within the central & southern tablelands and south-western slopes including areas in ACT. Local occurrences of this species are unlikely to be part of key source populations for breeding and dispersal. Therefore, individuals that occur within the area are not considered as part of 'an important population'.

D-1.2.16.5 Significant impact criteria

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- **LEAD TO A LONG-TERM DECREASE IN THE SIZE OF AN IMPORTANT POPULATION**

Not applicable – Pink-tailed Worm Lizard occurring within the study area is not part of an important population.

- **REDUCE THE AREA OF OCCUPANCY OF AN IMPORTANT POPULATION**

Not applicable – Pink-tailed Worm Lizard occurring within the study area is not part of an important population.

- **FRAGMENT AN EXISTING IMPORTANT POPULATION INTO TWO OR MORE POPULATIONS**

Not applicable – Pink-tailed Worm Lizard occurring within the study area is not part of an important population.

- **ADVERSELY AFFECT HABITAT CRITICAL TO THE SURVIVAL OF A SPECIES**

Habitat critical to the survival of a species refers to areas that are necessary:

- for activities such as foraging, breeding, roosting, or dispersal
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
- to maintain genetic diversity and long-term evolutionary development, or
- for the reintroduction of populations or recovery of the species or ecological community. (Department of the Environment Water Heritage and the Arts 2013)

The proposed action would impact potential habitat in the form of remnant patches of highly modified woodland/grassland with the presence of bush rock. Potential habitat has been previously disturbed by agricultural cropping and grazing. Due to the disturbed and limited extent of habitat within the Proposal study area is it unlikely that the habitat within the survey area would meet the above criteria for the Pink-tailed Worm Lizard.

- **DISRUPT THE BREEDING CYCLE OF AN IMPORTANT POPULATION**

Not applicable – Pink-tailed Worm Lizard occurring within the study area is not part of an important population.

- **MODIFY, DESTROY, REMOVE OR ISOLATE OR DECREASE THE AVAILABILITY OR QUALITY OF HABITAT TO THE EXTENT THAT THE SPECIES IS LIKELY TO DECLINE**

Potential impacts would involve removal of woodland/grassland habitat, and displacement of bush rock that provides potential foraging and sheltering habitat for the species. The potential habitat to be impacted is already disturbed in nature due to historic practices in the area. It is unlikely that the habitat to be impacted is important to a potential local population. It is unlikely that potential habitat to be impacted would isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

- **RESULT IN INVASIVE SPECIES THAT ARE HARMFUL TO A VULNERABLE SPECIES BECOMING ESTABLISHED IN THE VULNERABLE SPECIES' HABITAT**

It is not likely that invasive species (such as introduced predators) that are harmful to this species would become further established as a result of the proposed action.

- **INTRODUCE DISEASE THAT MAY CAUSE THE SPECIES TO DECLINE**

No. There are no known diseases that are likely to increase in the area as a result of the proposed action.

- **INTERFERE SUBSTANTIALLY WITH THE RECOVERY OF THE SPECIES**

Recovery actions have been prepared for this species under the Environment Protection Biodiversity Act 1999 (Threatened Species Scientific Committee, 2015). Of the conservation actions identified under the Conservation Advice, the proposed action is contrary to one being "habitat loss, disturbance and modifications".

Management actions under the NSW Saving Our Species (SOS) program have identified critical actions for the species that would be applicable to this species. Of the seven identified actions under SOS, the proposed action is contrary to one action being: retain imbedded and surface rock in suitable habitat throughout the species range; protect rocky habitat through management agreements and incentives.

Works will not disturb significant amounts of key habitats and will retain imbedded surface rock in suitable habitats and will therefore not interfere substantially with the recovery of this species.

- **CONCLUSION**

For the following reasons the proposed action is unlikely to significantly affect PTWL or their habitat:

- individuals that occur within the area are not considered as part of 'an important population'
- habitat affected is of marginal quality and is not of significant importance
- the habitat affected is a small proportion of potential habitat for these species in the locality
- management measures would be implemented to minimise potential impacts during works
- the works are unlikely to significantly fragment and/or isolate these species that would place it them at risk of extinction in the locality.

D-1.2.16.6 NSW Assessment Bilateral requirements

- **DESCRIPTION OF THE HABITAT (INCLUDING IDENTIFICATION AND MAPPING OF SUITABLE BREEDING HABITAT, SUITABLE FORAGING HABITAT, IMPORTANT POPULATIONS AND HABITAT CRITICAL FOR SURVIVAL), WITH CONSIDERATION OF, AND REFERENCE TO, ANY RELEVANT COMMONWEALTH GUIDELINES AND POLICY STATEMENTS INCLUDING LISTING ADVICE, CONSERVATION ADVICE AND RECOVERY PLAN**

Descriptions of habitats and factors relating to important populations are provided above in Section *D-1.2.16.1*.

References to relevant guidelines and recovery plans are provided in Section *D-1.2.16.2*.

This species was not observed during field surveys and proposed disturbance of habitat has been applied on a precautionary basis only.

- **DETAILS OF THE SCOPE, TIMING AND METHODOLOGY FOR STUDIES OR SURVEYS USED AND HOW THEY ARE CONSISTENT WITH (OR JUSTIFICATION FOR DIVERGENCE FROM) PUBLISHED AUSTRALIAN GOVERNMENT GUIDELINES AND POLICY STATEMENTS**

Threatened frog surveys completed within the Proposal study area were carried out in accordance with the *Survey guidelines for Australia's threatened reptiles Ver.6.6* (DSEWPaC 2011). Habitat assessments were undertaken to assess the likelihood of threatened species of animal (those species known or predicted to occur within the locality from the literature and database review) occurring within the Proposal study area. Fauna habitat assessments were the primary assessment tool in assessing whether threatened species were likely to occur within the Proposal study area. Opportunistic surveys of suitable habitats were undertaken in addition to targeted surveys, and the survey effort for Pink-tailed Worm Lizard is outlined in Table D-1.8.

Comprehensive survey for this species during appropriate conditions could not be undertaken. As such, using a precautionary approach, this species is assumed to be present in PCT 267, 277 & 319 (totally 56.33 ha).

Table D-1.8 Summary of survey effort for Pink-tailed Worm Lizard

FAUNA GROUP	SURVEY TECHNIQUE	SURVEY EFFORT	OPTIMUM SURVEY PERIOD	DATES SURVEYED
Grassy Woodlands PCT267, PCT277, PCT319				
Reptile	Artificial shelter site surveys (Roof Tile Array)	3 x 7x7 (49) 5m spacing (30m^2) roof tile arrays Survey concentrated in PCT319, due to a lack of suitable habitat in other PCTs.	Year Round	02/09/21 – 09/12/21

- **DESCRIPTION OF THE SPECIFIC IMPACTS AND ITS REGARD TO THE FULL NATIONAL EXTENT OF THE SPECIES OR COMMUNITY'S RANGE**

This species has not been recorded within the Proposal study area. Associated PCTs including 267, 277 and 319 (Inland Slopes subregion) are present within the Proposal study area and therefore broad potential habitat for this species is present (totally 56.33 ha).

Figure D-1.16 shows the current known generalised distribution from the Departments Species of National Environmental Significance dataset which is an indicative distribution map of the present distribution of the species based on best available knowledge. Any population of Pink-tailed Worm Lizard within the Proposal study area would be near the central-western extent of the known distribution of the species. Potential habitat is widespread but known occurrences of the species are rare.

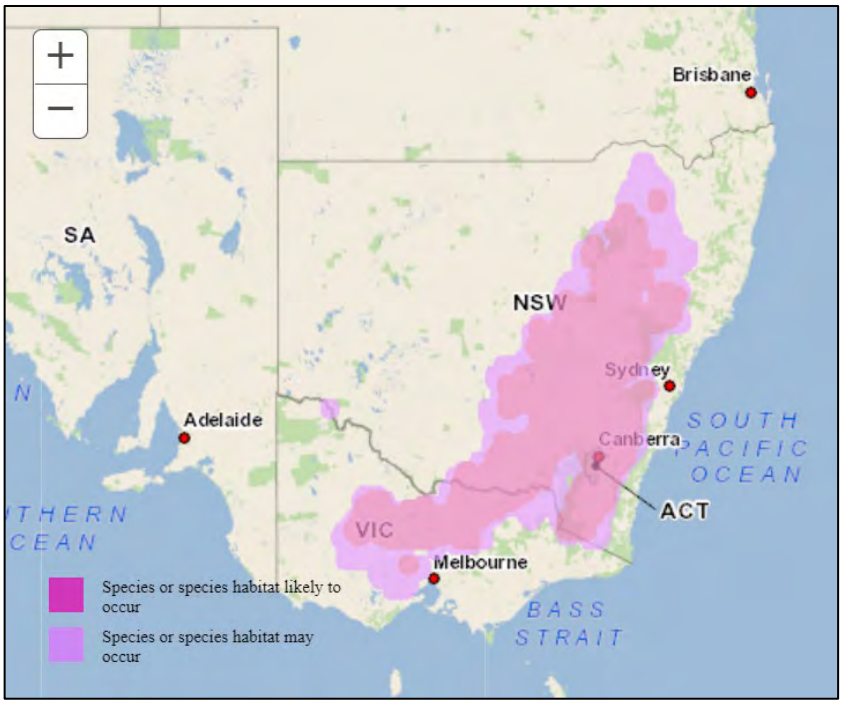


Figure D-1.16 Current distribution map for Pink-tailed Worm Lizard taken from the SPRAT

- **DESCRIPTION OF THE SPECIFIC PROPOSED AVOIDANCE AND MITIGATION MEASURES TO DEAL WITH RELEVANT IMPACTS OF THE ACTION**

The proposed avoidance and mitigation measures are outlined in Section 8 & 10 of the BDAR. Detailed avoidance description for impacts relating to biodiversity values (including threatened species) are outlined in Section 8. Mitigation measures to be implemented are outlined in Section 11. No specific measures for Pink-tailed Worm Lizard are identified other than retention of rocky areas.

- **IDENTIFICATION OF SIGNIFICANT RESIDUAL ADVERSE IMPACTS LIKELY TO OCCUR AFTER THE PROPOSED ACTIVITIES TO AVOID AND MITIGATE ALL IMPACTS ARE TAKEN INTO ACCOUNT**

No residual impact to the Pink-tailed Worm Lizard is expected.

- **A DESCRIPTION OF ANY OFFSETS PROPOSED TO ADDRESS RESIDUAL ADVERSE SIGNIFICANT IMPACTS AND HOW THESE OFFSETS WILL BE ESTABLISHED**

Details of offset requirements and obligations for this species as a result of residual impacts due the proposed action is addressed in Section 12 of the BDAR.

- **DETAILS OF HOW THE CURRENT PUBLISHED NSW BIODIVERSITY ASSESSMENT METHOD (BAM) HAS BEEN APPLIED IN ACCORDANCE WITH THE OBJECTS OF THE EPBC ACT TO OFFSET SIGNIFICANT RESIDUAL ADVERSE IMPACTS**

The BDAR specifically addresses Section 11 of the BAM and provides information on the application of the no net loss standard and the Proposal biodiversity offset obligations. Credit calculations were quantified using the BAM-C Version 1.3.0.00.

- **DETAILS OF THE OFFSET PACKAGE TO COMPENSATE FOR SIGNIFICANT RESIDUAL IMPACTS INCLUDING DETAILS OF THE CREDIT PROFILES REQUIRED TO OFFSET THE ACTION IN ACCORDANCE WITH THE BAM AND/OR MAPPING AND DESCRIPTIONS OF THE EXTENT AND CONDITION OF THE RELEVANT HABITAT AND/OR THREATENED COMMUNITIES OCCURRING ON PROPOSED OFFSET SITES**

Section 12 of the BDAR outlined the biodiversity offset strategy for the proposal. The offset obligations will be met through implementing a combination of the following offset delivery options, being:

- the purchase and retirement of existing biodiversity credits currently available on the biodiversity credit register
- establishing a biodiversity stewardship site(s) on lands with like for like biodiversity values to those impacted by the proposal
- through making a payment into the Biodiversity Conservation Fund.

D-1.2.17 Striped Legless Lizard (*Delma Impar*)

The Striped Legless Lizard (SLL) is listed as Vulnerable under the EPBC Act and BC Act.

D-1.2.17.1 Description

Striped Legless Lizard differs most obviously from a snake in having external ear openings, small scaly flaps for hind limbs, a long tail and a broad, undivided tongue. it is pale grey-brown above, with a darker head, and almost white below. The most distinguishing characteristic is a pattern of light and dark parallel lines running along the length of the body.

The Striped Legless Lizard occurs in the Southern Tablelands, the South West Slopes, the Upper Hunter and possibly on the Riverina. Populations are known in the Goulburn, Yass, Queanbeyan, Cooma, Muswellbrook and Tumut areas.

Found mainly in Natural Temperate Grassland but has also been captured in grasslands that have a high exotic component. Also found in secondary grassland near Natural Temperate Grassland and occasionally in open Box-Gum Woodland. Habitat is where grassland is dominated by perennial, tussock-forming grasses.

D-1.2.17.2 Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- Approved Conservation Advice: Conservation Advice Delma impar striped legless lizard. (TSSC 2016). In effect under the EPBC Act from 16-Dec-2016.
- Listing Advice: Listing assessment information may be available in the approved Conservation Advice
- Adopted/Made Recovery Plans: National Recovery Plan for the Striped Legless Lizard (Delma impar) 1999-2003. NSW (Smith and Robertson 1999).

Relevant adopted/made threat abatement plans include:

- threat abatement plan for competition and land degradation by rabbits (DoEE 2016)
- threat abatement plan for predation by feral cats (DoE 2015)
- threat abatement plan for predation by the European red fox (DEWHA) 2008).

Relevant guidelines for this species include:

- survey guidelines for Australia's threatened reptiles, EPBC Act survey guidelines 6.6 (DSEWPaC 2011)
- referral guidelines for the striped legless lizard, *Delma impar* (DSEWPaC 2011).

D-1.2.17.3 Specific impacts

SLL has potential habitat within the Proposal study area in the form of including 3.49 ha of associated PCT 277 (Inland Slopes).

However targeted surveys for the species failed to locate any individuals, and, overall, the Proposal is considered unlikely to impact upon habitats in which this species is most likely to occur. The Proposal area is not considered likely to provide habitat for this species, as there are no local records associated with the localities it traverses and mapping for the species does not extend into areas where the Proposal area occurs. This assessment has been completed as a precautionary measure despite the likelihood that the species is not present, due to the occurrence of a PCT it is reported to inhabit.

D-1.2.17.4 Is this part of an important population?

In accordance with the *Matters of National Environmental Significance - Significant Impact Guidelines 1.1* (Department of the Environment Water Heritage and the Arts 2013), the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the Significant Impact Guidelines as a population that is necessary for a species' long-term survival and recovery. Under the Act, important populations are:

- likely to be key source populations either for breeding or dispersal
- likely to be necessary for maintaining genetic diversity
- at or near the limit of the species range.

There are no records of this species within the Proposal study area or within the wider locality. Although this species was not recorded during the field surveys, habitat it is reported use would be impacted by the proposed action.

The SLL has a wide but patchy distribution within NSW from the Southern Tablelands, the South West Slopes, the Upper Hunter and possibly on the Riverina. Local occurrences of this species are unlikely to be part of key source populations for breeding and dispersal. Therefore, individuals that occur within the area are not considered as part of 'an important population'.

D-1.2.17.5 Significant impact criteria

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- **LEAD TO A LONG-TERM DECREASE IN THE SIZE OF AN IMPORTANT POPULATION**

Not applicable – SLL occurring within the study area is not part of an important population.

- **REDUCE THE AREA OF OCCUPANCY OF AN IMPORTANT POPULATION**

Not applicable – SLL occurring within the study area is not part of an important population.

- **FRAGMENT AN EXISTING IMPORTANT POPULATION INTO TWO OR MORE POPULATIONS**

Not applicable – SLL occurring within the study area is not part of an important population.

- **ADVERSELY AFFECT HABITAT CRITICAL TO THE SURVIVAL OF A SPECIES**

Habitat critical to the survival of a species refers to areas that are necessary:

- for activities such as foraging, breeding, roosting, or dispersal
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
- to maintain genetic diversity and long-term evolutionary development, or
- for the reintroduction of populations or recovery of the species or ecological community. (Department of the Environment Water Heritage and the Arts 2013).

Neither the recovery plan for this species (Smith and Robertson 1999) nor the referral guideline (DEWSPaC 2011) list or describe habitat critical for the survival of this species.

The proposed action would impact a PCT preferred by this species in the form of remnant patches of highly modified woodland/grassland and potential habitat has been previously disturbed by agricultural cropping and grazing. Due to the disturbed and limited extent of habitat within the study area is it unlikely that the habitat within the survey area would meet the above criteria for the SLL.

- **DISRUPT THE BREEDING CYCLE OF AN IMPORTANT POPULATION**

Not applicable – SLL occurring within the study area is not part of an important population.

- **MODIFY, DESTROY, REMOVE OR ISOLATE OR DECREASE THE AVAILABILITY OR QUALITY OF HABITAT TO THE EXTENT THAT THE SPECIES IS LIKELY TO DECLINE**

Potential impacts would involve removal of woodland/grassland habitat. The potential habitat to be impacted is already disturbed in nature due to historic practices in the area. It is unlikely that the habitat to be impacted is important to the species (if present). It is unlikely that potential habitat to be impacted would isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

- **RESULT IN INVASIVE SPECIES THAT ARE HARMFUL TO A VULNERABLE SPECIES BECOMING ESTABLISHED IN THE VULNERABLE SPECIES' HABITAT**

It is not likely that invasive species (such as introduced predators) that are harmful to the SLL would become further established as a result of the proposed action. Adhering to mitigation measures such as weed and pest management plans, and vehicle weed hygiene, would prevent invasive weeds and pests such establishing in wetland habitat areas.

- **INTRODUCE DISEASE THAT MAY CAUSE THE SPECIES TO DECLINE**

No. There are no known diseases that are likely to increase in the area as a result of the proposed action.

- **INTERFERE SUBSTANTIALLY WITH THE RECOVERY OF THE SPECIES**

Recovery actions have been prepared within the recovery plan for this species (Smith and Robertson 1999). The proposed action will not interfere with any of the proposed actions within this plan.

Works will not disturb significant amounts of key habitats and will retain imbedded surface rock in suitable habitats and will therefore not interfere substantially with the recovery of this species.

- **CONCLUSION**

For the following reasons the proposed action is unlikely to significantly affect SLL or their habitat:

- the known range of the species does not extend to the Proposal study area
- there are no records for the species within the wider locality of the study area
- individuals that occur within the area are not considered as part of 'an important population'
- habitat affected is of marginal quality and is not of significant importance
- the habitat affected is a small proportion of potential habitat for these species in the locality
- management measures would be implemented to minimise potential impacts during works
- the works are unlikely to significantly fragment and/or isolate these species that would place it them at risk of extinction in the locality.

D-1.2.17.6 NSW Assessment Bilateral requirements

- **DESCRIPTION OF THE HABITAT (INCLUDING IDENTIFICATION AND MAPPING OF SUITABLE BREEDING HABITAT, SUITABLE FORAGING HABITAT, IMPORTANT POPULATIONS AND HABITAT CRITICAL FOR SURVIVAL), WITH CONSIDERATION OF, AND REFERENCE TO, ANY RELEVANT COMMONWEALTH GUIDELINES AND POLICY STATEMENTS INCLUDING LISTING ADVICE, CONSERVATION ADVICE AND RECOVERY PLAN**

Descriptions of habitats and factors relating to important populations are provided above in Section *D–1.2.17.4*.

References to relevant guidelines and recovery plans are provided in Section *D–1.2.17.2*.

This species was not observed during field surveys and proposed disturbance of habitat has been applied on a precautionary basis only.

- **DETAILS OF THE SCOPE, TIMING AND METHODOLOGY FOR STUDIES OR SURVEYS USED AND HOW THEY ARE CONSISTENT WITH (OR JUSTIFICATION FOR DIVERGENCE FROM) PUBLISHED AUSTRALIAN GOVERNMENT GUIDELINES AND POLICY STATEMENTS**

Threatened reptile surveys completed within the Proposal study area were carried out in accordance with the *Survey guidelines for Australia's threatened reptiles Ver.6.6* (DSEWPaC 2011).Habitat assessments were undertaken to assess the likelihood of threatened species of animal (those species known or predicted to occur within the locality from the literature and database review) occurring within the Proposal study area. Fauna habitat assessments were the primary assessment tool in assessing whether threatened species were likely to occur within the Proposal study area. Targeted surveys, using the Artificial shelter site survey method was employed over a three month period in hilly grassy woodland with embedded rocky substrates. The survey effort for SLL is outlined in Table D-1.9.

Table D-1.9 Summary of survey effort for SLL

FAUNA GROUP	SURVEY TECHNIQUE	SURVEY EFFORT	OPTIMUM SURVEY PERIOD	DATES SURVEYED
Grassy Woodlands PCT277				
Reptile	Artificial shelter site surveys (Roof Tile Array)	3 x 7x7 (49) 5m spacing (30m^2) roof tile arrays	Sept – Dec BAM September to early May EPBC	02/09/21 to 09/12/21 inclusive

- **DESCRIPTION OF THE SPECIFIC IMPACTS AND ITS REGARD TO THE FULL NATIONAL EXTENT OF THE SPECIES OR COMMUNITY'S RANGE**

This species has not been recorded within the Proposal study area and its mapped range does not extend west to Wagga Wagga where the eastern end of the Proposal area of the alignment terminates. Associated PCTs within the study area are limited to 3.49 ha of PCT 277 (Inland Slopes) and therefore limited potential habitat for this species is present. Mapped areas of PCT277 were observed to be in very poor condition. Canopy strata will likely be removed from PCT277 patches, but grassy understorey layers will be maintained. Therefore, habitat quality for the species is unlikely to be significantly diminished beyond the grazing pressures currently being brought to bear on existing habitat.

Figure D-1.17 shows the current known generalised distribution which is an indicative distribution map of the species based on best available knowledge. Any population of SLL within the Proposal study area would be west of the central-western extent of the known distribution of the species. Potential habitat is widespread but known occurrences of the species are rare.



Figure D-1.17 Current distribution map for SLL taken from the (Smith and Robertson 1999)

- **DESCRIPTION OF THE SPECIFIC PROPOSED AVOIDANCE AND MITIGATION MEASURES TO DEAL WITH RELEVANT IMPACTS OF THE ACTION**

The proposed avoidance and mitigation measures are outlined in Section 8 & 10 of the BDAR. Detailed avoidance description for impacts relating to biodiversity values (including threatened species) are outlined in Section 8. Mitigation measures to be implemented are outlined in Section 11.

- **IDENTIFICATION OF SIGNIFICANT RESIDUAL ADVERSE IMPACTS LIKELY TO OCCUR AFTER THE PROPOSED ACTIVITIES TO AVOID AND MITIGATE ALL IMPACTS ARE TAKEN INTO ACCOUNT**

Residual impacts to the SLL are limited to 3.49 ha of potential habitat removal.

- **A DESCRIPTION OF ANY OFFSETS PROPOSED TO ADDRESS RESIDUAL ADVERSE SIGNIFICANT IMPACTS AND HOW THESE OFFSETS WILL BE ESTABLISHED**

Details of offset requirements and obligations for this species as a result of residual impacts due the proposed action is addressed in Section 12 of the BDAR.

- **DETAILS OF HOW THE CURRENT PUBLISHED NSW BIODIVERSITY ASSESSMENT METHOD (BAM) HAS BEEN APPLIED IN ACCORDANCE WITH THE OBJECTS OF THE EPBC ACT TO OFFSET SIGNIFICANT RESIDUAL ADVERSE IMPACTS**

The BDAR specifically addresses Section 11 of the BAM and provides information on the application of the no net loss standard and the Proposal biodiversity offset obligations. Credit calculations were quantified using the BAM-C Version 1.3.0.00.

- **DETAILS OF THE OFFSET PACKAGE TO COMPENSATE FOR SIGNIFICANT RESIDUAL IMPACTS INCLUDING DETAILS OF THE CREDIT PROFILES REQUIRED TO OFFSET THE ACTION IN ACCORDANCE WITH THE BAM AND/OR MAPPING AND DESCRIPTIONS OF THE EXTENT AND CONDITION OF THE RELEVANT HABITAT AND/OR THREATENED COMMUNITIES OCCURRING ON PROPOSED OFFSET SITES**

Section 12 of the BDAR outlined the biodiversity offset strategy for the proposal. Offset obligations will be met through implementing a combination of the following offset delivery options, being:

- the purchase and retirement of existing biodiversity credits currently available on the biodiversity credit register
- establishing a biodiversity stewardship site(s) on lands with like for like biodiversity values to those impacted by the proposal
- through making a payment into the Biodiversity Conservation Fund.

D-1.2.18 Regent Honeyeater (*Anthochaera phrygia*)

The Regent Honeyeater is listed as Critically Endangered under the EPBC Act and BC Act.

D-1.2.18.1 Description

The Regent Honeyeater is a nomadic and partially migratory woodland bird, which has a patchy distribution between south-east Queensland and central Victoria. Some predictable seasonal movements have been observed, and breeding varies between regions and corresponds with flowering of key eucalypt and mistletoe species (DoE, 2020a).

The species is predominantly found along inland slopes of the Great Dividing Range in areas containing moist, fertile soils. It prefers box-ironbark eucalypt woodland and dry sclerophyll forest, but also inhabits riparian vegetation including She-oak (*Casuarina* spp.). Lowland coastal forest may also act as a refuge habitat during periods of drought, and they may also be found in remnant patches of farmland and urban areas (DoE, 2015).

The Regent Honeyeater primarily feeds on nectar which it obtains from eucalyptus flowers and mistletoes, but also feeds on invertebrates and their exudates (lerp, honeydew), and occasionally fruit. This species roosts communally in small groups or large flocks, in trees with dense foliage, and foraging trees are rarely used for roosting (DoE, 2015).

Breeding appears to correspond with the flowering of key eucalypt and mistletoe species and varies between regions, usually occurring from August to January. Cup shapes nests are constructed usually in the canopy of mature trees with rough bark, and a clutch consists of 2 to 3 eggs (DoE, 2015).

Listed threats include:

- clearing, fragmentation and degradation of habitat, particularly the removal of large mature trees important for feeding or breeding
- competition for resources with birds such as the Noisy Minor and (*Manorina melanocephala*) and Noisy Friarbird (*Philemon corniculatus*), and nest predation by Pied Currawongs (*Strepera graculina*) (DoE, 2015).

D-1.2.18.2 Relevant commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- The approved *Conservation Advice* Anthochaera phrygia *Regent Honeyeater* (Department of Environment 2015) was reviewed as part of this assessment.
- There is no Listing Advice for this species.
- The *National Recovery Plan for the Regent Honeyeater* (Anthochaera phrygia) (Department of the Environment 2016) was reviewed as part of this assessment.

Relevant adopted/made threat abatement plans include:

- Threat abatement plan for competition and land degradation by rabbits (Department of Environment and Energy 2016)

Relevant survey guidelines for this species include:

- *Survey Guidelines for Australia's Threatened Birds* (Department of the Environment Water Heritage and the Arts 2010)

D-1.2.18.3 Specific impacts

Regent Honeyeater has potential habitat associations within the Murrumbidgee, Lower Slopes and Inland Slopes subregions of the Proposal study area in the form of PCTs 5, 7, 74, 75, 267, 277 & 319 (totalling 57.18 ha) of Riparian and Box woodlands (6.03 ha was subtracted from the total PCT319; 0.57 ha was subtracted from PCT277; and 4.69 ha was subtracted from PCT75, as those quantities constitute derived grasslands providing no habitat opportunities for this species). This species was not recorded within the study area despite targeted surveys and the Proposal will not impact any areas mapped as important habitat for the species. Direct impacts on White Box Yellow Box Blakely's Red Gum Woodland and Derived Native Grassland (Box Gum Woodland) have been avoided where possible through design refinement. Direct impact can be further avoided through careful placement of compound sites and construction zones. Indirect impacts will be managed through mitigation measures.

D-1.2.18.4 Significant impact criteria

An action is likely to have a significant impact on a Critically Endangered Species if there is a real chance or possibility that it will:

- **LEAD TO A LONG-TERM DECREASE IN THE SIZE OF A POPULATION**

Any identified population Regent Honeyeater in the area would not be restricted to habitat within the Proposal study area. Due to the species' large home range, nomadic nature and the occurrence of higher quality foraging habitat elsewhere in the locality and region, the proposed action is considered unlikely to significantly contribute to a long-term decline in the size of a population of these species.

Avoidance of large tracts of suitable woodland habitat through Proposal design refinement would reduce potential impacts to this species. Therefore, if further field studies had recorded this species, the avoidance of large tracts of woodland habitat during vegetation clearing means that the proposed action is unlikely to cause a long-term decrease in the size of a population, or significantly reduce the area of occupancy for the species.

The Proposal will impact 57.18 ha of Regent Honeyeater habitat.

- **REDUCE THE AREA OF OCCUPANCY OF THE SPECIES**

This habitat is highly modified by previous land uses in this area (i.e. cropping and agricultural grazing). Although the proposed action would result in the loss of potential foraging habitat, it is of marginal quality and is likely to only represent a small component of locally occurring resources accessible to this species.

The Proposal will impact 57.18 ha of Regent Honeyeater habitat.

- **FRAGMENT AN EXISTING POPULATION INTO TWO OR MORE POPULATIONS**

The Proposal study area is already largely fragmented, and habitat remaining occurs as disjunct remnant patches and as scattered paddock trees within the locality. Furthermore, this species is highly mobile and is known to disperse widely (Higgins et al., 2001), the proposed action would not present a significant barrier to these species. It is considered unlikely that the proposed action would fragment an existing population into two or more populations given the ecology of the species and current fragmented state of potential habitat.

- **ADVERSELY AFFECT HABITAT CRITICAL TO THE SURVIVAL OF A SPECIES**

The *National Recovery Plan for the Regent Honeyeater* (Anthochaera phrygia) (Department of the Environment 2016) states that habitat critical to the survival of the regent honeyeater includes: 1) Any breeding or foraging areas where the species is likely to occur and 2) Any newly discovered breeding or foraging locations.

Key areas of critical habitat listed for the species includes the Bundarra-Barraba, Pilliga Woodlands, Mudgee-Wollar and the Capertee Valley and Hunter Valley areas in New South Wales, and the Chiltern and Lurg-Benalla regions of north-east Victoria, inclusive of a number of subsidiary areas within these regions. The study area does not occur within any known areas of critical habitat.

There are no records of this species within the Proposal study area, the records within the wider region are largely confined to the National Parks (Murray Valley National Park) and State forest to the south, where better quality habitat would be present. Hence it is unlikely that this Proposal would adversely affect habitat critical to the survival of these species.

The Proposal will impact 57.18 ha of potential Regent Honeyeater habitat.

- **DISRUPT THE BREEDING CYCLE OF A POPULATION**

The proposed action does not impact upon the any of the known areas of critical habitat for this species. These are the Bundarra-Barraba, Capertee Valley and Hunter Valley districts in New South Wales, and the Chiltern area in north-east Victoria. The study area does not occur within these areas which are the only currently known breeding areas. As such the proposed action is unlikely to affect their breeding cycle.

- **MODIFY, DESTROY, REMOVE OR ISOLATE OR DECREASE THE AVAILABILITY OR QUALITY OF HABITAT TO THE EXTENT THAT THE SPECIES IS LIKELY TO DECLINE**

Potential habitat occurred within the survey area as disjunct remnant patches of highly modified woodland, scattered across a fragmented landscape. Potential habitat has been previously and/or currently disturbed by agricultural cropping and grazing. The higher quality habitat occurred along road reserves and areas were grazing has been excluded. Given the highly modified nature of observed habitats, land uses of these areas (i.e. cropping and agricultural grazing) and the poor condition of Woodland habitat observed it is unlikely that the proposed action would modify, destroy, remove or isolate habitat for this species to the extent that is likely to cause the species to decline.

The Proposal will impact 57.18 ha of Regent Honeyeater habitat.

- **RESULT IN INVASIVE SPECIES THAT ARE HARMFUL TO A CRITICALLY ENDANGERED OR ENDANGERED SPECIES BECOMING ESTABLISHED IN THE ENDANGERED OR CRITICALLY ENDANGERED SPECIES' HABITAT**

Adhering to mitigation measures such as weed and pest management plans, and vehicle weed hygiene, would prevent invasive weeds and vertebrate pests such as rabbits, cats and foxes establishing in wetland habitat areas.

- **INTRODUCE DISEASE THAT MAY CAUSE THE SPECIES TO DECLINE**

It is unlikely that disease would be increased by the proposal. Mitigation measures would be prepared to minimise the likelihood of spread of pathogens into the habitat of these species

- **INTERFERE SUBSTANTIALLY WITH THE RECOVERY OF THE SPECIES**

The Action Plan for Australian Birds (Garnett and Crowley 2000) addresses the need for further ecological research on the species and the conservation and protection of roosting habitat and identification of specific breeding requirements.

Recovery strategies outlined in Regent Honeyeater Recovery Plan (Department of the Environment 2016) include:

- improve the extent and quality of regent honeyeater habitat
- bolster the wild population with captive-bred birds until the wild population becomes self-sustaining
- increase understanding of the size, structure, trajectory and viability of the wild population
- maintain and increase community awareness, understanding and involvement in the recovery program.

Based on the potential impacts of the proposed action on this species, as discussed above, it is likely that the proposed action would be in conflict with the first objective above to a small extent, by not improving the extent of habitat for the Regent Honeyeater.

- **CONCLUSION**

Although potentially suitable woodland habitat has been mapped within the Proposal study area, records within the area are rare and intermittent. Additionally, clearing of large tracts of suitable woodland would be minimised or avoided during design refinement to prevent significant loss of habitat in the case that the species is found in the Proposal study area during future targeted surveys. Therefore, the proposed action is **considered unlikely to have a significant impact** on the Regent Honeyeater.

The Proposal will impact 57.18 ha of Regent Honeyeater habitat.

D-1.2.18.5 NSW Assessment Bilateral requirements

For each of the EPBC Act listed threatened species and communities and migratory species likely to be impacted by the action the EIS must provide a separate*:*

- **DESCRIPTION OF THE HABITAT (INCLUDING IDENTIFICATION AND MAPPING OF SUITABLE BREEDING HABITAT, SUITABLE FORAGING HABITAT, IMPORTANT POPULATIONS AND HABITAT CRITICAL FOR SURVIVAL), WITH CONSIDERATION OF, AND REFERENCE TO, ANY RELEVANT COMMONWEALTH GUIDELINES AND POLICY STATEMENTS INCLUDING LISTING ADVICE, CONSERVATION ADVICE AND RECOVERY PLAN**

There is no listing advice available for this species. According to the *National Recovery Plan for the Regent Honeyeater* (Anthochaera phrygia) (Department of the Environment 2016) states that habitat critical to the survival of the regent honeyeater includes: 1) Any breeding or foraging areas where the species is likely to occur and 2) Any newly discovered breeding or foraging locations.

Key areas of critical habitat include the Bundarra-Barraba, Pilliga Woodlands, Mudgee-Wollar and the Capertee Valley and Hunter Valley areas in New South Wales, and the Chiltern and Lurg-Benalla regions of north-east Victoria. These include both critical foraging and breeding areas. Habitat critical to the survival of the Regent Honeyeater occurs across a range of tenures, including private land, travelling stock routes and reserves, state forests and state reserves, and National Parks (Department of the Environment 2016). Breeding areas for the species are shown on Figure D-1.18. Regent Honeyeaters are commonly associated with box-ironbark eucalypt woodland and dry sclerophyll forest, though also use riparian vegetation such as sheoak (*Casuarina spp*.). It also occasionally uses lowland coastal forest (often a refuge during drought) as well as a range of other habitats including remnant patches in farmland and urban areas, roadside reserves and travelling stock routes (Department of Environment 2015).

Potential foraging habitat in the form of associated PCTs 5, 7, 74, 75, 267, 277 & 319 and Riparian and Box woodlands are available within the Proposal study area, however, this species was not recorded during targeted surveys and records within the area are rare and intermittent. Additionally, clearing of large tracts of suitable woodland habitat for this species would be minimised or avoided during design refinement to prevent significant loss of habitat in the case that the species is found in the Proposal study area during future targeted surveys. Additional areas of higher quality habitat will persist within the locality. The proposed action is considered unlikely to have a significant impact on the Regent Honeyeater.

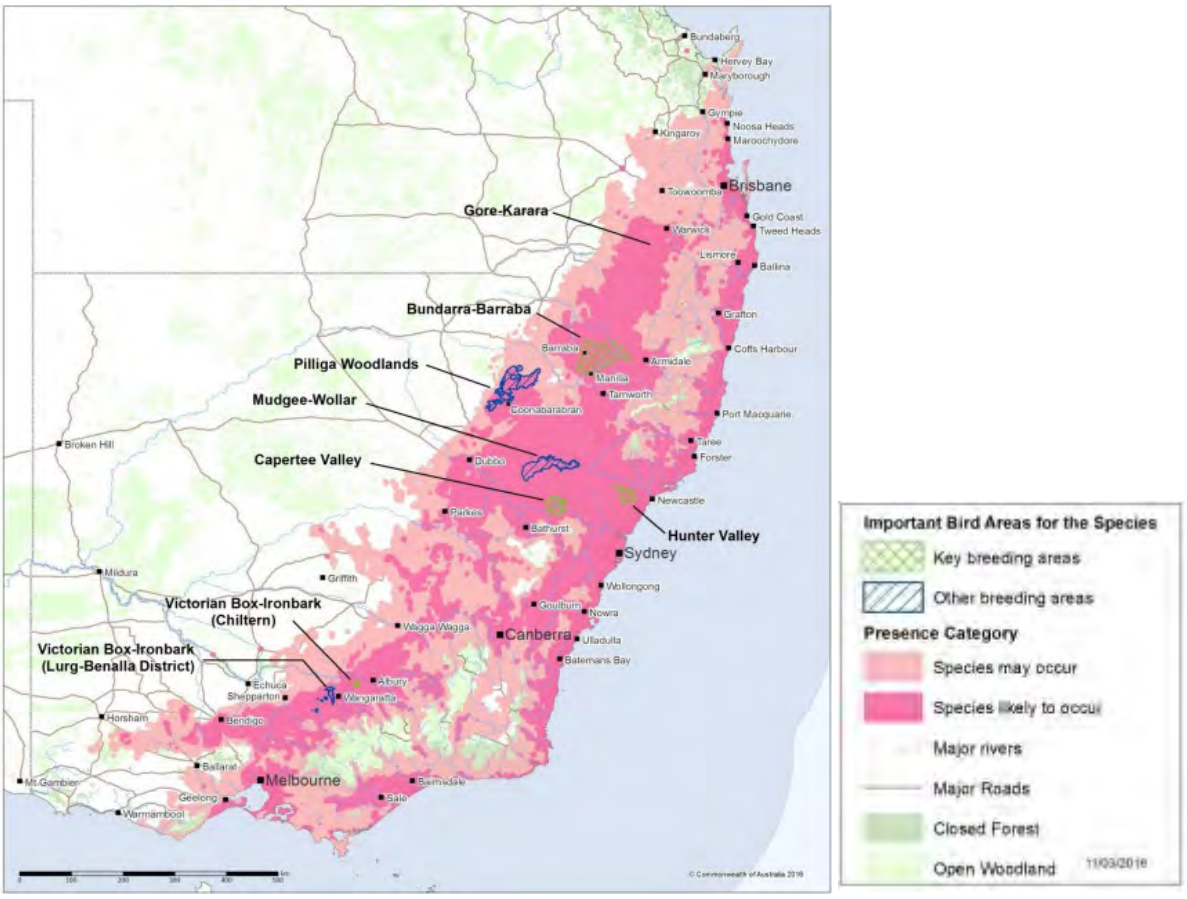


Figure D-1.18 Current distribution map for Regent Honeyeater (Department of the Environment 2016)

– DETAILS OF THE SCOPE, TIMING AND METHODOLOGY FOR STUDIES OR SURVEYS USED AND HOW THEY ARE CONSISTENT WITH (OR JUSTIFICATION FOR DIVERGENCE FROM) PUBLISHED AUSTRALIAN GOVERNMENT GUIDELINES AND POLICY STATEMENTS

Field survey techniques used to undertake surveys were in general accordance with the *NSW guide for the BAM* (Department of Planning, Industry and Environment, 2020) with a detailed field verification method provided in Section 5.2 of the BDAR. Mapping of native vegetation and habitat extent within the Proposal site is required under section 4.1 of the BAM, with detailed requirements outlined in section 3.2 of the BAM 2020 Operational Manual. Field data was used to assign condition classes for any given observed habitat patch, where relevant.

Specific search methodologies, relevant surveyed habitats and survey effort for this species include:

The species is highly nomadic and now currently reduced to very few in number. The species is most likely to be encountered where there is an abundance of resources and higher quality habitat types persist. At any given location, when abundances of resources are high, the extent of resources may be such that nectarivorous bird species, including Regent Honeyeaters, which are attracted to such events, signifying local resources are of significance beyond bird populations in the local region. Within such events, influxes of honeyeater species, such as Friarbirds, Yellow-faced Honeyeaters, White-naped Honeyeaters, Scarlet Honeyeaters, Lorikeets and other nectarivorous species noticeably inflate. During such events it is most likely that rare nectarivorous species, such as the Regent Honeyeater and Swift Parrot (in season) are most likely to appear in otherwise marginal areas of habitat. The diversity and number of nectarivorous bird species throughout the study was assessed during targeted avian fieldwork as well as opportunistically throughout all other fieldwork activities. During surveys conducted throughout the eastern sections of the Proposal area, avian diversity and densities were generally low, with the fragmented nature of the landscape largely favouring those species which have adapted to an agricultural dominance of the landscape. The eastern study area habitats, where Regent Honeyeaters are most likely to occur, are limited to small isolated fragments, often dominated by Cypress Pine, and

showed no indications that there might be times when it would offer sufficient resources to be important to nomadic nectarivorous species beyond resident species, including the Regent Honeyeater.

- **DESCRIPTION OF THE SPECIFIC IMPACTS AND ITS REGARD TO THE FULL NATIONAL EXTENT OF THE SPECIES OR COMMUNITY'S RANGE**

The direct impacts of the Proposal on *Regent Honeyeater* include removal of approximately 57.18 ha of potential habitat. There are no specific areas of potential impact mapped for the *Regent Honeyeater* (see Appendix C). Figure D-1.18 shows the current known generalised distribution (Department of the Environment 2016). The eastern portion of the Proposal area falls within the range of the Regent Honeyeater outside of the area it is likely to occur and where it only "may" occur. The total population size (as of 2010) was estimated at 350–400 mature individuals, however the distribution of the species is patchy across the landscape and current distribution is based mostly of re-sightings of banded birds. The species has a small number of known breeding sites. Movement through the landscape is associated with flowering of certain eucalypt species. It is nomadic and partly migratory, with some predictable seasonal movements observed.

- **DESCRIPTION OF THE SPECIFIC PROPOSED AVOIDANCE AND MITIGATION MEASURES TO DEAL WITH RELEVANT IMPACTS OF THE ACTION**

The proposed avoidance and mitigation measures are outlined in Section 8 & 10 of the BDAR. Detailed avoidance description for impacts relating to biodiversity values (including threatened species) are outlined in Section 8. Mitigation measures to be implemented are outlined in Section 11. The Regent Honeyeater is identified in section 7.1.3 as being identified in the SEARs as being a matter requiring further consideration. No other specific measures for Regent Honeyeater are identified.

- **A DESCRIPTION OF ANY OFFSETS PROPOSED TO ADDRESS RESIDUAL ADVERSE SIGNIFICANT IMPACTS AND HOW THESE OFFSETS WILL BE ESTABLISHED**

Details of offset requirements and obligations for this species as a result of residual impacts due the proposed action is addressed in Section 12 of the BDAR. No species credits are required to offset the residual impacts to *Regent Honeyeater.*

- **A DESCRIPTION OF ANY OFFSETS PROPOSED TO ADDRESS RESIDUAL ADVERSE SIGNIFICANT IMPACTS AND HOW THESE OFFSETS WILL BE ESTABLISHED**

Details of offset requirements and obligations for this species as a result of residual impacts due the proposed action is addressed in Section 12 of the BDAR.

- **DETAILS OF HOW THE CURRENT PUBLISHED NSW BIODIVERSITY ASSESSMENT METHOD (BAM) HAS BEEN APPLIED IN ACCORDANCE WITH THE OBJECTS OF THE EPBC ACT TO OFFSET SIGNIFICANT RESIDUAL ADVERSE IMPACTS**

The BDAR specifically addresses Section 11 of the BAM and provides information on the application of the no net loss standard and the Proposal biodiversity offset obligations. Credit calculations were quantified using the BAM-C Version 1.3.0.00.

- **DETAILS OF THE OFFSET PACKAGE TO COMPENSATE FOR SIGNIFICANT RESIDUAL IMPACTS INCLUDING DETAILS OF THE CREDIT PROFILES REQUIRED TO OFFSET THE ACTION IN ACCORDANCE WITH THE BAM AND/OR MAPPING AND DESCRIPTIONS OF THE EXTENT AND CONDITION OF THE RELEVANT HABITAT AND/OR THREATENED COMMUNITIES OCCURRING ON PROPOSED OFFSET SITES**

Section 12 of the BDAR outlines the biodiversity offset strategy for the proposal. The offset obligations will be met through implementing a combination of the following offset delivery options, being:

- the purchase and retirement of existing biodiversity credits currently available on the biodiversity credit register
- establishing a biodiversity stewardship site(s) on lands with like for like biodiversity values to those impacted by the proposal
- through making a payment into the Biodiversity Conservation Fund.

D-1.2.19 Australasian Bittern (*Botaurus poiciloptilus*)

The Australasian Bittern is listed as Endangered under the EPBC Act and the BC Act.

D-1.2.19.1 Description

The Australasian Bittern occurs in Australia, New Zealand and New Caledonia. In Australia, they occur from south-east Queensland to south-east Australia, Tasmania and the south-west of Western Australia. The Australian population size is estimated at between 250 and 800 individuals (2010 data) (Threatened Species Scientific Committee 2011).

Preferred habitat includes wetlands with tall vegetation, including permanent and seasonal freshwater habitats dominated by sedges, rushes, reeds, or cutting grass are preferred, with species such as *Phragmites, Cyperus, Eleocharis, Juncus, Typha, Baumea, Bolboschoenus, and Gahnia* growing over a muddy or peaty substrate (Threatened Species Scientific Committee 2011).

The Australasian Bittern forages in still, shallow water up to 0.3 metres deep, often at the edges of pools or waterways, or from platforms or mats of vegetation over deep water (Threatened Species Scientific Committee 2011). Solitary pairs breed in deep, densely vegetated swamps, building a nest just above the water level typically in shrubs standing in water within screening reeds (Morcombe *et al.,* 2011).

Threats to the Australasian Bittern include:

- reduction in extent and quality of habitat due to the diversion of water away from wetlands, and drainage of swamps
- land clearing for urban and agricultural development causing loss or alteration of wetland habitats
- peat mining
- predation by foxes and cats
- reduced water quality as a result of increasing salinity, siltation and pollution
- overgrazing by livestock and detrimental fire regimes (Threatened Species Scientific Committee 2011).

Atlas of Living Australia, eBird, Birdata and BioNet species records indicate some scattered species records north of the alignment, south of Coleambally and there is a known record from Lake Cullivel east of Urana. There are occasional ephemeral wetlands associated with the alignment along North Boundary Road, at Four Corners, on Colombo Creek, a large ephemeral dam south of the alignment along Federation Way, in irrigation drains south of Coleambally, and many shallow depressions in open plains country that fill after heavy rain, although these sites are not of sufficient extent, permanence and/or vegetation density to represent more than temporary opportunistic habitat for birds moving through the landscape. This species is cryptic and primarily solitary and sedentary, occasionally dispersing nocturnally.

D-1.2.19.2 Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- The *Conservation Advice Botaurus poiciloptilus Australasian Bittern* (Threatened Species Scientific Committee 2019) was reviewed as part of this assessment.
- The *Commonwealth Listing Advice on Botaurus poiciloptilus (Australasian Bittern)* (Threatened Species Scientific Committee 2011) provides a similar habitat description was reviewed as part of this assessment.
- There is no adopted or made Recovery Plan for this species.

Relevant adopted/made threat abatement plans include:

- Threat abatement plan for predation by feral cats (Department of the Environment 2015).
- Threat abatement plan for predation by the European red fox (Department of the Environment Water Heritage and the Arts 2008).

Relevant survey guidelines for this species include:

- *Survey Guidelines for Australia's Threatened Birds* (Department of the Environment Water Heritage and the Arts 2010).

D-1.2.19.3 Specific impacts

Australasian Bittern has potential habitat in the form of associated PCTs within the study area including PCT 8, 11, 13, 17, 24, 53, 160, 182 and 249. The majority of wetland habitats associated with the Proposal study area are unlikely to be used for breeding purposes, although there are perhaps breeding opportunities at Lake Cullivel and a moderately large dam south of the alignment along Federation Way. However, bitterns may occasionally use those wetlands during migratory movements when they hold water. There is also a risk of powerline strike, as north south movements through the study area have been recorded in recent years through satellite tracking studies. Due to the infrequency of these movements, the proposed action is unlikely to have a significant impact on existing populations within the locality. However, this assessment has been completed as a precautionary measure as the species has the potential to use habitat within habitats in the wider vicinity of the Proposal study area.

D-1.2.19.4 Significant impact criteria

An action is likely to have a significant impact on an Endangered or Critically Endangered species if there is a real chance or possibility that it will:

- **LEAD TO A LONG-TERM DECREASE IN THE SIZE OF A POPULATION**

This species has not been recorded within the Proposal study area despite targeted surveys. Associated PCTs including PCT 8, 11, 13, 17, 24, 53, 160, 182 and 249 are present within the Proposal study area and waterbodies presenting potential habitat for migrating birds were present with the Proposal area. Migration movements are infrequent; however, birds may travel several hundred kilometres between wetlands in NSW. The species can occur in high densities in temporary or infrequently filled wetlands during exceptionally wet years and also frequently utilise artificial habitats such as rice fields (Threatened Species Scientific Committee 2019). Aquatic habitats most likely to be used by the species are unlikely to be directly impacted by the Proposal (the maximum impact likely to occur would be the removal or trimming of tree canopy on riverbanks). Intermittent north-south movements have been recorded in recent years, so the species may be at an increased risk of powerline strike from the Proposal during migratory flights. However, due to the infrequency of these movements through the study area, the proposed action is unlikely to significantly effect a population or cause long-term decrease for the species.

- **REDUCE THE AREA OF OCCUPANCY OF THE SPECIES**

This species has not been recorded within the Proposal study area despite targeted survey. Associated PCTs including PCT 8, 11, 13, 17, 24, 53, 160, 182 and 249 are present within the Proposal study area and waterbodies presenting potential habitat for migrating birds were present with the Proposal area. However, there will be no direct impacts to permanent water bodies that are likely to provide suitable habitat for this species, and the Proposal is unlikely to result in fragmentation between habitats beyond that already existing in the landscape. The Proposal has the potential to increase the risk of powerline strike for migrating birds, however due to the infrequency of these movements within the Proposal study area, this is unlikely to significantly impact existing populations. As such, the Proposal is considered unlikely to reduce the area of the occupancy of the species.

- **FRAGMENT AN EXISTING POPULATION INTO TWO OR MORE POPULATIONS**

The Proposal study area is within an already fragmented and disturbed landscape, thereby limiting the potential for any substantial additional fragmentation to occur. In addition, the Proposal is unlikely to have any direct impact to aquatic/riparian habitat most likely to be used by this species. Given the capacity for Australasian Bittern to disperse over and around these cleared areas, and the cleared areas do not occur as large broad acre areas, is it considered unlikely that the action would result in increased fragmentation to an existing population of this species.

- **ADVERSELY AFFECT HABITAT CRITICAL TO THE SURVIVAL OF A SPECIES**

In accordance with the approved conservation advice for the species (Threatened Species Scientific Committee 2019), due to the severe reduction in numbers, based on historic habitat loss and degradation across the core part of its range, all natural habitat (including constructed wetlands with suitable habitat) in which the Australasian Bittern is known or likely to occur should be considered critical to the survival of the species. Given that both permanent and temporary waterbodies exist within the Proposal study area and are likely to be used by migrating birds there is critical habitat for the species within the study area. However, waterbodies within the impact area are unlikely to be impacted by the proposal. No direct impact to waterbodies or adjacent terrestrial habitats would occur as the maximum aquatic impact would be the removal or trimming of tree canopy on riverbanks to facilitate the construction and operation of the powerlines spanning riparian areas. Any potential indirect impacts to these habitats would be managed through mitigation measures. Consequently, it is unlikely that the Proposal would adversely affect habitat critical to the survival of the species.

- **DISRUPT THE BREEDING CYCLE OF A POPULATION**

Australasian Bittern breeds from October to February in solitary pairs. Nests are built under dense cover over shallow water adjacent to deep, densely vegetated freshwater swamps and pools. The species prefers to nest in vegetation that is up to 2.5 m tall and the nests are placed about 30 cm above the water level. No suitable breeding habitat occurs for this species within the Proposal study area. In addition, any waterbodies which have the potential to be used by this species will not be directly impacted by the Proposal and mitigation measures will be put in place to limit indirect impacts to areas of retained habitat. Consequently, it is considered unlikely that the action would adversely disrupt the breeding cycle of any important population of the species.

- **MODIFY, DESTROY, REMOVE OR ISOLATE OR DECREASE THE AVAILABILITY OR QUALITY OF HABITAT TO THE EXTENT THAT THE SPECIES IS LIKELY TO DECLINE**

The Proposal is unlikely to have any direct impact to waterbodies or adjacent terrestrial habitats suitable for this species within the Proposal study area. The maximum aquatic impact would be the removal or trimming of tree canopy on riverbanks to facilitate the construction and operation of the powerlines spanning riparian area. No suitable breeding habitat is present within the Proposal study area and the Proposal will occur within an already fragmented and disturbed landscape, thereby limiting the potential for any substantial additional fragmentation to occur. Consequently, the Proposal is considered unlikely to result in the modification, removal, isolation, or decreased availability or quality of habitat to the extent that the species is likely to decline.

- **RESULT IN INVASIVE SPECIES THAT ARE HARMFUL TO A CRITICALLY ENDANGERED OR ENDANGERED SPECIES BECOMING ESTABLISHED IN THE ENDANGERED OR CRITICALLY ENDANGERED SPECIES' HABITAT**

Adhering to mitigation measures such as weed and pest management plans, and vehicle weed hygiene, would prevent invasive weeds and vertebrate pests such as cats and foxes establishing in wetland habitat areas.

- **INTRODUCE DISEASE THAT MAY CAUSE THE SPECIES TO DECLINE**

There are no known diseases causing potential species decline to the Australasian Bittern. Mitigation measures including weed and pathogen controls would be put in place for the Proposal which would minimise the introduction of any potential diseases.

- **INTERFERE SUBSTANTIALLY WITH THE RECOVERY OF THE SPECIES**

There is no adopted or made Recovery Plan for this species. Although the proposed action does occur within priority management areas for this species, the Proposal is unlikely to interfere with any of the identified recovery actions for the species as outlined under the NSW Saving Our Species recovery strategy. Transitory habitats suitable for the Australasian Bittern are the only habitats within the Proposal study area and will not be directly impacted by the Proposal and indirect impacts will be controlled through mitigation measures. As such, the Proposal is unlikely to interfere with the recovery of the species.

- **CONCLUSION**

This species has not been recorded within the Proposal study area despite targeted survey. Australasian Bittern has multiple records within the locality and potential habitat within the study area in the form of associated PCTs including PCT 8, 11, 13, 17, 24, 53, 160, 182 and 249. Wetland habitats associated closely with the study area are unlikely to be used for breeding purposes, as no suitable habitat is present. However, the species may use these wetlands on occasion during migratory movements when they hold water and there are two wetland habitats that may represent breeding opportunities for the Australasian Bittern to the north and south of the Proposal area; Lake Cullivel and less likely, an ephemeral dam to the south of the Proposal area straddling Federation Way. Consequently, there is a very small possibility of powerline strike for the species, as north south movements through the study area have been recorded in recent years through satellite tracking studies. However, due to the infrequency of these migratory movements, the proposed action is unlikely to have a significant impact on existing populations. Further there would be no direct impacts to waterbodies from the Proposal and mitigation measures will be implemented to prevent indirect impacts to adjacent retained habitat. Consequently, it is unlikely that the proposed action would have significant impact on the species.

D-1.2.19.5 NSW Assessment Bilateral requirements

- **DESCRIPTION OF THE HABITAT (INCLUDING IDENTIFICATION AND MAPPING OF SUITABLE BREEDING HABITAT, SUITABLE FORAGING HABITAT, IMPORTANT POPULATIONS AND HABITAT CRITICAL FOR SURVIVAL), WITH CONSIDERATION OF, AND REFERENCE TO, ANY RELEVANT COMMONWEALTH GUIDELINES AND POLICY STATEMENTS INCLUDING LISTING ADVICE, CONSERVATION ADVICE AND RECOVERY PLAN**

The *Conservation Advice Botaurus poiciloptilus Australasian Bittern* (Threatened Species Scientific Committee 2019) states that given that the Australasian Bittern is presumed to have undergone a severe reduction in numbers, based on historic habitat loss and degradation across the core part of its range, all natural habitat (including constructed wetlands with suitable habitat) in which the Australasian Bittern is known or likely to occur should be considered critical to the survival of the species. The Australasian Bittern occurs mainly in freshwater wetlands and, rarely, in estuaries or tidal wetlands and favours wetlands with tall dense vegetation, where it forages in still, shallow water up to 0.3 m deep, often at the edges of pools or waterways, or from platforms or mats of vegetation over deep water (Threatened Species Scientific Committee 2019). It favours permanent and seasonal freshwater habitats, particularly those dominated by sedges, rushes and reeds (e.g. *Phragmites, Cyperus, Eleocharis, Juncus, Typha, Baumea, Bolboschoenus*) or cutting grass (*Gahnia*) growing over a muddy or peaty substrate (Threatened Species Scientific Committee 2019). The *Commonwealth*

Listing Advice on Botaurus poiciloptilus (Australasian Bittern) (Threatened Species Scientific Committee 2011) provides a similar habitat description.

Owing to the small total number of Australasian Bitterns and the significant observed declines in both total numbers and the species' extent of occurrence all populations should be considered important (Threatened Species Scientific Committee 2019).

There is no adopted or made Recovery Plan for this species.

Potential (wetland/riparian) habitat for this species is present within the study area. No suitable breeding habitat is present but waterbodies within the Proposal area are likely to be used during migratory north/south movements, particularly during wetter periods. This constitutes critical habitat for the species as there are known occurrences within the locality and all natural habitat (including constructed wetlands with suitable habitat) in which the Australasian Bittern is known or likely to occur should is critical to survival (Threatened Species Scientific Committee 2019). There is consequently an increased risk from the Proposal of powerline strike during these periods. However, no waterbodies presenting critical habitat are likely to be directly impacted by the Proposal and migratory movements across this area are intermittent, so significant impact to populations of the species is unlikely.

- **DETAILS OF THE SCOPE, TIMING AND METHODOLOGY FOR STUDIES OR SURVEYS USED AND HOW THEY ARE CONSISTENT WITH (OR JUSTIFICATION FOR DIVERGENCE FROM) PUBLISHED AUSTRALIAN GOVERNMENT GUIDELINES AND POLICY STATEMENTS**

Threatened bird surveys completed within the Proposal study area were carried out in accordance with the *Survey Guidelines for Australia's Threatened Birds* (Department of Environment Water Heritage and the Arts, 2010). Habitat assessments were undertaken to assess the likelihood of threatened species of animal (those species known or predicted to occur within the locality from the literature and database review) occurring within the Proposal study area. Fauna habitat assessments were the primary assessment tool in assessing whether threatened species were likely to occur within the Proposal study area. The primary technique used for surveying birds were 20-minute diurnal bird searches and opportunistic surveys. The survey effort for Australasian Bittern is outlined in Table D-1.10.

Table D-1.10 Summary of survey effort for Australasian Bittern

FAUNA GROUP	SURVEY TECHNIQUE	SURVEY EFFORT	OPTIMUM SURVEY PERIOD	DATES SURVEYED
Riverine Woodlands/wetlands –PCT11, PCT24 and PCT53				
Wetland Birds	Opportunistic surveys and habitat assessments conducted during targeted surveys for other wetland species. No significant areas of suitable habitat within the Proposal area.	Assessment of riparian/wetland habitat. (60 person hrs) Wetland surveys (4 sites – 6 person hrs) Spotlighting (5 sites – 8 person hrs)	All year – where suitable conditions occur	20 – 22 July 2020 21 – 22 July 2020 20 – 22 July 2020

- **DESCRIPTION OF THE SPECIFIC IMPACTS AND ITS REGARD TO THE FULL NATIONAL EXTENT OF THE SPECIES OR COMMUNITY'S RANGE**

Potential (wetland/riparian) habitat for this species is present within the study area and these waterbodies may be used during migratory north/south movements for the species. Though the waterbodies within the study area fall within the definition of critical habitat for the species (Threatened Species Scientific Committee 2019), no waterbodies presenting critical habitat are likely to be directly impacted by the Proposal and migratory movements across this area are intermittent. Therefore, significant impact to populations of the species is unlikely. Nevertheless, the Proposal falls

directly within the known distribution of the species and there is a potential increased risk from the Proposal of powerline strike during migratory movements which may result in increased injury or mortality for individual birds.

Figure D-1.19 shows the current known generalised distribution from the Departments Species of National Environmental Significance dataset which is an indicative distribution map of the present distribution of the species based on best available knowledge. The Proposal intersects the known distribution of the species and there are multiple records within the locality. However, the Proposal is unlikely to result in direct impacts to aquatic habitat likely to be used by the species and is not likely to result in a significant decrease or fragmentation to existing populations. Due to the mobile nature of the species the Proposal is unlikely to have any impact on the total range or distribution.

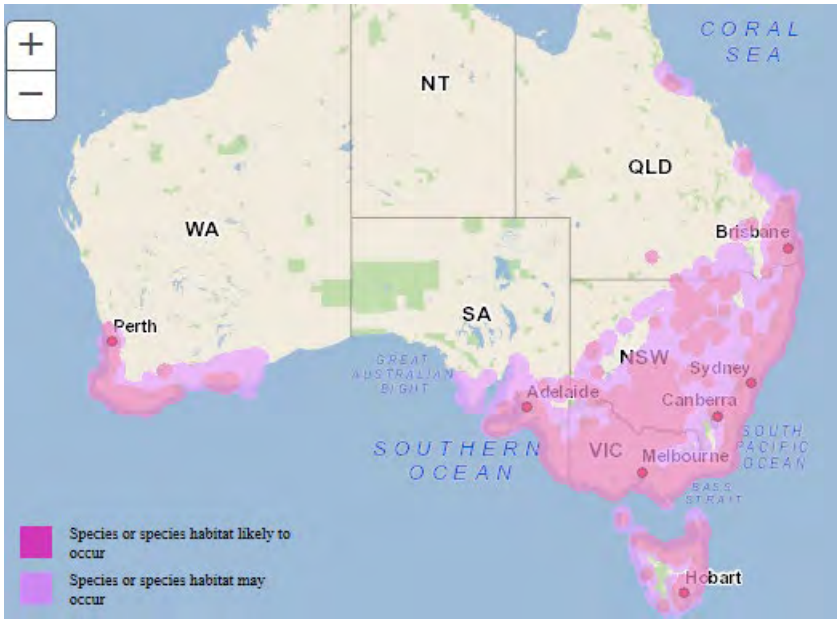


Figure D-1.19 Current distribution map for Australasian Bittern taken from the SPRAT

- **DESCRIPTION OF THE SPECIFIC PROPOSED AVOIDANCE AND MITIGATION MEASURES TO DEAL WITH RELEVANT IMPACTS OF THE ACTION**

The proposed avoidance and mitigation measures are outlined in Section 8 & 10 of the BDAR. Detailed avoidance description for impacts relating to biodiversity values (including threatened species) are outlined in Section 8. Mitigation measures to be implemented are outlined in Section 11. No specific measures for Australasian Bittern are identified.

- **IDENTIFICATION OF SIGNIFICANT RESIDUAL ADVERSE IMPACTS LIKELY TO OCCUR AFTER THE PROPOSED ACTIVITIES TO AVOID AND MITIGATE ALL IMPACTS ARE TAKEN INTO ACCOUNT**

Details of offset requirements and obligations for this species as a result of residual impacts due the proposed action is addressed in Section 12 of the BDAR. No species credits are required to offset the residual impacts to *Australasian Bittern* as habitat for the species will not be lost.

- **A DESCRIPTION OF ANY OFFSETS PROPOSED TO ADDRESS RESIDUAL ADVERSE SIGNIFICANT IMPACTS AND HOW THESE OFFSETS WILL BE ESTABLISHED**

Details of offset requirements and obligations for this species as a result of residual impacts due the proposed action is addressed in Section 12 of the BDAR.

- **DETAILS OF HOW THE CURRENT PUBLISHED NSW BIODIVERSITY ASSESSMENT METHOD (BAM) HAS BEEN APPLIED IN ACCORDANCE WITH THE OBJECTS OF THE EPBC ACT TO OFFSET SIGNIFICANT RESIDUAL ADVERSE IMPACTS**

The BDAR specifically addresses Section 11 of the BAM and provides information on the application of the no net loss standard and the Proposal biodiversity offset obligations. Credit calculations were quantified using the BAM-C Version 1.3.0.00.

- **DETAILS OF THE OFFSET PACKAGE TO COMPENSATE FOR SIGNIFICANT RESIDUAL IMPACTS INCLUDING DETAILS OF THE CREDIT PROFILES REQUIRED TO OFFSET THE ACTION IN ACCORDANCE WITH THE BAM AND/OR MAPPING AND DESCRIPTIONS OF THE EXTENT AND CONDITION OF THE RELEVANT HABITAT AND/OR THREATENED COMMUNITIES OCCURRING ON PROPOSED OFFSET SITES**

Section 12 of the BDAR outlines the biodiversity offset strategy for the proposal. The offset obligations will be met through implementing a combination of the following offset delivery options, being:

- the purchase and retirement of existing biodiversity credits currently available on the biodiversity credit register
- establishing a biodiversity stewardship site(s) on lands with like for like biodiversity values to those impacted by the proposal
- through making a payment into the Biodiversity Conservation Fund.

D-1.2.20 Curlew Sandpiper (*Calidris ferruginea*)

Curlew Sandpiper is listed as Critically Endangered under the EPBC Act and Endangered under the BC Act.

D-1.2.20.1 Description

Curlew Sandpipers are a migratory species, during the breeding season occurring in the Russian Arctic and the New Siberian Islands. The species is also a passage migrant through Europe, north Africa, Kazakhstan, west and southcentral Siberia, Ussuriland, China, Taiwan, Japan, the Philippines and Papua New Guinea. Throughout their non-breeding period, they occur through Africa, southern Mauritania and Ethiopia, along the valley of the Nile River and in Madagascar. They also occur in Asia, from the coastal Arabian Peninsula to Pakistan and India, through Indonesia and Malaysia, south-east Asia and Indochina to south China and Australasia (Department of the Environment 2015, Department of Agriculture Water and the Environment 2021).

In Australia, Curlew Sandpipers occur around the coastal areas and are also widespread further inland, though have irregular appearances inland and occur in in lower numbers. The species does not breed in Australia, only forages, with occurrences typically sometime between August and December.

Preferred habitat for the species includes intertidal mudflats in sheltered coastal areas, non-tidal swamps, lakes and lagoons near the coast, and ponds in saltworks and sewage farms. Inland, though less often recorded, they occur around ephemeral and permanent lakes, dams, waterholes and bore drains, usually with bare edges of mud or sand. They occur in both fresh and brackish waters. They are occasionally recorded around floodwaters.

Curlew Sandpipers do not breed in Australia. In Siberia they nest in June and July, creating cup nests. Curlew Sandpipers typically forage for invertebrates at the edges of shallow pools and drains of intertidal mudflats and sandy shores. They sometimes forage in flooded paddocks or inundated saltflats (Department of the Environment 2015).

Threats to the Curlew Sandpiper include:

- loss of feeding and roosting habitat
- fragmentation or isolation of sites within feeding areas resulting in decreasing abundance
- human disturbance at roost and feeding sites
- disturbance by dogs at roost and feeding sites
- pollution (Department of Agriculture Water and the Environment 2021).

Atlas of Living Australia and BioNet species records indicate some scattered species records for the species in association with the Murrumbidgee and Murray Rivers. This species may occasionally use habitats in Lake Cullivel and flooded plains for foraging purposes and individuals may migrate through regions the Proposal area traverses, although most likely at altitudes well above the Proposal infrastructure.

D-1.2.20.2 Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- There is no Listing advice available for this species
- The *Conservation Advice* Calidris ferruginea *curlew sandpiper* (Department of the Environment 2015) was reviewed as part of this assessment.
- There is no adopted or made Recovery Plan for this species. As outlined in the Commonwealth profile for this species a recovery plan is not required as 'the approved conservation advice for the species provides sufficient direction to implement priority actions and mitigate against key threats (Department of Agriculture Water and the Environment 2021).'

No Threat Abatement Plan has been identified as being relevant for this species

Relevant survey guidelines for this species include:

- *Survey Guidelines for Australia's Threatened Birds* (Department of the Environment Water Heritage and the Arts 2010).

D-1.2.20.3 Specific impacts

The Curlew Sandpiper was not recorded in the Proposal study area despite targeted surveys and no important habitat mapped areas will be impacted by the proposal. Suitable habitat is scant though the species has associated PCTs including PCT 24, 47 and 53 within the Proposal study area, as well as wetlands and lake edges. Curlew Sandpipers may occasionally use habitats in Lake Cullivel and flooded plains for foraging and during long-distance migratory movements. Birds are also considered likely to cross the Proposal area on a seasonal basis between southern coastal habitats and north Australian coastlines. These movements are infrequent, and the species is likely to migrate at elevations well above the Proposal infrastructure, therefore the proposed action is unlikely to have a direct impact on the species or aquatic habitat in which the species is most likely to occur. However, this assessment has been completed as a precautionary measure.

D-1.2.20.4 Significant impact criteria

An action is likely to have a significant impact on an Endangered or Critically Endangered species if there is a real chance or possibility that it will:

- **LEAD TO A LONG-TERM DECREASE IN THE SIZE OF A POPULATION**

This species has not been recorded within the Proposal study area despite targeted surveys. Associated PCTs including PCT 24, 47 and 53 within the Proposal study area, as well as wetlands and lake edges presenting potential habitat for non-breeding birds were present with the Proposal area – the most likely habitat was recorded around Lake Cullivel in the east of the Proposal study area. No important mapped habitat for the species occurs within the Proposal study area. Occurrences of this species inland are rare and infrequent, and it is highly unlikely that any populations occurring in the locality would be dependent on the habitat available within the Proposal study area. Further direct impact to wetlands and waterbodies within the study area will generally be avoided with the maximum likely aquatic impact being the removal or trimming of tree canopy on riverbanks to facilitate the construction and operation of the powerlines spanning riparian areas. Consequently, the proposed action is unlikely to significantly effect a population or contribute to any long-term decrease of the species.

- **REDUCE THE AREA OF OCCUPANCY OF THE SPECIES**

This species has not been recorded within the Proposal study area despite targeted survey, suitable habitat is scarce, and the species is likely only to use potential habitat within Lake Cullivel (which does not occur within the Proposal study area). Though the species may occasionally use this habitat and the flooded plains for foraging and passage during long-distance migratory movements, there will be no direct impacts to these habitats from the proposed action and the Proposal is unlikely to result in fragmentation of habitat available to the species. Consequently, the Proposal is considered unlikely to reduce the area of the occupancy of the species.

- **FRAGMENT AN EXISTING POPULATION INTO TWO OR MORE POPULATIONS**

The Proposal study area is within an already fragmented and disturbed landscape, thereby limiting the potential for any substantial additional fragmentation to occur. In addition, the Proposal is unlikely to have any direct impact to aquatic/riparian habitat most likely to be used by this species. Given the capacity for Curlew Sandpiper to disperse over and around these cleared areas, and the cleared areas do not occur as large broad acre areas, is it considered unlikely that the action would result in increased fragmentation to an existing population of this species.

- **ADVERSELY AFFECT HABITAT CRITICAL TO THE SURVIVAL OF A SPECIES**

Habitat critical to the survival of a species refers to areas that are necessary:

- for activities such as foraging, breeding, roosting, or dispersal
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
- to maintain genetic diversity and long-term evolutionary development, or
- for the reintroduction of populations or recovery of the species or ecological community. (Department of the Environment Water Heritage and the Arts 2013).

No habitat critical to the survival of this species has been listed under the EPBC Act. Critical habitat for Curlew Sandpiper may be identified by the use of important habitat maps which identify land that is considered important to support critical life stages of the species. As Curlew Sandpiper is extremely mobile and difficult to reliably detect by survey, these maps help identify key areas for the species (i.e., areas the species may forage, or sites where multiple records have been located over multiple years). No areas mapped as important habitat for this species occur within the Proposal study area therefore, it is unlikely that the Proposal would adversely affect habitat critical to the survival of the species (Department of Agriculture Water and the Environment 2021).

- **DISRUPT THE BREEDING CYCLE OF A POPULATION**

Curlew Sandpipers do not breed in Australia, and only rely on habitat in Australia to forage in order to migrate >10,000 km back to its breeding grounds. Consequently, it is unlikely that the proposed action would adversely affect the breeding cycle of the species.

- **MODIFY, DESTROY, REMOVE OR ISOLATE OR DECREASE THE AVAILABILITY OR QUALITY OF HABITAT TO THE EXTENT THAT THE SPECIES IS LIKELY TO DECLINE**

The Proposal is unlikely to have any direct impact to waterbodies or adjacent terrestrial habitats suitable for this species within the Proposal study area. The maximum aquatic impact would be the removal or trimming of tree canopy on riverbanks to facilitate the construction and operation of the powerlines spanning riparian area, although these habitats are unlikely to be used by this species. No breeding habitat is present within the Proposal study area and the Proposal will occur within an already fragmented and disturbed landscape, thereby limiting the potential for any substantial additional fragmentation to occur. Consequently, the Proposal is considered unlikely to result in the modification, removal, isolation, or decreased availability or quality of habitat to the extent that the species is likely to decline.

- **RESULT IN INVASIVE SPECIES THAT ARE HARMFUL TO A CRITICALLY ENDANGERED OR ENDANGERED SPECIES BECOMING ESTABLISHED IN THE ENDANGERED OR CRITICALLY ENDANGERED SPECIES' HABITAT**

Adhering to mitigation measures such as weed and pest management plans, and vehicle weed hygiene, would prevent invasive weeds and vertebrate pests such as cats and foxes establishing in wetland habitat areas.

- **INTRODUCE DISEASE THAT MAY CAUSE THE SPECIES TO DECLINE**

There are no known diseases causing potential species decline to the Curlew Sandpiper. Mitigation measures including weed and pathogen controls would be put in place for the Proposal which would minimise the introduction of any potential diseases.

- **INTERFERE SUBSTANTIALLY WITH THE RECOVERY OF THE SPECIES**

There is no adopted or made Recovery Plan for this species. The approved conservation advice for the species provides sufficient direction to implement priority actions and mitigate against key threats. The key conservation and management actions identified for the recovery of this species in Australia and internationally under this document include (Department of the Environment 2015):

- work with governments along the East Asian – Australasian Flyway to prevent destruction of key migratory staging sites
- support initiatives to protect and manage key staging sites of curlew sandpiper
- maintain and improve protection of roosting and feeding sites in Australia
- incorporate requirements for curlew sandpiper into coastal planning and management
- manage important sites to identify, control and reduce the spread of invasive species
- manage disturbance at important sites when curlew sandpipers are present – e.g. discourage or prohibit vehicle access, horse riding and dogs on beaches, implement temporary beach closures
- monitor the progress of recovery, including the effectiveness of management actions and the need to adapt them if necessary.

The Proposal is unlikely to interfere with any of the identified recovery actions outlined. As such, the Proposal is unlikely to interfere with the recovery of the species.

- **CONCLUSION**

The Curlew Sandpiper was not recorded in the Proposal study area despite targeted surveys. The species has habitat associations within the study area including PCTs 24, 47 and 53l, wetlands and lake edges however, surveys confirmed that suitable habitat, likely to be used by Curlew Sandpiper was scarce. Curlew Sandpipers are likely to occasionally use habitats in Lake Cullivel and flooded plains for foraging and during long-distance migratory movements. Birds are also considered likely to cross the Proposal area on an infrequent seasonal basis between southern coastal habitats and north Australian coastlines. The proposed action is unlikely to have a direct impact on aquatic habitat in which the species is most likely to occur and indirect impacts to any adjacent retained habitat would be managed through mitigation measures. No important mapped habitat for the species occurs within the Proposal study area. Consequently, it is unlikely that the proposed action would have significant impact on this species.

D-1.2.20.5 NSW Assessment Bilateral requirements

- **DESCRIPTION OF THE HABITAT (INCLUDING IDENTIFICATION AND MAPPING OF SUITABLE BREEDING HABITAT, SUITABLE FORAGING HABITAT, IMPORTANT POPULATIONS AND HABITAT CRITICAL FOR SURVIVAL), WITH CONSIDERATION OF, AND REFERENCE TO, ANY RELEVANT COMMONWEALTH GUIDELINES AND POLICY STATEMENTS INCLUDING LISTING ADVICE, CONSERVATION ADVICE AND RECOVERY PLAN**

There is no Listing Advice, and no adopted or made recovery plan for this species. NSW Bionet outlines the use of important habitat maps for Curlew Sandpiper which identify land that is considered important to support critical life stages of the species(Department of Planning Industry and Environment 2021). As Curlew Sandpiper is extremely mobile and difficult to reliably detect by survey, these maps help identify key areas for the species (i.e., areas the species may forage, or sites where multiple records have been located over multiple years).

Curlew Sandpipers do not breed in Australia, typically breeding in the Russian Arctic and the New Siberian Islands. The species primarily relies on habitat in Australia to forage in order to migrate >10,000 km back to its breeding grounds. Primary foraging habitat for Curlew Sandpipers includes mudflats and nearby shallow water. In non-tidal wetlands, they usually wade, mostly in water 15–30 mm, but up to 60 mm deep. They forage at the edges of shallow pools and drains of intertidal mudflats and sandy shores. At high tide, they sometimes forage among low sparse emergent vegetation, such as saltmarsh, and sometimes forage in flooded paddocks or inundated saltflats. Occasionally they forage on wet mats of algae or waterweed, or on banks of beach cast seagrass or seaweed (Department of the Environment 2015, Department of Agriculture Water and the Environment 2021).

Potential (wetland/lake) habitat for this species is present within the study area. No breeding habitat is present, and the Proposal does not occur within any important habitat mapping for the species. Curlew Sandpipers are likely to occasionally use habitats in Lake Cullivel and flooded plains for foraging and during long-distance migratory movements. Birds are also considered likely to cross the Proposal area on an infrequent seasonal basis between southern coastal habitats and north Australian coastlines. However, no waterbodies presenting potential habitat are likely to be directly impacted by the Proposal and migratory movements across this area are intermittent. Consequently, significant impact to populations of the species is unlikely.

- **DETAILS OF THE SCOPE, TIMING AND METHODOLOGY FOR STUDIES OR SURVEYS USED AND HOW THEY ARE CONSISTENT WITH (OR JUSTIFICATION FOR DIVERGENCE FROM) PUBLISHED AUSTRALIAN GOVERNMENT GUIDELINES AND POLICY STATEMENTS**

Threatened bird surveys completed within the Proposal study area were carried out in accordance with the *Survey Guidelines for Australia's Threatened Birds* (Department of Environment Water Heritage and the Arts, 2010). Habitat assessments were undertaken to assess the likelihood of threatened species of animal (those species known or predicted to occur within the locality from the literature and database review) occurring within the Proposal study area. Fauna habitat assessments were the primary assessment tool in assessing whether threatened species were likely to occur within the Proposal study area. The primary technique used for surveying birds were 20-minute diurnal bird searches, but opportunistic surveys undertaken throughout habitat assessments represented the key survey methodology for species that are unlikely to be encountered, due to the rarity of their occurrence in habitats associated with the Proposal area. The survey effort for Curlew Sandpiper is outlined in Table D-1.11.

Table D-1.11 Summary of survey effort for Curlew Sandpiper

FAUNA GROUP	SURVEY TECHNIQUE	SURVEY EFFORT	OPTIMUM SURVEY PERIOD	DATES SURVEYED
Wetlands – Miscellaneous ecosystem may include PCT11 during times of inundation PCT47, PCT53.				
Wetland Birds	Opportunistic surveys and habitat assessments conducted during targeted surveys for other wetland species. No significant areas of suitable habitat within the Proposal area.	Assessment of riparian/wetland habitat. (60 person hrs) Wetland surveys (4 sites – 6 person hrs) Wetland Surveys	All year – where suitable conditions occur	20 – 22 July 2020 21 – 22 July 2020 6 – 7 Dec 2021

- **DESCRIPTION OF THE SPECIFIC IMPACTS AND ITS REGARD TO THE FULL NATIONAL EXTENT OF THE SPECIES OR COMMUNITY'S RANGE**

Known habitat associations and potential (wetland/lake) habitat for this species is present within the Proposal study area. No breeding habitat is present, and the Proposal does not occur within any important habitat mapping for the species. Curlew Sandpipers are likely to occasionally use habitats in Lake Cullivel and flooded plains for foraging and during long-distance migratory movements. Birds are also considered likely to cross the Proposal area on an infrequent seasonal basis between southern coastal habitats and north Australian coastlines. This species is highly mobile and the Proposal study area falls within the known distribution of the species within Australia. No waterbodies presenting potential habitat for the species are likely to be directly impacted by the Proposal and migratory movements across this area are intermittent, so significant impact to populations or to the extent and distribution of the species is highly unlikely.

Figure D-1.20 shows the current known generalised distribution from the Departments Species of National Environmental Significance dataset which is an indicative distribution map of the present distribution of the species based on best available knowledge. The Proposal intersects the known distribution of the species and there are scattered records within the locality. However, the Proposal is unlikely to result in direct impacts to aquatic habitat likely to be used by the species and is not likely to result in a significant decrease or fragmentation to existing populations.

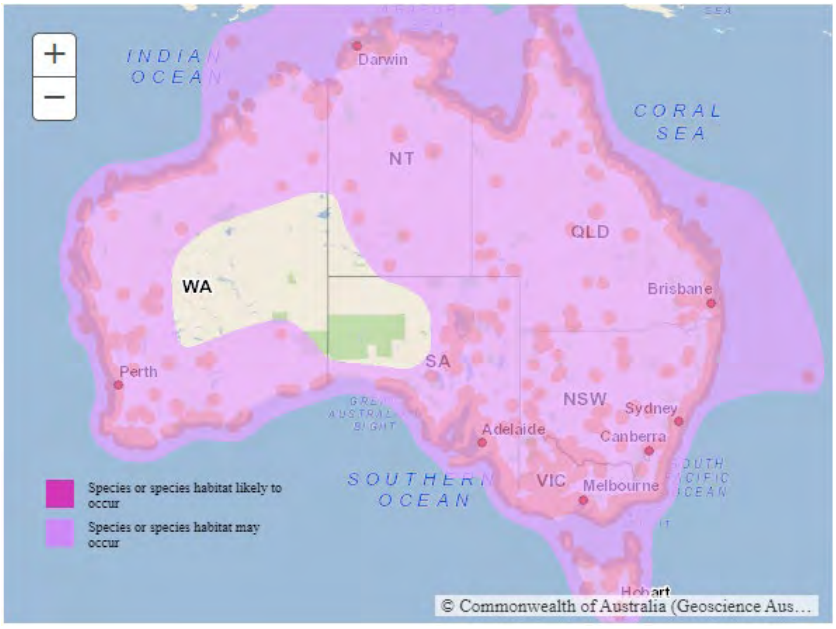


Figure D-1.20 Current distribution map for Australasian Bittern taken from the SPRAT

- **DESCRIPTION OF THE SPECIFIC PROPOSED AVOIDANCE AND MITIGATION MEASURES TO DEAL WITH RELEVANT IMPACTS OF THE ACTION**

The proposed avoidance and mitigation measures are outlined in Section 8 & 10 of the BDAR. Detailed avoidance description for impacts relating to biodiversity values (including threatened species) are outlined in Section 8. Mitigation measures to be implemented are outlined in Section 11. No specific measures for Curlew Sandpiper are identified.

- **IDENTIFICATION OF SIGNIFICANT RESIDUAL ADVERSE IMPACTS LIKELY TO OCCUR AFTER THE PROPOSED ACTIVITIES TO AVOID AND MITIGATE ALL IMPACTS ARE TAKEN INTO ACCOUNT**

Details of offset requirements and obligations for this species as a result of residual impacts due the proposed action is addressed in Section 12 of the BDAR. No species credits are required to offset the residual impacts to *Curlew Sandpiper*.

- **A DESCRIPTION OF ANY OFFSETS PROPOSED TO ADDRESS RESIDUAL ADVERSE SIGNIFICANT IMPACTS AND HOW THESE OFFSETS WILL BE ESTABLISHED**

Details of offset requirements and obligations for this species as a result of residual impacts due the proposed action is addressed in Section 12 of the BDAR.

- **DETAILS OF HOW THE CURRENT PUBLISHED NSW BIODIVERSITY ASSESSMENT METHOD (BAM) HAS BEEN APPLIED IN ACCORDANCE WITH THE OBJECTS OF THE EPBC ACT TO OFFSET SIGNIFICANT RESIDUAL ADVERSE IMPACTS**

The BDAR specifically addresses Section 11 of the BAM and provides information on the application of the no net loss standard and the Proposal biodiversity offset obligations. Credit calculations were quantified using the BAM-C Version 1.3.0.00.

- **DETAILS OF THE OFFSET PACKAGE TO COMPENSATE FOR SIGNIFICANT RESIDUAL IMPACTS INCLUDING DETAILS OF THE CREDIT PROFILES REQUIRED TO OFFSET THE ACTION IN ACCORDANCE WITH THE BAM AND/OR MAPPING AND DESCRIPTIONS OF THE EXTENT AND CONDITION OF THE RELEVANT HABITAT AND/OR THREATENED COMMUNITIES OCCURRING ON PROPOSED OFFSET SITES**

Section 12 of the BDAR outlines the biodiversity offset strategy for the proposal. The offset obligations will be met through implementing a combination of the following offset delivery options, being:

- the purchase and retirement of existing biodiversity credits currently available on the biodiversity credit register
- establishing a biodiversity stewardship site(s) on lands with like for like biodiversity values to those impacted by the proposal
- through making a payment into the Biodiversity Conservation Fund.

D-1.2.21 Grey Falcon (*Falco hypoleucos*)

Grey Falcon is listed as Vulnerable under the EPBC Act and Endangered under the BC Act.

D-1.2.21.1 Description

The Grey Falcon occurs in arid and semi-arid Australia, including the Murray-Darling Basin, Eyre Basin, central Australia and Western Australia (Marchant and Higgins 1993). The species is mainly found where annual rainfall is less than 500 mm, except when wet years are followed by drought, when the species might become marginally more widespread, although it is essentially confined to the arid and semi-arid zones (Schoenjahn 2018). Regarding NSW, Grey Falcon is sparsely distributed, chiefly throughout the Murray-Darling Basin, with the occasional rare vagrant east of the Great Dividing Range. The breeding range has contracted since the 1950s with most breeding now confined to arid parts of the range. There are possibly less than 5000 individuals left. Population trends are unclear, though it is believed to be extinct in areas with more than 500 mm rainfall in NSW. Usually restricted to shrubland, grassland and wooded

watercourses of arid and semi-arid regions, although it is occasionally found in open woodlands near the coast. Also occurs near wetlands where surface water attracts prey. Preys primarily on birds, especially parrots and pigeons, using high-speed chases and stoops; reptiles and mammals are also taken. Like other falcons it utilises old nests of other birds of prey and ravens, usually high in a living eucalypt near water or a watercourse; peak laying season is in late winter and early spring; two or three eggs are laid.

D-1.2.21.2 Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- The *Conservation Advice* Falco hypoleucos *Grey Falcon* (Threatened Species Scientific Committee 2020) was reviewed as part of this assessment.
- Listing assessment information may be available in the approved Conservation Advice for this species.
- There is no adopted or made Recovery Plan for this species.

No threat abatement plan has been identified as being relevant for this species.

Relevant survey guidelines for this species include:

- *Survey Guidelines for Australia's Threatened Birds* (Department of the Environment Water Heritage and the Arts 2010).

D-1.2.21.3 Specific impacts

Targeted bird surveys within the Proposal study area did not record Grey Falcon. This species has potential habitat within the study area in the Southern Olary Plains, Lachlan, Murrumbidgee and Lower Slopes IBRA subregions in the form of associated PCTs 8, 11, 13, 15, 17, 22, 23, 24, 26, 28, 44, 45, 46, 47, 53, 58, 76, 80, 143, 157, 160, 163, 164, 166, 170, 171, 172, 182, 199, 216 and 249. This species is an arid country bird and only rarely extends beyond the arid zone under severe climatic events. It is considered to be very rare in the South Olary Plain IBRA subregion and progressively rarer in the remaining IBRA subregions as the alignment extends east. So much so that habitats within the Lachlan, Murrumbidgee and Lower Slopes IBRA subregions cannot be regarded as being important to the species apart from very rare short-term occurrences. An open country species impacts from the Proposal relate to clearing of perching opportunities in open country, and it is highly unlikely that the species would breed within the eastern regions that the Proposal area traverses.

D-1.2.21.4 Is this an important population?

In accordance with the Significant Impact Guidelines, the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the guidelines as a population that is necessary for a species' long-term survival and recovery (Department of the Environment Water Heritage and the Arts 2013). Under the EPBC Act, important populations are:

- likely to be key source populations either for breeding or dispersal
- likely to be necessary for maintaining genetic diversity
- at or near the limit of the species range.

This location is not at the limit of this species known range, which extend into all mainland states. Nor would any population present be important for maintaining genetic diversity or breeding. Therefore, any occurrences of this species within the Proposal study area are not likely to form part of an important population or is the available habitat considered necessary for a species' long-term survival and recovery within the area.

D-1.2.21.5 Significant impact criteria

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- **LEAD TO A LONG-TERM DECREASE IN THE SIZE OF AN IMPORTANT POPULATION**

Not applicable, if present are not considered to be part of an important population.

- **REDUCE THE AREA OF OCCUPANCY OF AN IMPORTANT POPULATION**

Not applicable, if present are not considered to be part of an important population.

- **FRAGMENT AN EXISTING IMPORTANT POPULATION INTO TWO OR MORE POPULATIONS**

Not applicable, if present are not considered to be part of an important population.

- **ADVERSELY AFFECT HABITAT CRITICAL TO THE SURVIVAL OF A SPECIES**

Habitat critical to the survival of a species refers to areas that are necessary:

- for activities such as foraging, breeding, roosting, or dispersal
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
- to maintain genetic diversity and long-term evolutionary development, or
- for the reintroduction of populations or recovery of the species or ecological community. (Department of the Environment Water Heritage and the Arts 2013).

There is no habitat listed as critical to the survival of these species under the EPBC Act (Department of Agriculture Water and the Environment 2021). Although preferred habitat is present in the Proposal study area, clearing works would be linear and considered marginal compared to the amount of potential foraging habitat surrounding the Proposal study area, and is therefore not considered significant enough to adversely affect this habitat.

- **DISRUPT THE BREEDING CYCLE OF AN IMPORTANT POPULATION**

Not applicable as individuals, if present, are not considered to be part of an important population. No significant impacts are anticipated for the species from the proposed action, mitigation measures recommended include pre-clearing surveys to identify any trees containing breeding pairs or nests prior to clearing, and if possible, avoid clearing such trees. It is recommended to avoid clearing during the main breeding period, although it is considered unlikely to breed east of the South Olary Plain IBRA subregion. Therefore, the proposed action is unlikely to disrupt the breeding cycle of a population.

- **MODIFY, DESTROY, REMOVE OR ISOLATE OR DECREASE THE AVAILABILITY OR QUALITY OF HABITAT TO THE EXTENT THAT THE SPECIES IS LIKELY TO DECLINE**

The proposed action would reduce the availability of suitable foraging habitat on a relatively small scale. However, given the large availability of habitat within the surrounding landscape, it is unlikely that the proposed action would modify the existing environment to the extent that the species is likely to decline.

- **RESULT IN INVASIVE SPECIES THAT ARE HARMFUL TO A VULNERABLE SPECIES BECOMING ESTABLISHED IN THE VULNERABLE SPECIES' HABITAT**

The proposed action is considered unlikely to cause the establishment of any invasive species that would be harmful to the species or its habitat.

- **INTRODUCE DISEASE THAT MAY CAUSE THE SPECIES TO DECLINE**

There are no known diseases causing potential species decline to the Grey Falcon.

- **INTERFERE SUBSTANTIALLY WITH THE RECOVERY OF THE SPECIES**

There is no adopted or made recovery plans for this species. The primary conservation action for the species as identified under the approved conservation advice for the species is to 'Support initiatives to improve habitat management, cat and camel control in arid and semi-arid Australia. However, given our understanding of threats is poor, these actions are tentative and may be subject to change in priority.' A number of additional conservation and management priorities are outlined. The proposed action is unlikely to interfere with any of the recovery actions or priorities outlined. No key management sites are known to occur within the Proposal study area.

- **CONCLUSION**

There are no important populations of Grey Falcon within the Proposal study area, and with recommended mitigation measures, and the small scale of clearing relative to the availability of surrounding habitat, the proposed action is considered unlikely to significantly impact the Grey Falcon.

D-1.2.21.6 NSW Assessment Bilateral requirements

- **DESCRIPTION OF THE HABITAT (INCLUDING IDENTIFICATION AND MAPPING OF SUITABLE BREEDING HABITAT, SUITABLE FORAGING HABITAT, IMPORTANT POPULATIONS AND HABITAT CRITICAL FOR SURVIVAL), WITH CONSIDERATION OF, AND REFERENCE TO, ANY RELEVANT COMMONWEALTH GUIDELINES AND POLICY STATEMENTS INCLUDING LISTING ADVICE, CONSERVATION ADVICE AND RECOVERY PLAN**

There is no listing advice for this species. The *Conservation Advice* Falco hypoleucos *Grey Falcon* (Threatened Species Scientific Committee 2020) provides a broad habitat description that states that the species frequents timbered lowland plains, particularly acacia shrublands that are crossed by tree-lined water courses. The species has been observed hunting in treeless areas and frequents tussock grassland and open woodland, especially in winter (Threatened Species Scientific Committee 2020). There is no adopted or made Recovery Plan for this species.

Rare occurrences of this species within the Proposal study area cannot be entirely discounted. This species has potential habitat within the study area in the Southern Olary Plains, Lachlan, Murrumbidgee and Lower Slopes IBRA subregions in the form of associated PCTs 8, 11, 13, 15, 17, 22, 23, 24, 26, 28, 44, 45, 46, 47, 53, 58, 76, 80, 143, 157, 160, 163, 164, 166, 170, 171, 172, 182, 199, 216 and 249. It becomes less likely to occur the further east the Proposal area extends.

The species distribution is Australia wide, but generally movements away from the arid interior of the continent are rare, especially in the southeast.

- **DETAILS OF THE SCOPE, TIMING AND METHODOLOGY FOR STUDIES OR SURVEYS USED AND HOW THEY ARE CONSISTENT WITH (OR JUSTIFICATION FOR DIVERGENCE FROM) PUBLISHED AUSTRALIAN GOVERNMENT GUIDELINES AND POLICY STATEMENTS**

Threatened bird surveys completed within the Proposal study area were carried out in accordance with the *Survey Guidelines for Australia's Threatened Birds* (Department of the Environment Water Heritage and the Arts 2010). Habitat assessments were undertaken to assess the likelihood of threatened species of animal (those species known or predicted to occur within the locality from the literature and database review) occurring within the Proposal study area. Fauna habitat assessments were the primary assessment tool in assessing whether threatened species were likely to occur within the Proposal study area. The primary technique used for surveying birds were 20-minute diurnal bird searches and opportunistic searches. The survey effort for Grey Falcon is outlined in Table D-1.12.

Table D-1.12 Summary of survey effort for Grey Falcon

FAUNA GROUP	SURVEY TECHNIQUE	SURVEY EFFORT	OPTIMUM SURVEY PERIOD	DATES SURVEYED
Wetlands – PCT17, PCT24, PCT47, PCT53, PCT160, PCT182				
Aerial bird species	Targeted opportunistic surveys	Regional opportunistic surveys conducted in this habitat type while travelling and conducting bird survey works through the period.	All year	2-5 Dec 2019 11-19 Feb 2020 18-21; 23-31 Mar 2020
Birds of prey	Targeted Opportunistic and Targeted formal surveys in suitable habitat	56 person hours of opportunistic surveys and habitat assessment	All year	21, 22 Jul 2020 7 – 16 Sep 2021
Grassy Woodlands – PCT76, PCT80				
Aerial Species	Opportunistic surveys	Regional opportunistic surveys conducted in this habitat type while travelling and conducting bird survey works through the period.	All year	2-5 Dec 2019 11-19 Feb 2020 18-21; 23-31 Mar 2020
Birds of Prey	Targeted Opportunistic and Targeted formal surveys in suitable habitat	65 person hours of opportunistic surveys	All year	3-5 Dec 2019 23 Jul 2020 14 Apr 2021 25, 27-30 Apr 2021 27 May 2021 7 – 16 Sep 2021
Riverine Woodlands/wetlands – PCT8, PCT11, PCT13, PCT15, PCT17, PCT249				
Aerial Species	Opportunistic surveys	11 person hours of opportunistic surveys	Nov – Mar	Nov – Dec 2019; Mar 2020
Birds of Prey	Targeted Opportunistic and Targeted formal surveys in suitable habitat	2 x 20 min/2 ha formal bird surveys 68 person hours of opportunistic surveys	All year	3 Dec 2019 11 Feb 2020 12 & 14 Apr 2020 20-22 Jul 2020 28 Apr 2021 7 – 16 Sep 2021

FAUNA GROUP	SURVEY TECHNIQUE	SURVEY EFFORT	OPTIMUM SURVEY PERIOD	DATES SURVEYED
Grasslands – PCT44, PCT45, PCT46				
Aerial Species	Opportunistic surveys	Regional opportunistic surveys conducted in this habitat type while travelling and conducting bird survey works through the period.	All year	2-5 Dec 2019 11-19 Feb 2020 18-21; 23-31 Mar 2020
Birds of Prey	Targeted Opportunistic and Targeted formal surveys in suitable habitat	156 person hours of opportunistic surveys 6 x formal 20-minute bird survey	All year	8-15 Apr 2021 24-27 May 2021 7 – 16 Sep 2021
Chenopod Shrublands – PCT157, PCT163, PCT164, PCT166, PCT216				
Aerial Species	Opportunistic surveys	Regional opportunistic surveys conducted in this habitat type while travelling and conducting bird survey works through the period.	All year	2-5 Dec 2019 11-19 Feb 2020 18-21Mar 2020 23-31 Mar 2020
Birds of Prey	Targeted Opportunistic and Targeted formal surveys in suitable habitat	116 person hours of opportunistic surveys 2 x 20min/2ha formal bird surveys	All year	19-23 July 2020 7-15 Apr 2021 7 – 16 Sep 2021
Arid Woodlands/Shrublands – PCT22, PCT23, PCT26, PCT28, PCT58, PCT143, PCT170, PCT171, PCT172, PCT199				
Aerial Species	Opportunistic surveys	11 x 20 min/2ha formal bird surveys 352 person hours of opportunistic surveys	All year	2-5 Dec 2019 11-19 Feb 2020 18-21; 23-31 Mar 2020 19-23 July 2020 8-15 Apr 2021 25-30 Apr 2021 24-27 May 2021 2-9 Sep 2021

FAUNA GROUP	SURVEY TECHNIQUE	SURVEY EFFORT	OPTIMUM SURVEY PERIOD	DATES SURVEYED
Birds of Prey	Targeted Opportunistic and Targeted formal surveys in suitable habitat	24 x 20 min/2 ha Formal Bird surveys 768 Person hours of opportunistic surveys across all habitats	All year	2-5 Dec 2019 11-19 Feb 2020 18-21; 23-31 Mar 2020 19-23 July 2020 8-15 Apr 2021 25-30 Apr 2021 24-27 May 2021 2-9 Sep 2021

- **DESCRIPTION OF THE SPECIFIC IMPACTS AND ITS REGARD TO THE FULL NATIONAL EXTENT OF THE SPECIES OR COMMUNITY'S RANGE**

The proposed action would potentially clear vegetation within suitable habitat. The proposed action could potentially result in individuals rarely colliding with transmission lines. Not identified in the SEARs as a matter requiring further consideration. However, suitable habitat has been identified within the Proposal study area.

Figure D-1.21 shows the current known generalised distribution from the Departments Species of National Environmental Significance dataset which is an indicative distribution map of the present distribution of the species based on best available knowledge. The Proposal study area is not at the limit of the known distribution of this species.

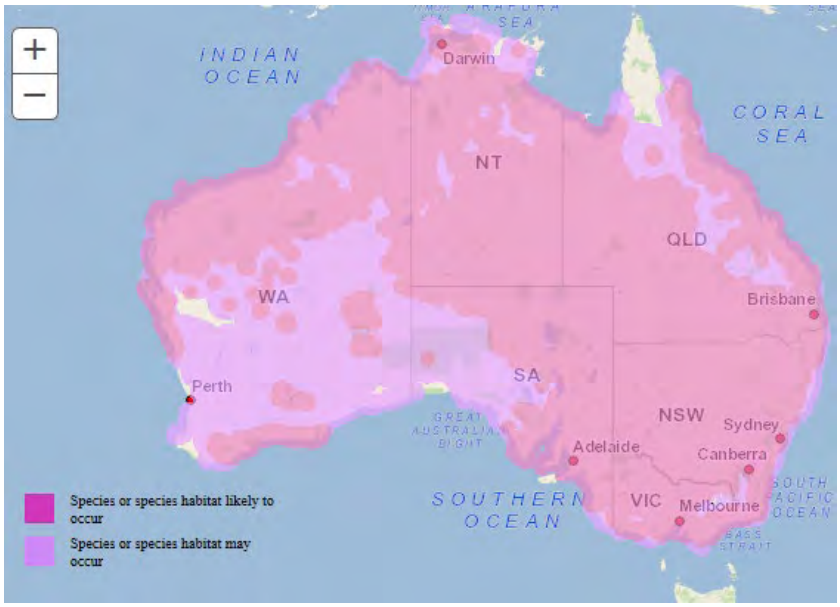


Figure D-1.21 Current distribution map for Grey Falcon taken from the SPRAT

- **DESCRIPTION OF THE SPECIFIC PROPOSED AVOIDANCE AND MITIGATION MEASURES TO DEAL WITH RELEVANT IMPACTS OF THE ACTION**

The proposed avoidance and mitigation measures are outlined in Section 8 & 10 of the BDAR. Detailed avoidance description for impacts relating to biodiversity values (including threatened species) are outlined in Section 8. Mitigation measures to be implemented are outlined in Section 11. No specific measures for the Grey Falcon are identified.

- **IDENTIFICATION OF SIGNIFICANT RESIDUAL ADVERSE IMPACTS LIKELY TO OCCUR AFTER THE PROPOSED ACTIVITIES TO AVOID AND MITIGATE ALL IMPACTS ARE TAKEN INTO ACCOUNT**

The residual impact to the Grey Falcon is likely to be minimal. The proposed action would potentially clear vegetation within suitable habitat. The proposed action could potentially rarely result in individuals colliding with transmission lines during dispersal.

- **A DESCRIPTION OF ANY OFFSETS PROPOSED TO ADDRESS RESIDUAL ADVERSE SIGNIFICANT IMPACTS AND HOW THESE OFFSETS WILL BE ESTABLISHED**

Details of offset requirements and obligations for this species as a result of residual impacts due the proposed action is addressed in Section 12 of the BDAR. Not identified in the SEARs as a matter requiring further consideration. However, suitable habitat has been identified within the Proposal study area.

- **DETAILS OF HOW THE CURRENT PUBLISHED NSW BIODIVERSITY ASSESSMENT METHOD (BAM) HAS BEEN APPLIED IN ACCORDANCE WITH THE OBJECTS OF THE EPBC ACT TO OFFSET SIGNIFICANT RESIDUAL ADVERSE IMPACTS**

The BDAR specifically addresses Section 11 of the BAM and provides information on the application of the no net loss standard and the Proposal biodiversity offset obligations. Credit calculations were quantified using the BAM-C Version 1.3.0.00.

- **DETAILS OF THE OFFSET PACKAGE TO COMPENSATE FOR SIGNIFICANT RESIDUAL IMPACTS INCLUDING DETAILS OF THE CREDIT PROFILES REQUIRED TO OFFSET THE ACTION IN ACCORDANCE WITH THE BAM AND/OR MAPPING AND DESCRIPTIONS OF THE EXTENT AND CONDITION OF THE RELEVANT HABITAT AND/OR THREATENED COMMUNITIES OCCURRING ON PROPOSED OFFSET SITES**

Section 12 of the BDAR outlines the biodiversity offset strategy for the proposal. The offset obligations will be met through implementing a combination of the following offset delivery options, being:

- the purchase and retirement of existing biodiversity credits currently available on the biodiversity credit register
- establishing a biodiversity stewardship site(s) on lands with like for like biodiversity values to those impacted by the proposal
- through making a payment into the Biodiversity Conservation Fund.

D-1.2.22 White-throated Needletail (*Hirundapus caudacutus*)

The White-throated Needletail is listed as Vulnerable under the EPBC Act.

D-1.2.22.1 Description

White-throated Needletails occur in Australia only between late spring and early autumn, but mostly in summer, when they sometimes form large flocks, appearing as a swirling cloud of birds. White-throated Needletails often occur in large numbers over eastern and northern Australia. In eastern Australia, it is recorded in all coastal regions of Queensland and NSW, extending inland to the western slopes of the Great Divide and occasionally onto the adjacent inland plains. The White-throated Needletail feeds on flying insects, such as termites, ants, beetles and flies. They catch the insects in flight in their wide gaping beaks. Birds usually feed in rising thermal currents associated with storm fronts and bushfires.

D-1.2.22.2 Relevant commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- The *Conservation Advice Hirundapus caudacutus White-throated Needletail* (Threatened Species Scientific Committee, 2019b) was reviewed as part of this assessment.
- Listing assessment information for this species may be available in the approved Conservation Advice.
- There is no adopted or made Recovery Plan for this species.
- The *Draft referral guideline for 14 birds listed as migratory species under the EPBC Act* (Department of the Environment, 2015d) was reviewed as part of this assessment.

No threat abatement plan has been identified as being relevant for this species.

Relevant survey guidelines for this species include:

- *Survey Guidelines for Australia's Threatened Birds* (Department of the Environment, Water, Heritage and the Arts (DEWHA), 2010).

D-1.2.22.3 Specific impacts

Vegetation clearing of habitat in areas which the species may be foraging above in aerial spaces on a seasonal basis.

D-1.2.22.4 Is this an important population?

In accordance with the Significant Impact Guidelines, the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the guidelines as a population that is necessary for a species' long-term survival and recovery (Department of the Environment, 2013). Under the EPBC Act, important populations are:

- likely to be key source populations either for breeding or dispersal
- likely to be necessary for maintaining genetic diversity
- at or near the limit of the species range.

In Australia, the White-throated Needletail is almost exclusively aerial, from heights of less than 1 m up to more than 1000 m above the ground. Because they are aerial, it has been stated that conventional habitat descriptions are inapplicable, but there are, nevertheless, certain preferences exhibited by the species. Although they occur over most types of habitat, they are probably recorded most often above wooded areas, including open forest and rainforest, and may also fly between trees or in clearings, below the canopy, but they are less commonly recorded flying above woodland. They also commonly occur over heathland, but less often over treeless areas, such as grassland or swamps.

The Proposal study area does not contain suitable habitat for breeding, as breeding takes place in Northern Asia. As the Proposal study area does not contain key resources for breeding or dispersal, does not occur at the limit of the species distribution range and is unlikely to be necessary for maintaining genetic diversity populations which may occur are not considered to form part of an 'important population'.

D-1.2.22.5 Significant impact criteria

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- **LEAD TO A LONG-TERM DECREASE IN THE SIZE OF AN IMPORTANT POPULATION**

Not applicable.

- **REDUCE THE AREA OF OCCUPANCY OF AN IMPORTANT POPULATION**

Not applicable.

- **FRAGMENT AN EXISTING IMPORTANT POPULATION INTO TWO OR MORE POPULATIONS**

Not applicable.

- **ADVERSELY AFFECT HABITAT CRITICAL TO THE SURVIVAL OF A SPECIES**

No critical habitat is listed for this species under the EPBC Act.

- **DISRUPT THE BREEDING CYCLE OF AN IMPORTANT POPULATION**

Not applicable.

- **MODIFY, DESTROY, REMOVE OR ISOLATE OR DECREASE THE AVAILABILITY OR QUALITY OF HABITAT TO THE EXTENT THAT THE SPECIES IS LIKELY TO DECLINE**

Although vegetation clearing for the Proposal may contribute to the decline of available habitat within Proposal study area, it is not considered likely that the action would result in disturbance to the extent that the species would decline.

- **RESULT IN INVASIVE SPECIES THAT ARE HARMFUL TO A VULNERABLE SPECIES BECOMING ESTABLISHED IN THE VULNERABLE SPECIES' HABITAT**

It is not likely that invasive species (such as introduced predators) that are harmful to the White-throated Needletail would become further established because of the Project.

- **INTRODUCE DISEASE THAT MAY CAUSE THE SPECIES TO DECLINE**

No. There are no known diseases that are likely to increase in the area because of the Project.

- **INTERFERE SUBSTANTIALLY WITH THE RECOVERY OF THE SPECIES**

Due to the limited foraging habitat likely to be affect by the Proposal, (709.58 ha) and as no breeding habitat is near the Proposal study area, the Proposal is not likely to interfere with the recovery of this species.

- **CONCLUSION**

The White-throated Needletail is almost exclusively aerial, breeding in Northern Asia, and occur from Queensland to Victoria. Any individuals or population observed within the Proposal study area are unlikely to be an important population and habitats associated with the Proposal are not considered to be important to the species' long-term survival. The extent of native vegetation clearing, and habitat removal associated with the proposed action is small in terms of the available habitat for this species within the surrounding landscape. Although the loss of foraging habitat for the White-throated Needletail is an incremental loss of suitable habitat regionally, the Proposal is **not likely to have a significant impact** on the long-term survival of the White-throated Needletail within the area.

D-1.2.22.6 NSW Assessment Bilateral requirements

- **DESCRIPTION OF THE HABITAT (INCLUDING IDENTIFICATION AND MAPPING OF SUITABLE BREEDING HABITAT, SUITABLE FORAGING HABITAT, IMPORTANT POPULATIONS AND HABITAT CRITICAL FOR SURVIVAL), WITH CONSIDERATION OF, AND REFERENCE TO, ANY RELEVANT COMMONWEALTH GUIDELINES AND POLICY STATEMENTS INCLUDING LISTING ADVICE, CONSERVATION ADVICE AND RECOVERY PLAN**

There is no listing advice for this species. The *Conservation Advice Hirundapus caudacutus White-throated Needletail* (Threatened Species Scientific Committee, 2019b) indicates that in Australia, the White-throated Needletail is mostly aerial, from heights of less than 1 m up to more than 1000 m above the ground. Although they occur over most types of habitat, they are recorded most often above wooded areas, including open forest and rainforest, and may also fly below the canopy between trees or in clearings (Threatened Species Scientific Committee, 2019). When flying above farmland, they are more often recorded above partly cleared pasture, plantations or remnant vegetation at the edge of paddocks (Threatened Species Scientific Committee, 2019). There is no adopted or made Recovery Plan for this species.

This species may occur in aerial habitats over the Proposal study area on a seasonal basis. Specific PCT associations cannot be made.

- **DETAILS OF THE SCOPE, TIMING AND METHODOLOGY FOR STUDIES OR SURVEYS USED AND HOW THEY ARE CONSISTENT WITH (OR JUSTIFICATION FOR DIVERGENCE FROM) PUBLISHED AUSTRALIAN GOVERNMENT GUIDELINES AND POLICY STATEMENTS**

Threatened bird surveys completed within the Proposal study area were carried out in accordance with the *Survey Guidelines for Australia's Threatened Birds* (Department of Environment Water Heritage and the Arts, 2010). Habitat assessments were undertaken to assess the likelihood of threatened species of animal (those species known or predicted to occur within the locality from the literature and database review) occurring within the Proposal study area. Fauna habitat assessments were the primary assessment tool in assessing whether threatened species were likely to occur within the Proposal study area. The primary technique used for surveying birds were 20-minute diurnal bird searches and opportunistic surveys made during onsite works. The survey effort for White-throated Needletail is outlined in Table D-1.13.

Table D-1.13 Summary of survey effort for White-throated Needletail

FAUNA GROUP	SURVEY TECHNIQUE	SURVEY EFFORT	OPTIMUM SURVEY PERIOD	DATES SURVEYED
Wetlands – All PCTs in this habitat type				
Aerial bird species	Targeted opportunistic surveys	Regional opportunistic surveys conducted in this habitat type while travelling and conducting bird survey works through the period.	All year	2-5 Dec 2019 11-19 Feb 2020 18-21; 23-31 Mar 2020
Grassy Woodlands – All PCTs in this habitat type				
Aerial Species	Opportunistic surveys	Regional opportunistic surveys conducted in this habitat type while travelling and conducting bird survey works through the period.	All year	2-5 Dec 2019 11-19 Feb 2020 18-21; 23-31 Mar 2020
Riverine Woodlands/wetlands – All PCTs in this habitat type				
Aerial Species	Opportunistic surveys	11 person hours of opportunistic surveys	Nov – Mar	Nov – Dec 2019; Mar 2020
Grasslands – All PCTs in this habitat type				
Aerial Species	Opportunistic surveys	Regional opportunistic surveys conducted in this habitat type while travelling and conducting bird survey works through the period.	All year	2-5 Dec 2019 11-19 Feb 2020 18-21; 23-31 Mar 2020
Chenopod Shrublands – All PCTs in this habitat type				
Aerial Species	Opportunistic surveys	Regional opportunistic surveys conducted in this habitat type while travelling and conducting bird survey works through the period.	All year	2-5 Dec 2019 11-19 Feb 2020 18-21Mar 2020 23-31 Mar 2020

FAUNA GROUP	SURVEY TECHNIQUE	SURVEY EFFORT	OPTIMUM SURVEY PERIOD	DATES SURVEYED
Arid Woodlands/Shrublands – All PCTs in this habitat type				
Aerial Species	Opportunistic surveys	11 x 20 min/2ha formal bird surveys 352 person hours of opportunistic surveys	All year	2-5 Dec 2019 11-19 Feb 2020 18-21; 23-31 Mar 2020 19-23 July 2020 8-15 Apr 2021 25-30 Apr 2021 24-27 May 2021 2-9 Sep 2021

– **DESCRIPTION OF THE SPECIFIC IMPACTS AND ITS REGARD TO THE FULL NATIONAL EXTENT OF THE SPECIES OR COMMUNITY'S RANGE**

The proposed action would not clear vegetation within suitable habitat as this species is an aerial species. Identified in the SEARs as a matter requiring further consideration, this species is a seasonal migrant, which forages within the aerial spaces above a wide range of habitats for airborne insects. The species' roosting habits are not well documented, but they have been known to roost in woodland habitats and often times rest on the wing.

Figure D-1.22 shows the current known generalised distribution from the Departments Species of National Environmental Significance dataset which is an indicative distribution map of the present distribution of the species based on best available knowledge.

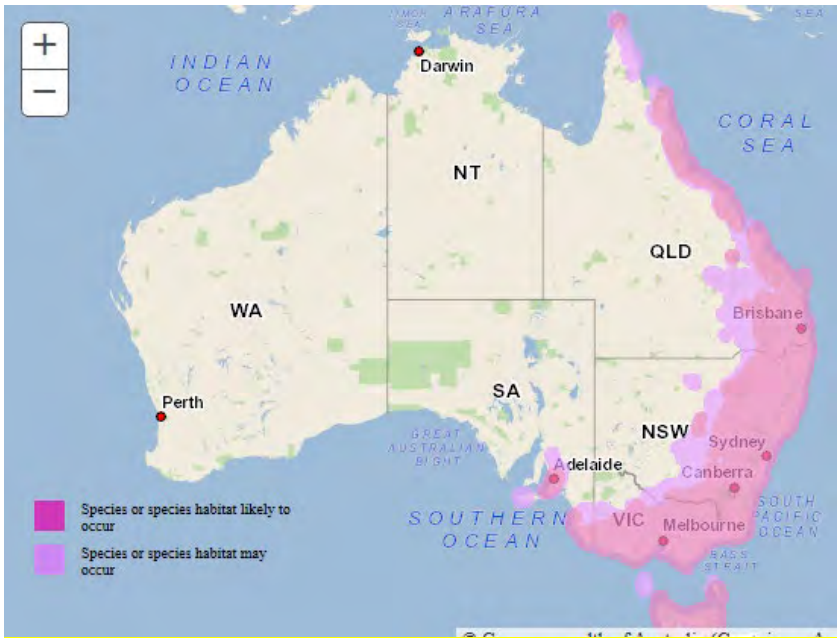


Figure D-1.22 Current distribution map for White-throated Needletail taken from the SPRAT

- **DESCRIPTION OF THE SPECIFIC PROPOSED AVOIDANCE AND MITIGATION MEASURES TO DEAL WITH RELEVANT IMPACTS OF THE ACTION**

The proposed avoidance and mitigation measures are outlined in Section 8 & 10 of the BDAR. Detailed avoidance description for impacts relating to biodiversity values (including threatened species) are outlined in Section 8. Mitigation measures to be implemented are outlined in Section 11. No specific measures for the White-throated Needletail are identified.

- **IDENTIFICATION OF SIGNIFICANT RESIDUAL ADVERSE IMPACTS LIKELY TO OCCUR AFTER THE PROPOSED ACTIVITIES TO AVOID AND MITIGATE ALL IMPACTS ARE TAKEN INTO ACCOUNT**

The residual impact to the White-throated Needletail is likely to be minimal. The proposed action would potentially clear vegetation within suitable habitat (709.58 ha)

- **A DESCRIPTION OF ANY OFFSETS PROPOSED TO ADDRESS RESIDUAL ADVERSE SIGNIFICANT IMPACTS AND HOW THESE OFFSETS WILL BE ESTABLISHED**

Details of offset requirements and obligations for this species as a result of residual impacts due the proposed action is addressed in Section 12 of the BDAR.

- **DETAILS OF HOW THE CURRENT PUBLISHED NSW BIODIVERSITY ASSESSMENT METHOD (BAM) HAS BEEN APPLIED IN ACCORDANCE WITH THE OBJECTS OF THE EPBC ACT TO OFFSET SIGNIFICANT RESIDUAL ADVERSE IMPACTS**

The BDAR specifically addresses Section 11 of the BAM and provides information on the application of the no net loss standard and the Proposal biodiversity offset obligations. Credit calculations were quantified using the BAM-C Version 1.3.0.00.

- **DETAILS OF THE OFFSET PACKAGE TO COMPENSATE FOR SIGNIFICANT RESIDUAL IMPACTS INCLUDING DETAILS OF THE CREDIT PROFILES REQUIRED TO OFFSET THE ACTION IN ACCORDANCE WITH THE BAM AND/OR MAPPING AND DESCRIPTIONS OF THE EXTENT AND CONDITION OF THE RELEVANT HABITAT AND/OR THREATENED COMMUNITIES OCCURRING ON PROPOSED OFFSET SITES**

Section 12 of the BDAR outlines the biodiversity offset strategy for the proposal. The offset obligations will be met through implementing a combination of the following offset delivery options, being:

- the purchase and retirement of existing biodiversity credits currently available on the biodiversity credit register
- establishing a biodiversity stewardship site(s) on lands with like for like biodiversity values to those impacted by the proposal
- through making a payment into the Biodiversity Conservation Fund.

D-1.2.23 Swift Parrot (Lathamus discolor)

Listed as Critically Endangered under the EPBC Act and BC Act.

D-1.2.23.1 Description

Breeding occurs in Tasmania, majority migrates to mainland Australia in autumn, over-wintering, particularly in Victoria and central and eastern NSW, but also south-eastern Queensland as far north as Duaringa. Until recently it was believed that in New South Wales, Swift Parrots forage mostly in the western slopes region along the inland slopes of the Great Dividing Range but are patchily distributed along the north and south coasts including the Sydney region, but new evidence indicates that the forests on the coastal plains from southern to northern NSW are also extremely important. In mainland Australia it is semi-nomadic, foraging in flowering eucalypts and in eucalypt associations, particularly box-ironbark forests and woodlands. Preference for sites with highly fertile soils where large trees have high nectar

production, including along drainage lines and isolated rural or urban remnants, and for sites with flowering *Acacia pycnantha*, is indicated. Sites used vary from year to year (Garnett and Crowley 2000, Swift Parrot Recovery Team 2001).

Threats for this species include:

- loss of habitat through clearing for agriculture, and urban and industrial development
- collisions with wire netting fences, windows and cars, during the breeding season and winter migration.

D-1.2.23.2 Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- The *Conservation Advice Lathamus discolor swift parrot* (Threatened Species Scientific Committee 2016) was reviewed as part of this assessment.
- Listing assessment information may be available in the approved Conservation Advice.
- The *National Recovery Plan for the Swift Parrot (*Lathamus discolor*)* (Saunders and Tzaros 2011) was reviewed as part of this assessment.

Relevant adopted/made threat abatement plans include:

- Threat abatement plan for predation by feral cats (Department of the Environment 2015).
- Relevant survey guidelines for this species include:
- *Survey Guidelines for Australia's Threatened Birds* (Department of the Environment Water Heritage and the Arts 2010).

D-1.2.23.3 Specific impacts

Swift Parrot has potential habitat in the study area in the form of associated PCTs 5, 7, 8, 11, 74, 75, 76, 80, 110, 249, 267 and 277 as well as potential foraging resources throughout study area's eastern woodlands, including River Red Gum riparian communities and Box Gum in the east. An impact of approximately 95.47 ha to potential foraging resources is predicted (4.69 ha was subtracted from total PCT75 area: 1.51 ha was subtracted from total PCT80 area; and 2.1 ha was subtracted from total PCT249 area, as these quantities constitute derived grasslands providing no habitat opportunities for this species). Swift Parrots were not recorded within the study area despite targeted survey. Wagga Wagga appears to be the western limit of the range for this species and while important habitat for the species is mapped around Wagga Wagga, none of this occurs within the study area or is likely to be impacted by the proposal. Nevertheless, this assessment has been completed as a precautionary measure as potential foraging resources do occur within the study area.

D-1.2.23.4 Significant impact criteria

An action is likely to have a significant impact on an Endangered or Critically Endangered species if there is a real chance or possibility that it will:

- **LEAD TO A LONG-TERM DECREASE IN THE SIZE OF A POPULATION**

Any identified population Swift Parrot in the area would not be restricted to habitat within the Proposal study area. An impact of approximately 95.57 ha is predicted. Due to the species' large home range, nomadic nature, and higher quality foraging habitat elsewhere in the locality and region, the proposed action is not considered likely to significantly contribute to a long-term decline in the size of a population of these species. The Swift Parrot does not breed in the Proposal study area and the extent of habitat remaining in the Proposal study area would provide sufficient resources to sustain future visitation, such that the action is unlikely to lead to a long-term decrease in the size of the Australian population.

- **REDUCE THE AREA OF OCCUPANCY OF THE SPECIES**

The Proposal would contribute to the loss of potential foraging habitat by approximately 95.57 ha which would reduce the area of habitat available. Though this is an incremental loss of suitable foraging resources available to the species, this area of potential foraging habitat only represents a small component of similar locally occurring resources accessible to these species. It is unlikely that the Proposal would reduce the area of occupancy of this species given the better-quality habitat in the locality and greater region.

Nevertheless, the removal of approximately 95.57 ha of potential habitat is considered to be a small incremental loss of suitable habitat locally and as such has the potential to incrementally reduce the area of occupancy for the Swift Parrot during seasons when individuals of this species may be reliant on local resources.

- **FRAGMENT AN EXISTING POPULATION INTO TWO OR MORE POPULATIONS**

The Proposal will result in the removal of 95.57 ha of potential foraging habitat for this species. This removal will occur within an already fragmented and degraded agricultural landscape and is unlikely to result in fragmentation of habitat for the Swift Parrot. This species is highly mobile and regularly flies long distances over open areas to move between suitable foraging habitats. The action will not affect the movement of the Swift Parrot between habitat patches or fragment the population.

- **ADVERSELY AFFECT HABITAT CRITICAL TO THE SURVIVAL OF A SPECIES**

According to the *National Recovery Plan for the Swift Parrot (*Lathamus discolor*)*, habitat critical to the survival of the Swift Parrot includes 'those areas of priority habitat for which the Swift Parrot has a level of site fidelity or possess phenological characteristics likely to be of importance to the Swift Parrot, or are otherwise identified by the recovery team.' Swift Parrot has important habitat maps, as identified in NSW Bionet which identify land that is considered important to support critical life stages of the species (i.e., key areas that migratory species forage/over-winter in, or sites where multiple records have been located over multiple years) (Department of Planning Industry and Environment 2021). While important foraging habitat is mapped around the Wagga Wagga area, no mapped habitat overlaps with the study area. As the species is not known to regularly visit the Proposal study area and the Proposal study area is not identified an area of important habitat, it is unlikely to be critical habitat for this species.

- **DISRUPT THE BREEDING CYCLE OF A POPULATION**

Swift Parrots breed in Tasmania during spring and summer, migrating to south-eastern Australia during autumn and winter (Department of Planning Industry and Environment 2021). While Swift Parrots are dependent on flowering resources across a wide range of habitats (woodlands and forests) within their NSW wintering grounds, the removal of a small amount of potential foraging habitat is unlikely to disrupt their movements to Tasmanian breeding grounds. As such the proposed action is unlikely to affect their breeding cycle.

- **MODIFY, DESTROY, REMOVE OR ISOLATE OR DECREASE THE AVAILABILITY OR QUALITY OF HABITAT TO THE EXTENT THAT THE SPECIES IS LIKELY TO DECLINE**

Potential foraging habitat for this species will be reduced by about 95.57 ha. As a large-scale migrant, it has the ability to cover vast areas of its winter range, seeking suitable flowering eucalypt habitat. The species is an occasional visitor to the region and may utilise trees in the Proposal study area for foraging intermittently. The action is unlikely to modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

- **RESULT IN INVASIVE SPECIES THAT ARE HARMFUL TO A CRITICALLY ENDANGERED OR ENDANGERED SPECIES BECOMING ESTABLISHED IN THE ENDANGERED OR CRITICALLY ENDANGERED SPECIES' HABITAT**

Adhering to mitigation measures such as weed and pest management plans, and vehicle weed hygiene, would prevent invasive weeds and vertebrate pests such as rabbits, cats and foxes establishing in habitat areas.

- **INTRODUCE DISEASE THAT MAY CAUSE THE SPECIES TO DECLINE**

It is unlikely that disease would be increased by the proposed action. Mitigation measures would be prepared to minimise the likelihood of spread of pathogens into the habitat of these species

- **INTERFERE SUBSTANTIALLY WITH THE RECOVERY OF THE SPECIES**

A National Recovery Plan for the Swift Parrot *Lathamus discolor* was prepared in 2011 (Saunders and Tzaros 2011). Recovery actions outlined in this plan include:

- identify the extent and quality of habitat
- manage and protect swift parrot habitat at the landscape scale
- monitor and manage the impact of collisions, competition and disease
- monitor population and habitat.

Based on the potential ecological impacts of the proposed action on the Swift Parrot it is unlikely the proposed action would be in conflict with the recovery actions outlined above.

- **CONCLUSION**

This species was not recorded within the Proposal study area despite targeted survey. Although 95.57 ha of potential foraging resources for this species including River Red Gum riparian communities and Box Gum woodland would be removed by the proposal, this habitat is small in comparison to locally and regionally available resources for the species. Wagga Wagga appears to be the western limit of the range for this species and while important habitat for the species is mapped around Wagga Wagga, none of this occurs within the study area or is likely to be impacted by the proposal. Additionally, clearing of large tracts of suitable woodland habitat would be minimised or avoided to prevent significant loss of habitat in the case that the species is found in the Proposal study area during future targeted surveys. Therefore, the proposed action is considered unlikely to have a significant impact on the Swift Parrot.

D-1.2.23.5 NSW Assessment Bilateral requirements

- **DESCRIPTION OF THE HABITAT (INCLUDING IDENTIFICATION AND MAPPING OF SUITABLE BREEDING HABITAT, SUITABLE FORAGING HABITAT, IMPORTANT POPULATIONS AND HABITAT CRITICAL FOR SURVIVAL), WITH CONSIDERATION OF, AND REFERENCE TO, ANY RELEVANT COMMONWEALTH GUIDELINES AND POLICY STATEMENTS INCLUDING LISTING ADVICE, CONSERVATION ADVICE AND RECOVERY PLAN**

There is no listing advice for this species. The *Conservation Advice* Lathamus discolor *swift parrot* (Threatened Species Scientific Committee 2016) indicates that the species exhibits high site fidelity, returning to locations on an irregular cyclic basis. They disperse across eastern Tasmania after breeding and migrate to overwinter on the mainland in flowering woodlands and forests (Threatened Species Scientific Committee 2016). They feed preferentially in the largest trees available (Threatened Species Scientific Committee 2016). Their distribution fluctuates with food availability as they feed on psyllid lerps, seeds and fruit (Threatened Species Scientific Committee 2016). Non-breeding birds preferentially feed in inland box-ironbark and grassy woodlands, and coastal swamp mahogany (E. robusta) and spotted gum (Corymbia maculata) woodland when in flower; otherwise often in coastal forests from eastern Victorian to the central coast of New South Wales (Threatened Species Scientific Committee 2016).

The *National Recovery Plan for the Swift Parrot* (Lathamus discolor) (Saunders and Tzaros 2011) indicates that priority sites for the management of Swift Parrot foraging habitat to be identified within the following CMAs: Hawkesbury – Nepean, Hunter – Central Rivers, Lachlan, Murray, Murrumbidgee, Northern Rivers, Southern Rivers, Sydney Metro.

This species may occur within a number of PCTs in the Southern Olary Plains, Lower Slopes and Inland Slopes IBRA subregions on a seasonal basis.

A map of suitable habitat for this species is provided in Figure D-1.23.

- **DETAILS OF THE SCOPE, TIMING AND METHODOLOGY FOR STUDIES OR SURVEYS USED AND HOW THEY ARE CONSISTENT WITH (OR JUSTIFICATION FOR DIVERGENCE FROM) PUBLISHED AUSTRALIAN GOVERNMENT GUIDELINES AND POLICY STATEMENTS**

Threatened bird surveys completed within the Proposal study area were carried out in accordance with the *Survey Guidelines for Australia's Threatened Birds* (Department of the Environment Water Heritage and the Arts 2010). Habitat assessments were undertaken to assess the likelihood of threatened species of animal (those species known or predicted to occur within the locality from the literature and database review) occurring within the Proposal study area. Fauna habitat assessments were the primary assessment tool in assessing whether threatened species were likely to occur within the Proposal study area. The primary technique used for surveying birds were 20-minute diurnal bird searches. The survey effort for Swift Parrot is outlined in Table D-1.14.

Table D-1.14 Summary of survey effort for Swift Parrot

FAUNA GROUP	SURVEY TECHNIQUE	SURVEY EFFORT	OPTIMUM SURVEY PERIOD	DATES SURVEYED
Riparian Woodlands – PCT5, PCT8, PCT11, PCT249				
Blossom Nomads	Favoured habitat surveys and assessment	2 x 20 min/2 ha formal bird surveys 68 person hours of opportunistic surveys	Associated with strong winter blossoming events Apr – Sep	12 & 14 Apr 2020 20-22 Jul 2020 28 Apr 2021 7 – 16 Sep 2021
Grassy Woodlands – PCT74, PCT75, PCT76, PCT80				
Blossom Nomads	Favoured habitat surveys and assessment	65 person hours of opportunistic surveys	Associated with strong winter blossoming events Apr – Sep	23 Jul 2020 14 Apr 2021 25, 27-30 Apr 2021 27 May 2021 16 Sep 2021

- **DESCRIPTION OF THE SPECIFIC IMPACTS AND ITS REGARD TO THE FULL NATIONAL EXTENT OF THE SPECIES OR COMMUNITY'S RANGE**

Known habitat associations and potential (River Red Gum riparian communities and Box Gum woodland) foraging habitat for this species is present within the Proposal study area. No breeding habitat is present, and the Proposal does not occur within any important habitat mapping for the species. This species is highly mobile the Proposal study area falls within the known distribution of the species, however the Proposal area occurs toward the western most extent of the species' known distribution. This species was not recorded in the study area despite targeted survey and clearing of large tracts of suitable woodland habitat would be minimised or avoided to prevent significant loss of habitat in the case that the species is found in the Proposal study area during future targeted surveys. Consequently, significant impact to populations or to the extent and distribution of the species is highly unlikely.

Figure D-1.23 shows the current known generalised distribution from the Departments Species of National Environmental Significance dataset which is an indicative distribution map of the present distribution of the species based on best available knowledge. The Proposal study area toward the western-most limit of the species distribution, though birds may forage in the study area on occasion.



Figure D-1.23 Current distribution map for Swift Parrot taken from the SPRAT

- **DESCRIPTION OF THE SPECIFIC PROPOSED AVOIDANCE AND MITIGATION MEASURES TO DEAL WITH RELEVANT IMPACTS OF THE ACTION**

The proposed avoidance and mitigation measures are outlined in Section 8 & 10 of the BDAR. Detailed avoidance description for impacts relating to biodiversity values (including threatened species) are outlined in Section 8. Mitigation measures to be implemented are outlined in Section 11. The Swift Parrot is identified in the SEARs as a matter requiring further consideration.

- **IDENTIFICATION OF SIGNIFICANT RESIDUAL ADVERSE IMPACTS LIKELY TO OCCUR AFTER THE PROPOSED ACTIVITIES TO AVOID AND MITIGATE ALL IMPACTS ARE TAKEN INTO ACCOUNT**

Details of offset requirements and obligations for this species as a result of residual impacts due the proposed action is addressed in Section 12 of the BDAR. No species credits are required to offset the residual impacts to *Swift Parrot.*

- **A DESCRIPTION OF ANY OFFSETS PROPOSED TO ADDRESS RESIDUAL ADVERSE SIGNIFICANT IMPACTS AND HOW THESE OFFSETS WILL BE ESTABLISHED**

Details of offset requirements and obligations for this species as a result of residual impacts due the proposed action is addressed in Section 12 of the BDAR.

- **DETAILS OF HOW THE CURRENT PUBLISHED NSW BIODIVERSITY ASSESSMENT METHOD (BAM) HAS BEEN APPLIED IN ACCORDANCE WITH THE OBJECTS OF THE EPBC ACT TO OFFSET SIGNIFICANT RESIDUAL ADVERSE IMPACTS**

The BDAR specifically addresses Section 11 of the BAM and provides information on the application of the no net loss standard and the Proposal biodiversity offset obligations. Credit calculations were quantified using the BAM-C Version 1.3.0.00.

- **DETAILS OF THE OFFSET PACKAGE TO COMPENSATE FOR SIGNIFICANT RESIDUAL IMPACTS INCLUDING DETAILS OF THE CREDIT PROFILES REQUIRED TO OFFSET THE ACTION IN ACCORDANCE WITH THE BAM AND/OR MAPPING AND DESCRIPTIONS OF THE EXTENT AND CONDITION OF THE RELEVANT HABITAT AND/OR THREATENED COMMUNITIES OCCURRING ON PROPOSED OFFSET SITES**

Section 12 of the BDAR outlines the biodiversity offset strategy for the proposal. The offset obligations will be met through implementing a combination of the following offset delivery options, being:

- the purchase and retirement of existing biodiversity credits currently available on the biodiversity credit register
- establishing a biodiversity stewardship site(s) on lands with like for like biodiversity values to those impacted by the proposal
- through making a payment into the Biodiversity Conservation Fund.

D-1.2.24 Malleefowl (*Leipoa ocellata*)

Listed as Vulnerable under the EPBC Act and Endangered under the BC Act.

D-1.2.24.1 Description

The Malleefowl occupies semi-arid mallee scrub on the fringes of the relatively fertile areas of southern Australia, where it is now reduced to three separate populations: the Murray-Murrumbidgee basin, west of Spencer Gulf along the fringes of the Simpson Desert, and the semiarid fringe of Western Australia's fertile southwest corner (ALA, 2019). They occur in the semi-arid to arid zone in shrublands and low woodlands dominated by mallee and associated habitats such as Broombush (*Melaleuca uncinata*) and Scrub Pine (*Callitris verrucosa*). Malleefowl also occur in Red Ironbark (*Eucalyptus sideroxylon*) woodland at the eastern limit of their distribution. They require a sandy substrate and abundance of leaf litter for next construction, which are built in the form of large incubating mounds (Benshemesh, 2007).

Threats for the Malleefowl include:

- loss of habitat and habitat fragmentation due to clearing and habitat degradation
- habitat degradation due to inappropriate grazing or fire regimes
- fire causing removal of leaf litter for mound constructions, shelter from predators, and food sources such as seeds
- predation by foxes and cats and disturbance to mounds by feral goats and pigs
- vehicle strike while birds are feeding along the roadside or crossing roads (OEH, 2019).

The stronghold for this species in NSW is located in the mallee in the south west centred on Mallee Cliffs National Park and extending east to near Balranald and scattered records as far north as Mungo National Park (OEH, 2019).

There are OEH and ALA records within most westerly habitats of the Proposal study area and within the locality, specifically between Buronga and Balranald, centred around Mallee Cliffs National Park. Preferred Malleefowl habitat occurs within the Proposal study area. No indications of Malleefowl occurrence were recorded, although there are records along the Sturt Highway to the Proposal area’s south from the last 10 years. The species is very cryptic within mallee habitats and the lack of records during the survey period does not rule out their use of surrounding habitats. Although very likely to be present on at least an intermittent basis, the species is not likely to abundant in areas surrounding the study area due to the general degradation of habitats from past clearing for agriculture or through fire, evidenced by the lack of old growth mallee trees throughout the alignment footprint.

D-1.2.24.2 Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- There is no approved Conservation Advice for this species.
- There is no Listing Advice for this species
- The *National Recovery Plan for Malleefowl* (Benshemesh 2007) was reviewed as part of this assessment.

Relevant adopted/made threat abatement plans include:

- Threat abatement plan for predation by feral cats (Department of the Environment 2015).
- Threat abatement plan for competition and land degradation by rabbits (Department of Environment and Energy 2016).
- Threat abatement plan for predation, habitat degradation, competition and disease transmission by feral pigs (Department of the Environment and Energy 2017).
- Threat abatement plan for competition and land degradation by unmanaged goats (Department of the Environment Water Heritage and the Arts 2008).
- Threat abatement plan for predation by the European red fox (Department of the Environment Water Heritage and the Arts 2008).

Relevant survey guidelines for this species include:

- *Survey Guidelines for Australia's Threatened Birds* (Department of the Environment Water Heritage and the Arts 2010).

D-1.2.24.3 Specific impacts

Clearing of habitat in the form of PCT 110, 170, 171 & 172 in the South Olary Plain region would occur. The Proposal would impact on approximately 232.6 ha of potential habitat in the form of PCT 110, 170, 171 & 172 in the South Olary Plain region, although not all of this habitat would be suitable for this species. Most of this habitat is not in good condition as it has been intensely grazed by sheep and goats. No individuals were recorded during targeted surveys and no Malleefowl mounds were observed within the Proposal area or adjacent lands scoped during opportunistic surveys. While no evidence of Malleefowl was observed during surveys, an interrogation of bird records data bases show a very small number (3) of opportunistic records associated with a small section of mallee habitats along the Sturt Highway east of Paringi over the last 10 years.

The Proposal is linear infrastructure which will result in a level of fragmentation at the landscape scale. However, the habitats within this landscape have been severely fragmented by agriculture and existing infrastructure. The Proposal would adjoin existing fragments and existing easements minimising new fragmentation. The Proposal will result in a level of fragmentation but functional connectivity between habitats is likely to be retained as the alignment will not be completely cleared.

The potential for this species to receive injury or mortality from colliding with the future transmission lines is considered to be negligible. This species rarely flies and when it does so would only fly just above the mallee canopy and not to the height of the powerlines themselves.

D-1.2.24.4 Is this an important population?

In accordance with the Significant Impact Guidelines, the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the guidelines as a population that is necessary for a species' long-term survival and recovery (Department of the Environment, 2013). Under the EPBC Act, important populations are:

- likely to be key source populations either for breeding or dispersal
- likely to be necessary for maintaining genetic diversity
- at or near the limit of the species range.

Malleefowl occur in a wide range of habitat types and habitat critical to the survival of the species is known only in broad terms and no particular populations or general areas can be described as being of greater importance for the long-term survival of Malleefowl than any other (Benshemesh, 2007). As such, in the absence of other information the population subject to this assessment is considered to be important. No individuals were recorded during targeted surveys and no evidence of Malleefowl mounds was observed during a considerable period of investigation.

D-1.2.24.5 Significant impact criteria

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- **LEAD TO A LONG-TERM DECREASE IN THE SIZE OF AN IMPORTANT POPULATION**

The Proposal would impact on approximately 232.6 ha of potential habitat in the form of PCT 170, 171 & 172 in the South Olary Plain subregion, PCT170 in the Lachlan subregion and PCT 110 in the Inland Slopes subregion. Although not all of this habitat would be suitable for this species. Most of this habitat is not in good condition as it has been intensely grazed by sheep and goats and the young cohort of trees suggests it has been cleared or burnt in the past. This species was not observed during targeted seasonal surveys, and there was no evidence of new or old Malleefowl mounds observed during comprehensive surveys. This suggests that the Malleefowl is present at low densities in the habitats that would be impacted. Any birds that use the habitat would have a large home range and the habitat to be impacted by the Proposal is not limiting for this species. If present, Malleefowl mounds would be avoided during detailed design. The clearing associated with the Proposal would not result in the extinction of this species from the locality and as such, the Proposal is considered unlikely to lead to a long-term decrease in the size of an important population.

- **REDUCE THE AREA OF OCCUPANCY OF AN IMPORTANT POPULATION**

The area of occupancy for this species is not provided in any documents. The stronghold for this species in NSW is the mallee in the south west centred on Mallee Cliffs NP and extending east to near Balranald and scattered records as far north as Mungo NP. West of the Darling River a population also occurs in the Scotia mallee including Tarawi NR and Scotia Sanctuary and is part of a larger population north of the Murray River in South Australia. Approximately 232.6 ha of potential habitat in the form of PCT 170, 171 & 172 in the South Olary Plain subregion, PCT 170 in the Lachlan subregion and PCT 110 in the Inland Slopes subregion will be impacted. While there will be an impact to suitable habitat, the overall Australian area of occupancy will not be affected.

- **FRAGMENT AN EXISTING IMPORTANT POPULATION INTO TWO OR MORE POPULATIONS**

The Proposal is linear infrastructure which will result in a level of fragmentation at the landscape scale. However, the habitats within this landscape have been severely fragmented by agriculture and existing infrastructure. The Proposal would adjoin existing fragments and existing easements minimising new fragmentation. The Proposal will result in a level of fragmentation but functional connectivity between habitats is likely to be retained as the alignment will not be completely cleared. The Proposal would not result in the fragmentation of an existing population into two or more populations.

- **ADVERSELY AFFECT HABITAT CRITICAL TO THE SURVIVAL OF A SPECIES**

Malleefowl occur in a wide range of habitat types and habitat critical to the survival of the species is known only in broad terms and no particular populations or general areas can be described as being of greater importance for the long-term survival of Malleefowl than any other (Benshemesh, 2007). Although habitat such as mallee woodland is present within the Proposal study area and would be impacted by the proposal, clearing works would be relatively small or in narrow patches and fragmented woodland, and the clearance of this habitat is very limited compared to the amount of potential foraging habitat surrounding the Proposal study area. Although removal of Malleefowl habitat for transmission towers and associated infrastructure is likely to be required, the availability of surrounding suitable Mallee woodland habitat provides extensive habitat. Any identified mounds within the study Proposal area would be avoided. Therefore, the impact is not considered significant enough to adversely affect this habitat.

- **DISRUPT THE BREEDING CYCLE OF AN IMPORTANT POPULATION**

Although removal of Malleefowl habitat for transmission towers and associated infrastructure is likely to be required, the availability of surrounding suitable Mallee woodland habitat provides extensive habitat. Any identified mounds within the study Proposal area would be avoided so that the breeding cycle is not disrupted.

- **MODIFY, DESTROY, REMOVE OR ISOLATE OR DECREASE THE AVAILABILITY OR QUALITY OF HABITAT TO THE EXTENT THAT THE SPECIES IS LIKELY TO DECLINE**

The proposed action would decrease the availability of potential habitat by approximately 232.6 ha in the form of PCT 170, 171 & 172 in the South Olary Plain region, PCT 170 in the Lachlan subregion and PCT 110 in the Inland Slopes subregion. Although removal of Malleefowl habitat for transmission towers and associated infrastructure is likely to be required, the availability of surrounding suitable Mallee woodland habitat provides extensive habitat. Therefore, the proposed action is considered unlikely to modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

- **RESULT IN INVASIVE SPECIES THAT ARE HARMFUL TO A VULNERABLE SPECIES BECOMING ESTABLISHED IN THE VULNERABLE SPECIES' HABITAT**

Vertebrate pests and weeds are already established in the habitat. Adhering to mitigation measures such as weed and pest management plans, and vehicle weed hygiene, would prevent further invasive weeds and vertebrate pests such as cats and foxes establishing in the Proposal study area.

- **INTRODUCE DISEASE THAT MAY CAUSE THE SPECIES TO DECLINE**

There are no diseases known to the Malleefowl that may cause the species to decline.

- **INTERFERE SUBSTANTIALLY WITH THE RECOVERY OF THE SPECIES**

The *National Recovery Plan for Malleefowl* (Benshemesh 2007)states that the overall objective is to de-list Malleefowl as a threatened species under the EPBC Act. To achieve this the following specific objectives have been identified:

- reduce permanent habitat loss
- reduce the threat of grazing pressure on Malleefowl populations
- reduce fire threats
- reduce predation
- reduce isolation of fragmented populations
- promote Malleefowl-friendly agricultural practices
- reduce mortality on roads
- provide information for regional planning
- monitor Malleefowl and develop an adaptive management framework
- determine the current distribution of Malleefowl
- examine population dynamics: longevity, recruitment and parentage
- describe habitat requirements that determine Malleefowl abundance

- define appropriate genetic units for management of Malleefowl
- assess captive breeding and re-introduction of Malleefowl
- investigate infertility and agrochemicals
- facilitate communication between groups
- raise public awareness through education and publicity
- manage the recovery process.

The Proposal would result in habitat loss and therefore is not consistent with the objectives of the *National Recovery Plan for Malleefowl* (Benshemesh, 2007).

- **CONCLUSION**

This species is known to utilise the Proposal study area. Malleefowl occur in a wide range of habitat types and habitat critical to the survival of the species is known only in broad terms and no particular populations or general areas can be described as being of greater importance for the long-term survival of Malleefowl than any other (Benshemesh 2007). As such, in the absence of other information the population subject to this assessment is considered to be important.

The Proposal would impact on approximately 232.6 ha of potential habitat in the form of PCT 170, 171 & 172 in the South Olary Plain region, PCT 170 in the Lachlan subregion and PCT 110 in the Inland Slopes subregion. While this is a relatively large area of habitat removal it is a conservative overestimate as not all mapped habitat would be suitable for this species. Most of this habitat is not in good condition as it has been intensely grazed by sheep and goats and generally young cohorts of mallee trees suggest clearing or fire in the past. The carrying capacity of the habitat is likely to be low due to past clearing for agriculture, heavy grazing that has damaged vegetation integrity, and predation pressure from vertebrate pests. At a minimum the Malleefowl is present at low density in the habitats that would be impacted. Any birds that use the habitat would have a large home range and the habitat to be impacted by the Proposal is not likely to be limiting for this species.

Any Malleefowl mounds that are identified would be avoided during detailed design. Much of the clearing would take place adjacent to existing power lines or access tracks. The clearing associated with the Proposal would not result in the extinction of this species from the locality and as such, the Proposal is considered unlikely to lead to a long-term decrease in the size of an important population. Some fragmentation would occur, but as lower level vegetation will be retained within the easement any fragmentation is likely to be localised and functional connectivity for this species would remain.

The area of occupancy would not be reduced by the proposal. While all habitats are considered critical for this species the habitat in the Proposal study area is not high quality when compared to more intact areas of Mallee.

D-1.2.24.6 NSW Assessment Bilateral requirements

- **DESCRIPTION OF THE HABITAT (INCLUDING IDENTIFICATION AND MAPPING OF SUITABLE BREEDING HABITAT, SUITABLE FORAGING HABITAT, IMPORTANT POPULATIONS AND HABITAT CRITICAL FOR SURVIVAL), WITH CONSIDERATION OF, AND REFERENCE TO, ANY RELEVANT COMMONWEALTH GUIDELINES AND POLICY STATEMENTS INCLUDING LISTING ADVICE, CONSERVATION ADVICE AND RECOVERY PLAN**

There is no Listing Advice for this species. The *National Recovery Plan for Malleefowl* (Benshemesh 2007) states that Malleefowl occur in a wide range of habitat types and habitat critical to the survival of the species is known only in broad terms and no particular populations or general areas can be described as being of greater importance for the long-term survival of Malleefowl than any other. The *National Recovery Plan for Malleefowl* (Benshemesh 2007) outlines habitat requirements and limiting factors for the species as follows:

- The Malleefowl is found in semi-arid to arid shrublands and low woodlands, especially those dominated by mallee and/or acacias. A sandy substrate and abundance of leaf litter are required for breeding. Densities of the birds are generally greatest in areas of higher rainfall and on more fertile soils where habitats tend to be thicker and there is an abundance of food plants. Much of the best habitat for Malleefowl has already been cleared or has been modified by grazing by sheep, cattle, rabbits and goats. The species has been shown to be highly sensitive to grazing by sheep

and is probably similarly sensitive to grazing by other introduced herbivores. The effect of fire on Malleefowl is severe and breeding in burnt areas is usually reduced for at least 30 years. However, the deleterious effect of fire appears to be mitigated if fires burn patchily. Predation by the introduced fox is also thought to be limiting the abundance of Malleefowl and in many areas may be a major cause of decline. The degree of fragmentation of the remaining Malleefowl habitat is of particular concern and presents a major limiting factor to halting and reversing the decline of the species.

Potential habitat is present in the form of PCT 170, 171 & 172 in the South Olary Plain subregion, PCT 170 in the Lachlan subregion and PCT 110 in the Inland Slopes subregion. However, most of this habitat is not in good condition as it has been intensely grazed by sheep and goats.

- **DETAILS OF THE SCOPE, TIMING AND METHODOLOGY FOR STUDIES OR SURVEYS USED AND HOW THEY ARE CONSISTENT WITH (OR JUSTIFICATION FOR DIVERGENCE FROM) PUBLISHED AUSTRALIAN GOVERNMENT GUIDELINES AND POLICY STATEMENTS**

Threatened bird surveys completed within the Proposal study area were carried out in accordance with the *Survey Guidelines for Australia's Threatened Birds* (Department of Environment Water Heritage and the Arts, 2010). Habitat assessments were undertaken to assess the likelihood of threatened species of animal (those species known or predicted to occur within the locality from the literature and database review) occurring within the Proposal study area. Fauna habitat assessments were the primary assessment tool in assessing whether threatened species were likely to occur within the Proposal study area. The primary technique used for surveying birds were 20-minute diurnal bird searches. The survey effort for Malleefowl is outlined in Table D-1.15.

Table D-1.15 Summary of survey effort for Malleefowl

FAUNA GROUP	SURVEY TECHNIQUE	SURVEY EFFORT	OPTIMUM SURVEY PERIOD	DATES SURVEYED
Arid Woodlands/Shrublands – PCT 110, PCT170, PCT171, PCT172				
Mallee Spinifex birds	Targeted habitat searches and assessments	32 x 20 min/2 ha formal bird surveys 302 person hours of opportunistic surveys	All year	2-5 Dec 2019 11-14, 16-19 Feb 2020 18-21; 23-31 Mar 2020 19-23 July 2020 2-9 Sep 2021
Mallee, Woodlands and Shrubland birds	Formal 20 min/2 ha surveys, opportunistic surveys and habitat assessments	33 x 20 min/2 ha Formal Bird surveys 339 person hours of opportunistic surveys	All year	3-5 Dec 2019 11-19 Feb 2020 18-21; 23-31 Mar 2020 19 & 20 July 2020 2-9 Sep 2021

- **DESCRIPTION OF THE SPECIFIC IMPACTS AND ITS REGARD TO THE FULL NATIONAL EXTENT OF THE SPECIES OR COMMUNITY'S RANGE**

The Proposal would impact on approximately 232.6 ha of potential habitat in the form of PCT 170, 171 & 172 in the South Olary Plain subregion, PCT 170 in the Lachlan subregion and PCT 110 in the Inland Slopes. While this is a relatively large area of habitat removal it is a conservative overestimate as not all of this habitat would be suitable for this species. Most of this habitat is not in good condition as it has been intensely grazed by sheep and goats. The carrying capacity of the habitat is likely to be low due to past clearing for agriculture, heavy grazing that has damaged vegetation integrity, and predation pressure from vertebrate pests. At a minimum the Malleefowl is present at low density in the habitats that would be impacted. Any birds that use the habitat would have a large home range and the habitat to be impacted by the Proposal is not likely to be limiting for this species.

Figure D-1.24 shows the current known generalised distribution from the Departments Species of National Environmental Significance dataset which is an indicative distribution map of the present distribution of the species based on best available knowledge. The Proposal study area is at the south-western edge of the NSW distribution. The species is more widely spread across WA and SA.



Figure D-1.24 Current distribution map for Malleefowl taken from the SPRAT

- **DESCRIPTION OF THE SPECIFIC PROPOSED AVOIDANCE AND MITIGATION MEASURES TO DEAL WITH RELEVANT IMPACTS OF THE ACTION**

The proposed avoidance and mitigation measures are outlined in Section 8 & 10 of the BDAR. Detailed avoidance description for impacts relating to biodiversity values (including threatened species) are outlined in Section 8. Mitigation measures to be implemented are outlined in Section 11.

- **IDENTIFICATION OF SIGNIFICANT RESIDUAL ADVERSE IMPACTS LIKELY TO OCCUR AFTER THE PROPOSED ACTIVITIES TO AVOID AND MITIGATE ALL IMPACTS ARE TAKEN INTO ACCOUNT**

The residual impact to the Malleefowl is approximately 232.6 ha of potential habitat in the form of PCT 170, 171 & 172 in the South Olary Plain subregion, PCT 170 in the Lachlan subregion and PCT 110 in the Inland Slopes subregion.

- **A DESCRIPTION OF ANY OFFSETS PROPOSED TO ADDRESS RESIDUAL ADVERSE SIGNIFICANT IMPACTS AND HOW THESE OFFSETS WILL BE ESTABLISHED**

Impacts to the Malleefowl were not assessed as being significant.

- **DETAILS OF HOW THE CURRENT PUBLISHED NSW BIODIVERSITY ASSESSMENT METHOD (BAM) HAS BEEN APPLIED IN ACCORDANCE WITH THE OBJECTS OF THE EPBC ACT TO OFFSET SIGNIFICANT RESIDUAL ADVERSE IMPACTS**

Impacts to the Malleefowl were not assessed as being significant.

- **DETAILS OF THE OFFSET PACKAGE TO COMPENSATE FOR SIGNIFICANT RESIDUAL IMPACTS INCLUDING DETAILS OF THE CREDIT PROFILES REQUIRED TO OFFSET THE ACTION IN ACCORDANCE WITH THE BAM AND/OR MAPPING AND DESCRIPTIONS OF THE EXTENT AND CONDITION OF THE RELEVANT HABITAT AND/OR THREATENED COMMUNITIES OCCURRING ON PROPOSED OFFSET SITES**

Section 12.6 of the BDAR outlines the biodiversity offset strategy for the proposal. Offset obligations will be met through implementing a combination of the following offset delivery options, being:

- the purchase and retirement of existing biodiversity credits currently available on the biodiversity credit register
- establishing a biodiversity stewardship site(s) on lands with like for like biodiversity values to those impacted by the proposal
- through making a payment into the Biodiversity Conservation Fund.

D-1.2.25 Western Alaskan Bar-tailed Godwit (*Limosa lapponica baueri*)

The Western Alaskan Bar-tailed Godwit (*Limosa lapponica baueri*) is listed as Vulnerable and Migratory under the EPBC Act.

D-1.2.25.1 Description

The Bar-tailed Godwit (*Limosa lapponica*) contains one nominate species and three subspecies, one of which has the potential to occur within the Proposal study area on rare occasion: The Bar-tailed Godwit (Western Alaskan) (*Limosa lapponica baueri*)

The Bar-tailed Godwit (Western Alaskan) is migratory shorebird species and are largely found in coastal habitats such as large intertidal sandflats, banks, mudflats, estuaries, inlets, harbours, coastal lagoons and bays. They less frequently occur in salt lakes and brackish wetlands, sandy ocean beaches and rock platforms. The subspecies is most frequently recorded along major coastal river estuaries and sheltered embayments, particularly the Tweed, Richmond, Clarence, Macleay, Hastings, Hunter and Shoalhaven river estuaries, Port Stephens and Botany Bay. It is a rare visitor to wetlands away from the coast with scattered records as far west as along the Darling River and the Riverina (Department of Planning Industry and Environment 2020).

The Bar-tailed Godwit (Western Alaskan) forages near the edge of water or in shallow water, mainly in tidal estuaries and harbours, with a mainly carnivorous diet of worms, molluscs, crustaceans, insects and some plant material. They prefer exposed sandy or soft mud substrates on intertidal flats, banks and beaches, and usually roosts on sandy beaches, sandbars, spits and in near-coastal saltmarsh (Threatened Species Scientific Committee 2016).

The Bar-tailed Godwit (Western Alaskan) leaves Australia to breed in north-east Siberia from around the Kolyma River to east of the Chukotski Peninsula. They also breed in west Alaska, from Wales to Barrow. Western Alaskan Bar-tailed Godwits have been confirmed by satellite tracking data to fly over 11,000 km from Alaska to New Zealand without stopping. This is one of the longest non-stop migrations of any bird (Threatened Species Scientific Committee 2016).

D-1.2.25.2 Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- The *Conservation Advice Limosa lapponica baueri Bar-tailed godwit (western Alaskan)* (Threatened Species Scientific Committee 2016) was reviewed as part of this assessment.
- Listing assessment information for this species may be available in the approved Conservation Advice.
- There is no adopted or made Recovery Plan for this species.
- The *Wildlife Conservation Plan for Migratory Shorebirds* (Commonwealth of Australia 2015) applies to this species.
- The EPBC Act Policy Statement 3.21 – Industry Guidelines for avoiding, assessing and mitigating impacts on EPBC Act listed migratory shorebird species (Department of Environment and Energy 2017) applies to this species.

No threat abatement plan has been identified as being relevant for this species.

Relevant survey guidelines for this species include:

- *Survey Guidelines for Australia's Threatened Birds* (Department of the Environment Water Heritage and the Arts 2010).

D-1.2.25.3 Specific impacts

This species usually migrates through coastal areas but sufficient records in inland areas suggest that a proportion of the migratory flock fly across the continent during their migrations north and south. Such movements would require the crossing of the Proposal area. There is little chance that birds may potentially collide with transmission lines and conductors causing injury or mortality, as migratory wading birds have been demonstrated to fly at very high altitudes during flights where topography does not force them to do so (Li, Davison et al. 2020). The potential impacts to Migratory and wetland birds was considered during the Proposal design development, including the strategic options assessment and identification and refinement of the Proposal process. Details about the Proposal design development are summarised in Chapter 3 of the EIS and Section 8.1 of the BDAR. A biodiversity constraints assessment was undertaken through the Proposal design development phase to identify biodiversity values to be avoided. Ramsar wetlands and other important wetlands and water sources for migratory birds were avoided as a priority.

The Proposal study area does not contain and mapped important areas or PCTs that are known to be used by this species.

D-1.2.25.4 Is this an important population?

In accordance with the Significant Impact Guidelines, the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the guidelines as a population that is necessary for a species' long-term survival and recovery (Department of the Environment Water Heritage and the Arts 2013). Under the EPBC Act, important populations are:

- likely to be key source populations either for breeding or dispersal
- likely to be necessary for maintaining genetic diversity
- at or near the limit of the species range.

Any birds that may fly through or utilise the habitats within the Proposal study area would be part of the same population that is present in Australia during the non-breeding season. In the absence of other evidence this population is assumed to be important for the purpose of this assessment.

D-1.2.25.5 Significant impact criteria

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- **LEAD TO A LONG-TERM DECREASE IN THE SIZE OF AN IMPORTANT POPULATION**

The Bar-tailed Godwit (Baueri) is a migratory shorebird species with a global population, and is widespread throughout Australia, preferring coastal habitats. No records for this subspecies occur within the locality. Locations where species records for the nominate species (*Limosa lapponica*) occur including around Leeton, Lake Wyangan, Fletcher's Lake will not be impacted by the current proposal. The Proposal study area does not contain and mapped important areas or PCTs that are known to be used by this species. However, during long-distance migratory movements, this species may potentially collide with transmission lines and conductors causing injury or mortality.

Due to lack of records within the Proposal study area and locality, as well as generally lower occurrences of this species this far inland in contrast with coastal areas, collision with the transmission line is not considered likely to significantly affect or decrease the size of a population as very few birds would be affected. The transmission line will not be built over a congregation or migration staging area. Therefore, the proposed action is considered unlikely to lead to a long-term decrease in the size of a population.

- **REDUCE THE AREA OF OCCUPANCY OF AN IMPORTANT POPULATION**

The extent of occurrence in Australia is estimated to be 7,500,000 km^2 and area occupied 8,100 km^2 (Threatened Species Scientific Committee 2016). This species is only considered likely to occur intermittently within the Proposal study area between periods of migration as the wetland habitat within the Proposal study area is not the preferred or internationally important coastal habitat for these species. As the Proposal will not impact important wetland habitats the area of occupancy for this species is unlikely to be reduced.

- **FRAGMENT AN EXISTING IMPORTANT POPULATION INTO TWO OR MORE POPULATIONS**

No important wetland habitat will be impacted and given the ability of this species to disperse over these cleared areas it is considered unlikely that the action would fragment an existing population.

- **ADVERSELY AFFECT HABITAT CRITICAL TO THE SURVIVAL OF A SPECIES**

There is no habitat listed as critical to the survival of this species within the Proposal study area.

- **DISRUPT THE BREEDING CYCLE OF AN IMPORTANT POPULATION**

This species does not breed in Australia, and migration to the Proposal study area is not considered important in the breeding cycle. Therefore, the proposed action is unlikely to disrupt the breeding cycle of a population.

- **MODIFY, DESTROY, REMOVE OR ISOLATE OR DECREASE THE AVAILABILITY OR QUALITY OF HABITAT TO THE EXTENT THAT THE SPECIES IS LIKELY TO DECLINE**

The Proposal study area does not contain wetland habitat preferred for these species, as they prefer coastal intertidal areas. Additionally, vegetation clearing in wetland habitat for the Proposal in general is likely to be minimal or avoided, therefore, the proposed action is unlikely to result in the modification, removal, isolation, or decreased availability or quality of habitat to the extent that the species is likely to decline.

- **RESULT IN INVASIVE SPECIES THAT ARE HARMFUL TO A VULNERABLE SPECIES BECOMING ESTABLISHED IN THE VULNERABLE SPECIES' HABITAT**

Adhering to mitigation measures such as weed and pest management plans, and vehicle weed hygiene, would prevent invasive weeds and vertebrate pests such as cats and foxes establishing in wetland habitat areas.

- **INTRODUCE DISEASE THAT MAY CAUSE THE SPECIES TO DECLINE**

The action is not considered likely to introduce or cause the spread of disease that may affect this species.

- **INTERFERE SUBSTANTIALLY WITH THE RECOVERY OF THE SPECIES**

There is no adopted or made Recovery Plan for this species. No key management sites are known to occur within the Proposal study area.

- **CONCLUSION**

The action is considered **unlikely to significantly impact** upon The Western Alaskan Bar-tailed Godwit (Baueri). No mapped important habitats or PCTs known to be used by this species would be impacted. This species is migratory, widely distributed, and does not breed in Australia. No important habitats would be impacted by the proposed action. Additionally, collision with transmission lines causing injury or mortality is considered minimal due to the relatively low abundance of the species in the locality.

D-1.2.25.6 NSW Assessment Bilateral requirements

- **DESCRIPTION OF THE HABITAT (INCLUDING IDENTIFICATION AND MAPPING OF SUITABLE BREEDING HABITAT, SUITABLE FORAGING HABITAT, IMPORTANT POPULATIONS AND HABITAT CRITICAL FOR SURVIVAL), WITH CONSIDERATION OF, AND REFERENCE TO, ANY RELEVANT COMMONWEALTH GUIDELINES AND POLICY STATEMENTS INCLUDING LISTING ADVICE, CONSERVATION ADVICE AND RECOVERY PLAN**

There is no listing advice for this species. The *Conservation Advice* Limosa lapponica baueri *Bar-tailed godwit (western Alaskan)* (Threatened Species Scientific Committee 2016) outlines habitat during the non-breeding season in Australasia as coastal habitats such as large intertidal sandflats, banks, mudflats, estuaries, inlets, harbours, coastal lagoons and bays. It has also been recorded in coastal sewage farms and saltworks, saltlakes and brackish wetlands near coasts, sandy ocean beaches, rock platforms, and coral reef-flats. Feeding habitat includes the edge of water or in shallow water, mainly in tidal estuaries and harbours. They prefer exposed sandy or soft mud substrates on intertidal flats, banks and beaches (Threatened Species Scientific Committee 2016). Roosting habitat includes sandy beaches, sandbars, spits and also in near-coastal saltmarsh (Threatened Species Scientific Committee 2016).

There is no adopted or made Recovery Plan for this species.

The *Wildlife Conservation Plan for Migratory Shorebirds* (Commonwealth of Australia 2015) and *EPBC Act Policy Statement 3.21 - Industry Guidelines for avoiding, assessing and mitigating impacts on EPBC Act listed migratory shorebird species* (Department of Environment and Energy 2017) state that important habitats in Australia for migratory shorebirds under the EPBC Act include those recognised as nationally or internationally important. According to this approach, wetland habitat should be considered internationally important if it regularly supports:

- 1 per cent of the individuals in a population of one species or subspecies of waterbird or
- a total abundance of at least 20,000 waterbirds.

Nationally important habitat for migratory shorebirds can be defined using a similar approach to these international criteria, i.e. if it regularly supports:

- 0.1 per cent of the flyway population of a single species of migratory shorebird or
- 2000 migratory shorebirds or
- 15 migratory shorebird species.

The habitats within the Proposal study area would not meet any of the criteria for nationally or internationally important habitat as listed in the *Wildlife Conservation Plan for Migratory Shorebirds* (Commonwealth of Australia 2015). Core coastal habitat does not occur within the Proposal study area. Records for the species within the locality do not fall within the Proposal study area and are primarily in riverine and wetland habitat locations. No aquatic habitats are likely to be directly impacted as a result of the proposal.

– DETAILS OF THE SCOPE, TIMING AND METHODOLOGY FOR STUDIES OR SURVEYS USED AND HOW THEY ARE CONSISTENT WITH (OR JUSTIFICATION FOR DIVERGENCE FROM) PUBLISHED AUSTRALIAN GOVERNMENT GUIDELINES AND POLICY STATEMENTS

Threatened bird surveys completed within the Proposal study area were carried out in accordance with the *Survey Guidelines for Australia's Threatened Birds* (Department of the Environment Water Heritage and the Arts 2010). Habitat assessments were undertaken to assess the likelihood of threatened species of animal (those species known or predicted to occur within the locality from the literature and database review) occurring within the Proposal study area. Fauna habitat assessments were the primary assessment tool in assessing whether threatened species were likely to occur within the Proposal study area. The primary technique used for surveying birds were 20-minute diurnal bird searches, however, due to the rarity of migratory birds in the regions through which the Proposal area traverses, and the generally ephemerality of wetland habitats, assessments were made of habitats when carrying water, although sometimes outside of the periods when migratory birds might be present, to determine if suitable habitat exists in proximity to the Proposal alignment. The survey effort for wetland birds is outlined in Table D-1.16.

Table D-1.16 Summary of survey effort for Migratory Birds

FAUNA GROUP	SURVEY TECHNIQUE	SURVEY EFFORT	OPTIMUM SURVEY PERIOD	DATES SURVEYED
Wetlands – Miscellaneous ecosystem may include PCT11 during times of inundation				
Migratory Birds	Targeted wetland surveys during the Spring and Summer and habitat assessments during periods of inundation.	32 person hours of opportunistic surveys 8 x 20 min/2 ha formal bird surveys 8 person hours of opportunistic surveys 1 x 20 min/2 ha formal bird surveys	Sep – Mar	21-22 Jul 2020 7 Dec 2021

– DESCRIPTION OF THE SPECIFIC IMPACTS AND ITS REGARD TO THE FULL NATIONAL EXTENT OF THE SPECIES OR COMMUNITY'S RANGE

The proposed action would avoid the clearing of vegetation within suitable wetland habitat. The proposed action is unlikely to result in individuals colliding with transmission lines during nocturnal dispersal, due to the high-altitude migratory birds have been found to travel at. There are no significant impacts predicted for migratory wading birds, including the West Alaskan Bar-tailed Godwit (*Limosa lapponica baueri*).

Figure D-1.25 shows the current known generalised distribution from the Departments Species of National Environmental Significance dataset which is an indicative distribution map of the present distribution of the species based on best available knowledge. The Proposal study area is not within the known habitat distributions, but the species is only likely to occasionally traverse the Proposal area during long distance migration movements.

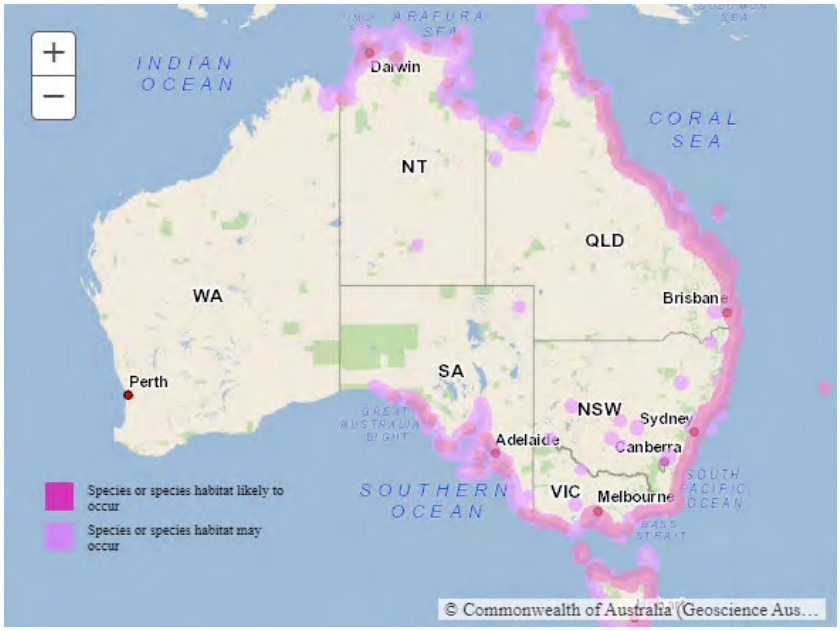


Figure D-1.25 Current distribution map for Bar-tailed Godwit (Baueri) taken from the SPRAT

- **DESCRIPTION OF THE SPECIFIC PROPOSED AVOIDANCE AND MITIGATION MEASURES TO DEAL WITH RELEVANT IMPACTS OF THE ACTION**

The proposed avoidance and mitigation measures are outlined in Section 8 & 10 of the BDAR. Detailed avoidance description for impacts relating to biodiversity values (including threatened species) are outlined in Section 8. Mitigation measures to be implemented are outlined in Section 11. No specific measures for the Western Alaskan Bar-tailed Godwit are identified.

- **IDENTIFICATION OF SIGNIFICANT RESIDUAL ADVERSE IMPACTS LIKELY TO OCCUR AFTER THE PROPOSED ACTIVITIES TO AVOID AND MITIGATE ALL IMPACTS ARE TAKEN INTO ACCOUNT**

Details of offset requirements and obligations for this species as a result of residual impacts due the proposed action is addressed in Section 12 of the BDAR. No species credits are required to offset the residual impacts to *Western Alaskan Bar-tailed Godwit.*

- **A DESCRIPTION OF ANY OFFSETS PROPOSED TO ADDRESS RESIDUAL ADVERSE SIGNIFICANT IMPACTS AND HOW THESE OFFSETS WILL BE ESTABLISHED**

Details of offset requirements and obligations for this species as a result of residual impacts due the proposed action is addressed in Section 12 of the BDAR.

- **DETAILS OF HOW THE CURRENT PUBLISHED NSW BIODIVERSITY ASSESSMENT METHOD (BAM) HAS BEEN APPLIED IN ACCORDANCE WITH THE OBJECTS OF THE EPBC ACT TO OFFSET SIGNIFICANT RESIDUAL ADVERSE IMPACTS**

The BDAR specifically addresses Section 11 of the BAM and provides information on the application of the no net loss standard and the Proposal biodiversity offset obligations. Credit calculations were quantified using the BAM-C Version 1.3.0.00.

- **DETAILS OF THE OFFSET PACKAGE TO COMPENSATE FOR SIGNIFICANT RESIDUAL IMPACTS INCLUDING DETAILS OF THE CREDIT PROFILES REQUIRED TO OFFSET THE ACTION IN ACCORDANCE WITH THE BAM AND/OR MAPPING AND DESCRIPTIONS OF THE EXTENT AND CONDITION OF THE RELEVANT HABITAT AND/OR THREATENED COMMUNITIES OCCURRING ON PROPOSED OFFSET SITES**

Section 12 of the BDAR outlines the biodiversity offset strategy for the proposal. The offset obligations will be met through implementing a combination of the following offset delivery options, being:

- the purchase and retirement of existing biodiversity credits currently available on the biodiversity credit register
- establishing a biodiversity stewardship site(s) on lands with like for like biodiversity values to those impacted by the proposal
- through making a payment into the Biodiversity Conservation Fund.

D-1.2.26 Red-lored Whistler (*Pachycephala rufogularis*)

The Red-lored Whistler is listed as Vulnerable under the EPBC Act and Critically Endangered under the BC Act.

D-1.2.26.1 Description

The Red-lored Whistler is found in semi-arid regions of New South Wales, Victoria and South Australia. The core of the population is centred on the South Australia-Victoria border, where it occurs in the Murray-Mallee region and Upper South-East region (including Riverland Biosphere Reserve) of South Australia, and in the Big Desert and Sunset Country areas of Victoria (Department of Agriculture Water and the Environment 2021).

The Red-lored Whistler inhabits low mallee shrublands, heathlands and woodlands that have an open canopy and a moderately dense but patchy understorey. In tree mallee environments in the Murray Mallee region they prefer habitats that support a mosaic of mallee and *Triodia* vegetation. In the more heath-dominated mallee environments located further south, they display a preference for taller mallee heath. In tree mallee habitats, they appear to prefer habitats that have remained unburnt for at least 20 years. They predominantly occur in mallee vegetation that has a sparse or open canopy comprised of 2–5 m tall eucalypts such as *Eucalyptus incrassata*, *Eucalyptus dumosa*, *Eucalyptus foecunda*, *Eucalyptus socialis* and *Eucalyptus leptophylla*; a low (usually less than 1.5 m tall), moderately dense understorey that may be comprised of various species, including *Melaleuca uncinata*, *Callitris verrucosa*, *Leptospermum coriaceum*, *Phebalium bullatum*, *Baeckea behrii*, *B. crassifolia*, *Hakea muelleriana*, *Leucopogon cordifolius*, *Allocasuarina muelleriana*, *Calytrix tetragona*, *Banksia ornata* and species of *Acacia*; and a sparse ground layer usually comprised of tussocks of *Triodia*, and sometimes species of *Maireana*, *Sclerolaena*, *Chenopodium*, *Westringia*, *Zygophyllum*, *Ptilotus* and *Stipa*, with extensive areas of bare ground.

The Red-lored Whistler breeds from August to November and builds a cup-shaped nest of bark, sticks, leaves and other plant material that is mainly taken from mallee eucalypts. The nest is generally placed amongst *Triodia* and sheltered by a shrub or tree, or in the fork of a mallee *Eucalyptus*, *Casuarina*, *Banksia*, *Melaleuca* or *Acacia*. The total breeding population of the Red-lored Whistler has been estimated, with low reliability, to consist of 10,000 birds (Department of Agriculture Water and the Environment 2021).

Important populations for this species are likely to Sunset Country and Big Desert in Victoria, and in Billiatt Conservation Park, and in the Ninety-Mile Desert and Upper South-East region (including Riverland Biosphere Reserve), in South Australia. Some information suggests the Eyre Peninsula population in NSW may have genetic differences other populations and may also be considered important to the long-term survival of the species. Populations in Eyre Peninsula and central New South Wales may also be considered important because they occur at the limit of the distribution. There are no records for this species within the Proposal study area or locality.

D-1.2.26.2 Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- There is no approved Conservation Advice for this species.
- There is no Listing Advice for this species.
- The *National Recovery Plan for the Mallee Emu-Wren* Stipiturus mallee, *Red-lored Whistler* Pachycephala rufogularis *and Western Whipbird* Psophodes nigrogularis leucogaster (Department of Environment Land Water and Planning 2016) was reviewed as part of this assessment.

Relevant adopted/made threat abatement plans include:

- *Threat abatement plan for predation by feral cats* (Department of the Environment 2015).

Relevant survey guidelines for this species include:

- *Survey Guidelines for Australia's Threatened Birds* (Department of the Environment Water Heritage and the Arts 2010).

D-1.2.26.3 Specific impacts

Targeted bird surveys within the Proposal study area did not record any Red-lored Whistler and there are no records for this species in south-western NSW including in Mallee Cliffs NP and local mallee habitats. Impacts would consist of clearing of potential mallee habitat in the form of PCT 171 & 172. The total impacts to these PCTs in the South Olary Plain subregion include clearing of 89.78 ha. However, the habitats within the Proposal study area are not optimal for the Red-lored Whistler.

The potential for this species to receive injury or mortality from colliding with the future transmission lines is negligible. This species inhabits mallee and the associated shrub and ground layer and feeds mainly on the ground, eating invertebrates and seed and fruit. When flying, it is most likely to fly into the mallee canopy and not to the height of the powerlines themselves. Striking powerlines is not recorded for this species.

D-1.2.26.4 Is this an important population?

In accordance with the Matters of National Environmental Significance, Significant Impact Guidelines 1.1, the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the guidelines as a population that is necessary for a species' long-term survival and recovery (Department of the Environment Water Heritage and the Arts 2013). Under the EPBC Act, important populations are:

- likely to be key source populations either for breeding or dispersal
- likely to be necessary for maintaining genetic diversity
- at or near the limit of the species range.

The Proposal study area does not occur within the mapped area of potential occurrence for this species. As Red-lored Whistlers are not known from the locality, if a Red-lored Whistler population did occur within the Proposal study area, then it would likely be considered an important population. Taking a precautionary approach, the population subject to this assessment is assumed to be important.

D-1.2.26.5 Significant impact criteria

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- **LEAD TO A LONG-TERM DECREASE IN THE SIZE OF AN IMPORTANT POPULATION**

Targeted bird surveys within the Proposal study area did not record any Red-lored Whistler. Impacts would consist of clearing of potential mallee habitat in the form of PCT 171 and PCT 172. The impacts to PCT 171 and PCT 172 in the South Olary Plain region include clearing of 89.78 ha. However, as described in Section 5.6.3 of the BDAR the habitats within the Proposal study area are not optimal for the Red-lored Whistler.

The species requires high quality habitat and is absent from large areas of mallee habitat, particularly where grazing is present, with habitat noted as unsuitable within six kilometres of water points for livestock (Department of Environment Land Water and Planning 2016). Grazing pressure within the mallee habitats in the Proposal study area is very high. The Red-lored Whistler is considered very unlikely to occur within habitats impacted by the proposal, due to the lack of records from the surrounding regions and the degraded condition of associated mallee habitats as a consequence of clearing, burning and a long history of grazing. This species was not recorded within the Proposal study area, despite targeted surveys for this species and habitat assessments concluded that habitat was not of sufficient quality to support its presence. As such, it is unlikely that the Proposal would lead to a long-term decrease in the size of an important population of the Red-lored Whistler.

- **REDUCE THE AREA OF OCCUPANCY OF AN IMPORTANT POPULATION**

The extent of occurrence for the Red-lord Whistler is estimated to be 400,000 km² an estimate based on published maps (Garnett and Crowley 2000). The Red-lored Whistler has disappeared from some areas of its former range but based on available records, these disappearances do not seem to have had a major effect on the extent of occurrence which is estimated at 5,000 km² (Garnett and Crowley 2000).

The mallee habitats that would be impacted by the Proposal are considered to be marginal habitat for the Red-lored Whistler and impact to these habitats would not reduce the known area of occupancy for this species.

- **FRAGMENT AN EXISTING IMPORTANT POPULATION INTO TWO OR MORE POPULATIONS**

Although sections of marginal Red-lored Whistler habitat are likely to be cleared, this habitat does not occur within the known distribution of the species and habitats recorded were largely considered to be of insufficient quality to support this species. Further, the maximum cleared area for a single tower footprint or laydown area would not exceed 0.5 ha, and the easement width of the transmission line would be a maximum of approximately 80 meters (with full clearing not always being required). The Proposal study area is within an already fragmented landscape from agriculture and existing linear infrastructure, thereby limiting the potential for any substantial additional fragmentation to occur. It is unlikely that a Red-lored Whistler population occurs within the habitats to be impacted by the proposal. However, if a population does occur, functional connectivity of habitats would remain due to shrubby understories continuing within the alignment corridor.

- **ADVERSELY AFFECT HABITAT CRITICAL TO THE SURVIVAL OF A SPECIES**

Habitat critical to the survival of a species refers to areas that are necessary:

- for activities such as foraging, breeding, roosting, or dispersal
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
- to maintain genetic diversity and long-term evolutionary development, or
- for the reintroduction of populations or recovery of the species or ecological community. (Department of the Environment Water Heritage and the Arts 2013).

There is no habitat listed as critical to the survival of these species under the EPBC Act (Department of Agriculture Water and the Environment 2021). Key management sites in NSW containing important habitat for the species exist in Nombinnie Nature Reserve/State Conservation Area and Round Hill Nature Reserve to the north of the study area and Scotia Sanctuary, Tarawi Nature Reserve, Nanya Station and private properties to the west of the study area (Department of Planning Industry and Environment 2021). The proposed action would not impact on these sites. The mallee habitat within the Proposal study area is considered to be marginal for the Red-lored Whistler and would not be critical to the survival of this species.

- **DISRUPT THE BREEDING CYCLE OF AN IMPORTANT POPULATION**

The species requires high quality habitat and is absent from large areas of mallee habitat, particularly where grazing is present, with habitat noted as unsuitable within six kilometres of livestock water points (Department of Environment Land Water and Planning 2016). Grazing pressure within the mallee habitats in the Proposal study area is very high and the Red-lored Whistler is considered unlikely to occur within habitats impacted by the proposal. Breeding habitat is unlikely to be present.

- **MODIFY, DESTROY, REMOVE OR ISOLATE OR DECREASE THE AVAILABILITY OR QUALITY OF HABITAT TO THE EXTENT THAT THE SPECIES IS LIKELY TO DECLINE**

The proposed action is considered unlikely to modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline. Grazing pressure within the mallee habitats in the Proposal study area is very high and the Red-lored Whistler is considered unlikely to occur within habitats impacted by the proposal. Habitat quality is already poor. Any impact from the Proposal is considered likely to be negligible for this species as the habitat is already marginal.

- **RESULT IN INVASIVE SPECIES THAT ARE HARMFUL TO A VULNERABLE SPECIES BECOMING ESTABLISHED IN THE VULNERABLE SPECIES' HABITAT**

Adhering to mitigation measures such as weed and pest management plans, and vehicle weed hygiene, would prevent invasive weeds and vertebrate pests such as goats, cats and foxes establishing in the Proposal study area.

- **INTRODUCE DISEASE THAT MAY CAUSE THE SPECIES TO DECLINE**

There are no diseases known to the Red-lored Whistler that may cause the species to decline.

- **INTERFERE SUBSTANTIALLY WITH THE RECOVERY OF THE SPECIES**

The *National Recovery Plan for the Mallee Emu-Wren* Stipiturus mallee*, Red-lored Whistler* Pachycephala rufogularis *and Western Whipbird* Psophodes nigrogularis leucogaster (Department of Environment Land Water and Planning 2016) outlines the following strategies to achieve the recovery objectives:

- establishing a recovery team to coordinate implementation of the recovery plan
- incorporating threatened mallee bird fire scale and frequency requirements into all fire management plans and annual works plans
- enhancing habitat connectivity and quality
- managing total grazing pressure from all herbivores by decommissioning artificial water points and controlling introduced herbivores
- undertaking introduced predator control programs
- monitoring trends in subpopulations in response to management actions, particularly rates of recovery from fire
- investigating the need for translocations, including the degree of genetic isolation of geographically separate subpopulations, and develop translocation programs where necessary
- enhancing community involvement and awareness.

The proposed action would not interfere with these identified strategies.

- **CONCLUSION**

The proposed action is considered unlikely to significantly impact the Red-lored Whistler. Targeted bird surveys within the Proposal study area did not record any Red-lored Whistler. Impacts would consist of clearing of potential mallee habitat in the form of PCT 171 and PCT 172. The impacts to PCT 171 and PCT 172 in the South Olary Plain region include clearing of 89.78 ha. However, the habitats within the Proposal study area are not optimal for the Red-lored Whistler. The species requires high quality habitat and is absent from large areas of mallee habitat, particularly where grazing is present. Grazing pressure within the mallee habitats in the Proposal study area is very high. The Red-lored Whistler is considered very unlikely to occur within habitats impacted by the proposal, due to the lack of records from the locality and the degraded condition of associated mallee habitats as a consequence of clearing, burning and a long history of grazing. It is therefore unlikely that the proposed action would have a significant impact on this species.

D-1.2.26.6 NSW Assessment Bilateral requirements

- **DESCRIPTION OF THE HABITAT (INCLUDING IDENTIFICATION AND MAPPING OF SUITABLE BREEDING HABITAT, SUITABLE FORAGING HABITAT, IMPORTANT POPULATIONS AND HABITAT CRITICAL FOR SURVIVAL), WITH CONSIDERATION OF, AND REFERENCE TO, ANY RELEVANT COMMONWEALTH GUIDELINES AND POLICY STATEMENTS INCLUDING LISTING ADVICE, CONSERVATION ADVICE AND RECOVERY PLAN**

There is no Listing Advice for this species. There is no approved Conservation Advice for this species. The *National Recovery Plan for the Mallee Emu-Wren* Stipiturus mallee*, Red-lored Whistler* Pachycephala rufogularis *and Western Whipbird* Psophodes nigrogularis leucogaster (Department of Environment Land Water and Planning 2016) outlines the habitat for the Red-lored Whistler as follows:

- In New South Wales, Red-lored Whistlers chiefly occur in the central-western NSW mallee centred on Round Hill and Nombinnie Nature Reserves. It is thought to have become locally extinct at Pulletop Nature Reserve in central New South Wales where it was last seen in 1982. There were also records during the 1980s from the Scotia Mallee west of the Darling River, at Scotia Sanctuary, Tarawi Nature Reserve and Springwood Station north of Wentworth, but targeted searches have failed to find Red-lored Whistlers in this region since 1996.
- The Red-lored Whistler occurs in Spinifex Grass (*Triodia*) mallee, shrubland or mallee heath, mostly 2–5 m tall and usually where the canopy is sparse, and with a sparse to moderately dense but patchy shrub layer (Carpenter & Matthew 1986; Woinarski 1987; Matthew et al. 1996; Sluiter & O'Neill 1996). Like the Mallee Emu-wren, the Red-lored Whistler prefers the Woorinen Sands Mallee ecological vegetation class in Victoria (Clarke 2007a). Moise (2008) showed that the Red-lored Whistler has strict habitat requirements with its distribution in both mallee and mallee heath limited by the presence of Spinifex Grass (Triodia scariosa). Red-lored Whistlers often nest on Spinifex Grass hummocks (Higgins and Peter 2002, Moise 2008). Dominant Eucalypt species include *Eucalyptus incrassata, E. dumosa and E. socialis,* with understorey shrubs including *Acacia species, Callitris verrucosa, Leptospermum coriaceum, Calytrix tetragona, Hakea muelleriana, Baeckea behrii, B. crassifolia, Phebalium bullatum, Leucopogon cordifolius, Banksia ornata* and Broombush (*Melaleuca uncinata*), and a ground cover of *Triodia scariosa* and species such as *Westringia rigida, Ptilotus* species and *Stipa* species (Matthew et al. 1995; 1996; Sluiter & O'Neill 1996). Birds are very occasionally recorded in tall mallee, eucalypt woodland and Banksia species scrub (Hackett & Hackett 1986; Cooper & McAllan 1995). The Red-lored Whistler appears to have one of the most specialised habitat requirements of all of the threatened mallee birds, and because their habitat is patchily distributed, and the birds have very large home ranges, this specialisation results in low population densities (Clarke 2005b, Moise 2008). Much of the remaining habitat is in conservation reserves.
- Red-lored Whistlers apparently do not recolonise areas until at least five years after a fire (Matthew et al. 1996). In the Big Desert mallee-heath, 63% of Red-lored Whistler records were in vegetation 21–40 years post-fire, with other records in long-unburnt habitat (Cheal et al. 1979), while studies in heath habitat indicated a preference for Broombush 3–30 years of age (Woinarski 1987, 1989). In the Sunset Country, the Red-lored Whistler was recorded from a range of early post-fire to long-unburnt vegetation (Cheal et al. 1979; Silveira 1993; Sluiter & O'Neill 1996), with areas that have remained unburnt for 21–44 years most important (Clarke 2005b; Connell et al. in press). In the

Riverland Biosphere Reserve, the Red-lored Whistler has been recorded predominantly in long-unburnt mallee (Moise 2008), with habitats that have remained unburnt for 46–52 years most important, with some ability to utilise habitats last burnt 20–23 years ago. In heath-dominated mallee the species appears to occupy more recently burnt habitats, with a preference for areas burnt 10–24 years ago (Clarke 2005b, Moise 2008).

- In the Riverland Biosphere Reserve Red-lored Whistlers occur >6 km from water points and their associated grazing impacts (Harrington 2002). Moise (2008) also recorded this species only in areas that had experienced low grazing impacts.

Associated PCTs in NSW, which are also present in the Proposal study area in the South Olary Plain region, include:

- PCT 171 – Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion.
- PCT 172 – Deep sand mallee of irregular dunefields of the semi-arid (warm) zone

However, the habitats within the Proposal study area are considered marginal (see discussion above).

A map of suitable habitat for this species is provided in Figure D-1.26.

- **DETAILS OF THE SCOPE, TIMING AND METHODOLOGY FOR STUDIES OR SURVEYS USED AND HOW THEY ARE CONSISTENT WITH (OR JUSTIFICATION FOR DIVERGENCE FROM) PUBLISHED AUSTRALIAN GOVERNMENT GUIDELINES AND POLICY STATEMENTS**

Threatened bird surveys completed within the Proposal study area were carried out in accordance with the *Survey Guidelines for Australia's Threatened Birds* (Department of the Environment Water Heritage and the Arts 2010). Habitat assessments were undertaken to assess the likelihood of threatened species of animal (those species known or predicted to occur within the locality from the literature and database review) occurring within the Proposal study area. Fauna habitat assessments were the primary assessment tool in assessing whether threatened species were likely to occur within the Proposal study area. The primary technique used for surveying birds were 20-minute diurnal bird searches, but mallee woodland traverses were also employed to cover large areas with relatively low avian activity. The survey effort for Red-lored Whistler is outlined in Table D-1.17.

Table D-1.17 Summary of survey effort for Red-lored Whistler

FAUNA GROUP	SURVEY TECHNIQUE	SURVEY EFFORT	OPTIMUM SURVEY PERIOD	DATES SURVEYED
Arid Woodlands/Shrublands – PCT 58, PCT139, PCT143, PCT170, PCT171, PCT172, PCT19, PCT21, PCT252				
Mallee Spinifex birds	Targeted habitat searches and assessments	32 x 20 min/2 ha formal bird surveys 302 person hours of opportunistic surveys	All year	2-5 Dec 2019 11-14, 16-19 Feb 2020 18-21; 23-31 Mar 2020 19-23 July 2020 2-9 Sep 2021
Mallee, Woodlands and Shrubland birds	Formal 20 min/2 ha surveys, opportunistic surveys and habitat assessments	33 x 20 min/2 ha Formal Bird surveys 339 person hours of opportunistic surveys	All year & during breeding seasons for certain species (Aug-Jan)	3-5 Dec 2019 11-19 Feb 2020 18-21; 23-31 Mar 2020 19 & 20 July 2020 2-9 Sep 2021

- **DESCRIPTION OF THE SPECIFIC IMPACTS AND ITS REGARD TO THE FULL NATIONAL EXTENT OF THE SPECIES OR COMMUNITY'S RANGE**

Vegetation clearing in potentially suitable mallee habitat will occur. The impacts to PCT 171 and PCT 172 in the Southern Olary Plain region include clearing of 89.78 ha. However, the habitats within the Proposal study area are not optimal for the Red-lored Whistler.

The extent of occurrence for the Red-lord Whistler is estimated to be 400,000 km² and this estimate, which is based on published maps, is considered to be of medium reliability (Garnett and Crowley 2000). The Red-lored Whistler has disappeared from some areas of its former range but based on available records, these disappearances do not seem to have had a major effect on the extent of occurrence which is estimated at 5,000 km² (Garnett and Crowley 2000). The mallee habitats that would be impacted by the Proposal are considered to be marginal habitat for the Red-lored Whistler and impact to these habitats would not reduce the known area of occupancy for this species. The current distribution of the Red-lored Whistler is shown in Figure D-1.26. The Proposal will not impact on any areas of known occurrence for the Red-lored Whistler.

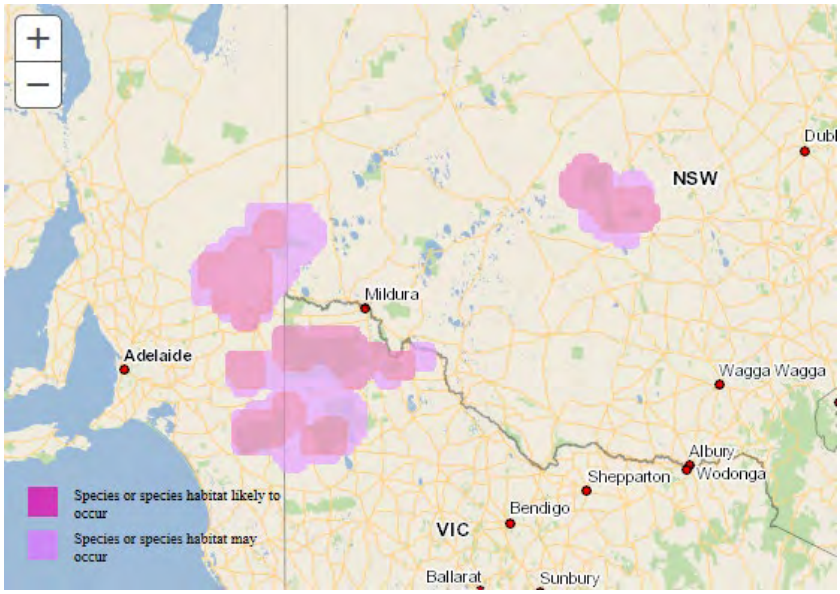


Figure D-1.26 Current distribution map for Red-lored Whistler taken from the SPRAT

- **DESCRIPTION OF THE SPECIFIC PROPOSED AVOIDANCE AND MITIGATION MEASURES TO DEAL WITH RELEVANT IMPACTS OF THE ACTION**

The proposed avoidance and mitigation measures are outlined in Section 8 & 10 of the BDAR. Detailed avoidance description for impacts relating to biodiversity values (including threatened species) are outlined in Section 8. Mitigation measures to be implemented are outlined in Section 11. No specific measures for the Red-Lored Whistler are identified.

- **IDENTIFICATION OF SIGNIFICANT RESIDUAL ADVERSE IMPACTS LIKELY TO OCCUR AFTER THE PROPOSED ACTIVITIES TO AVOID AND MITIGATE ALL IMPACTS ARE TAKEN INTO ACCOUNT**

Details of offset requirements and obligations for this species as a result of residual impacts due the proposed action is addressed in Section 12 of the BDAR. No species credits are required to offset the residual impacts to *Red-lored Whistler.*

- **A DESCRIPTION OF ANY OFFSETS PROPOSED TO ADDRESS RESIDUAL ADVERSE SIGNIFICANT IMPACTS AND HOW THESE OFFSETS WILL BE ESTABLISHED**

Details of offset requirements and obligations for this species as a result of residual impacts due the proposed action is addressed in Section 12 of the BDAR.

- **DETAILS OF HOW THE CURRENT PUBLISHED NSW BIODIVERSITY ASSESSMENT METHOD (BAM) HAS BEEN APPLIED IN ACCORDANCE WITH THE OBJECTS OF THE EPBC ACT TO OFFSET SIGNIFICANT RESIDUAL ADVERSE IMPACTS**

The BDAR specifically addresses Section 11 of the BAM and provides information on the application of the no net loss standard and the Proposal biodiversity offset obligations. Credit calculations were quantified using the BAM-C Version 1.3.0.00.

- **DETAILS OF THE OFFSET PACKAGE TO COMPENSATE FOR SIGNIFICANT RESIDUAL IMPACTS INCLUDING DETAILS OF THE CREDIT PROFILES REQUIRED TO OFFSET THE ACTION IN ACCORDANCE WITH THE BAM AND/OR MAPPING AND DESCRIPTIONS OF THE EXTENT AND CONDITION OF THE RELEVANT HABITAT AND/OR THREATENED COMMUNITIES OCCURRING ON PROPOSED OFFSET SITES**

Section 12 of the BDAR outlines the biodiversity offset strategy for the proposal. The offset obligations will be met through implementing a combination of the following offset delivery options, being:

- the purchase and retirement of existing biodiversity credits currently available on the biodiversity credit register
- establishing a biodiversity stewardship site(s) on lands with like for like biodiversity values to those impacted by the proposal
- through making a payment into the Biodiversity Conservation Fund.

D-1.2.27 Painted Honeyeater (*Grantiella picta*)

The Painted Honeyeater is listed as Vulnerable under the EPBC Act and the BC Act.

D-1.2.27.1 Distribution

The Painted Honeyeater is sparsely distributed from south-eastern Australia to north-western Queensland and eastern Northern Territory. The greatest concentrations and almost all records of breeding come from south of 26ºS, on inland slopes of the Great Dividing Range between the Grampians, Victoria and Roma, Queensland. Fruiting mistletoe primarily influences the Painted Honeyeater's seasonal north-south movements, with its breeding season closely matched. After breeding, many birds move into semi-arid regions such as north-eastern South Australia, central and western Queensland, and central Northern Territory. Breeding occurs from October to March when mistletoe fruits are most available (Department of the Environment 2015).

The species is a mistletoe specialist, and inhabits mistletoes in eucalypt forests/woodlands, riparian woodlands of Black Box and River Red Gum, Box-ironbark-yellow Gum woodlands, Acacia-dominated woodlands, Paperbarks, Casuarinas, Callitris, and trees on farmland or gardens. The species prefers woodlands which contain a higher number of mature trees, as these host more mistletoes, and is more common in wider blocks of remnant woodland than in narrower strips (Department of the Environment 2015).

Threats for this species include:

- habitat loss due to clearing
- grazing by livestock, macropods and rabbits, limiting new tree recruitment
- competition with the aggressive Noisy Miner (Manorina melanocephala), predation by invasive species such as Black Rats (*Rattus rattus*), and nest predation by over abundant Pied Currawongs (Strepera graculina), pied and grey butcherbirds (Cracticus nigrogularis and Cracticus torquatus), and crows and ravens (Corvidae). (Threatened Species Scientific Committee, 2015).

Strongholds for the species and breeding areas occur on the inland slopes of the Great Dividing Range in NSW, Vic and Southern Queensland (OEH, 2019).

There are records of this species within the locality of Proposal study area including bird data base records on the plains north of Deniliquin.

D-1.2.27.2 Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- The *Conservation Advice* Grantiella picta *painted honeyeater* (Department of the Environment 2015) was reviewed as part of this assessment.
- Listing assessment information for this species may be available in the approved Conservation Advice.
- There is no adopted or made Recovery Plan for this species.

No threat abatement plan has been identified as being relevant for this species.

Relevant survey guidelines for this species include:

- *Survey Guidelines for Australia's Threatened Birds* (Department of the Environment Water Heritage and the Arts 2010).

D-1.2.27.3 Specific impacts

Painted Honeyeater has potential habitat within all IBRA subregions of the Proposal study area in the form of associated PCTs 5, 7, 8, 11, 13, 15, 23, 26, 28, 58, 74, 75, 76, 80, 110, 143, 249, 277 and 319 Eucalypt and riparian woodlands.

D-1.2.27.4 Is this an important population?

In accordance with the Significant Impact Guidelines, the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the guidelines as a population that is necessary for a species' long-term survival and recovery (Department of the Environment, 2013). Under the EPBC Act, important populations are:

- likely to be key source populations either for breeding or dispersal
- likely to be necessary for maintaining genetic diversity
- at or near the limit of the species range.

There are records of this species within the locality of Proposal study area including bird data base records on the plains north of Deniliquin.

As the core range for Painted Honeyeaters is inland south-eastern Australia where its natural habitat is subtropical or tropical dry forests, and species population strongholds and breeding areas occur on the inland slopes of the Great Dividing Range (outside of the Proposal study area). If any population is present, they are unlikely to be key source populations for dispersal or for maintaining genetic diversity. Also, this location is not at the limit of this species known range. As such any individual or population recorded within the Proposal study area would not be considered part of an important population.

D-1.2.27.5 Significant impact criteria

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- **LEAD TO A LONG-TERM DECREASE IN THE SIZE OF AN IMPORTANT POPULATION**

Not applicable. Not considered an important population.

- **REDUCE THE AREA OF OCCUPANCY OF AN IMPORTANT POPULATION**

Not applicable. Not considered an important population.

- **FRAGMENT AN EXISTING IMPORTANT POPULATION INTO TWO OR MORE POPULATIONS**

Not applicable. Not considered an important population.

- **ADVERSELY AFFECT HABITAT CRITICAL TO THE SURVIVAL OF A SPECIES**

Conservation advice does not list any habitat critical to the survival of this species. Therefore, the proposed action is not considered likely to adversely affect habitat critical to the survival of the species.

- **DISRUPT THE BREEDING CYCLE OF AN IMPORTANT POPULATION**

Not applicable. Not considered an important population.

- **MODIFY, DESTROY, REMOVE OR ISOLATE OR DECREASE THE AVAILABILITY OR QUALITY OF HABITAT TO THE EXTENT THAT THE SPECIES IS LIKELY TO DECLINE**

Although vegetation clearing at the Proposal level may contribute to the decline of the population within the Proposal study area, it is not considered likely that the action would result in disturbance to the extent that the species would decline. There is adjacent habitat located in contiguous areas such as National Parks and reserves, where the species is known to occur

- **RESULT IN INVASIVE SPECIES THAT ARE HARMFUL TO A VULNERABLE SPECIES BECOMING ESTABLISHED IN THE VULNERABLE SPECIES' HABITAT**

Adhering to mitigation measures such as weed and pest management plans, and vehicle weed hygiene, would prevent invasive weeds and vertebrate pests such as cats and foxes establishing in wetland habitat areas

- **INTRODUCE DISEASE THAT MAY CAUSE THE SPECIES TO DECLINE**

There are no knows diseases causing potential species decline to the Painted Honeyeater, or diseases to its preferred food source, mistletoe.

- **INTERFERE SUBSTANTIALLY WITH THE RECOVERY OF THE SPECIES**

The proposed action the proposed action is contrary to the recovery objectives and actions outlined in the Saving Our Species program and the National Recovery Program for the Painted Honeyeater. Contributing to the degradation and removal of habitat (i.e. mature trees containing mistletoe). Vegetation clearing will occur in potential habitat associated with PCT 5, 7, 8, 11, 13, 15, 23, 26, 28, 58, 74, 75, 76, 80, 110, 143, 249, 267, 277 & 319. Although sections of potential habitat are likely to be cleared, the maximum cleared area for a single tower footprint or laydown area would not exceed 0.5 ha, and the easement width of the transmission line would be a maximum of approximately 80 meters (with full clearing not always being required). The Proposal study area is within an already fragmented landscape from agriculture and existing linear infrastructure, thereby limiting the potential for any substantial patches of habitat removal to occur. It is considered unlikely that the amount of potential clearing would interfere substantially with the recovery of the species.

- **CONCLUSION**

Although potentially suitable woodland habitat has been mapped within the Proposal study area, mitigation measures would ensure that clearing of large tracts of suitable woodland are minimised or avoided to prevent significant loss of habitat. As core populations, breeding areas, and the species stronghold do not occur within the locality of this proposed action, it is considered unlikely that the proposed action would have a significant impact on the Painted Honeyeater.

D-1.2.27.6 NSW Assessment Bilateral requirements

- **DESCRIPTION OF THE HABITAT (INCLUDING IDENTIFICATION AND MAPPING OF SUITABLE BREEDING HABITAT, SUITABLE FORAGING HABITAT, IMPORTANT POPULATIONS AND HABITAT CRITICAL FOR SURVIVAL), WITH CONSIDERATION OF, AND REFERENCE TO, ANY RELEVANT COMMONWEALTH GUIDELINES AND POLICY STATEMENTS INCLUDING LISTING ADVICE, CONSERVATION ADVICE AND RECOVERY PLAN**

There is no listing advice for this species. The *Conservation Advice Grantiella picta painted honeyeater* (Department of the Environment, 2015c) indicates that the species inhabits mistletoes in eucalypt forests/woodlands, riparian woodlands of black box and river red gum, box-ironbark-yellow gum woodlands, acacia-dominated woodlands, paperbarks, casuarinas, Callitris, and trees on farmland or gardens. The species prefers woodlands which contain a higher number of mature trees, as these host more mistletoes. It is more common in wider blocks of remnant woodland than in narrower strips, although it breeds in quite narrow roadside strips if ample mistletoe fruit is available. There is no adopted or made Recovery Plan for this species.

Habitat is present within PCT 5, 7, 8, 11, 13, 15, 23, 26, 28, 58, 74, 75, 76, 80, 110, 143, 249, 267, 277 & 319.

A map of suitable habitat for this species is provided in Figure D-1.27.

- **DETAILS OF THE SCOPE, TIMING AND METHODOLOGY FOR STUDIES OR SURVEYS USED AND HOW THEY ARE CONSISTENT WITH (OR JUSTIFICATION FOR DIVERGENCE FROM) PUBLISHED AUSTRALIAN GOVERNMENT GUIDELINES AND POLICY STATEMENTS**

Threatened bird surveys completed within the Proposal study area were carried out in accordance with the *Survey Guidelines for Australia's Threatened Birds* (Department of the Environment Water Heritage and the Arts 2010). Habitat assessments were undertaken to assess the likelihood of threatened species of animal (those species known or predicted to occur within the locality from the literature and database review) occurring within the Proposal study area. Fauna habitat assessments were the primary assessment tool in assessing whether threatened species were likely to occur within the Proposal study area. The primary technique used for surveying birds were 20-minute diurnal bird searches. The survey effort for Painted Honeyeater is outlined in Table D-1.18.

Table D-1.18 Summary of survey effort for Painted Honeyeater

FAUNA GROUP	SURVEY TECHNIQUE	SURVEY EFFORT	OPTIMUM SURVEY PERIOD	DATES SURVEYED
Grassy Woodlands – PCT11, PCT13, PCT15, PCT17, PCT63				
Blossom Nomads	20min 2 ha bird surveys Favoured habitat surveys and assessment	65 person hours of opportunistic surveys	Nov – Feb – Mistletoe fruiting Associated with strong winter blossoming events Apr – Sep	3-5 Dec 2019 11-19 Feb 2020

- **DESCRIPTION OF THE SPECIFIC IMPACTS AND ITS REGARD TO THE FULL NATIONAL EXTENT OF THE SPECIES OR COMMUNITY'S RANGE**

The proposed action would potentially clear vegetation within suitable habitat. These impacts are captured in Section 12 of the BDAR.

Figure D-1.27 shows the current known generalised distribution from the Departments Species of National Environmental Significance dataset which is an indicative distribution map of the present distribution of the species based on best available knowledge. The Proposal study area is not at the limit of the known distribution of this species.

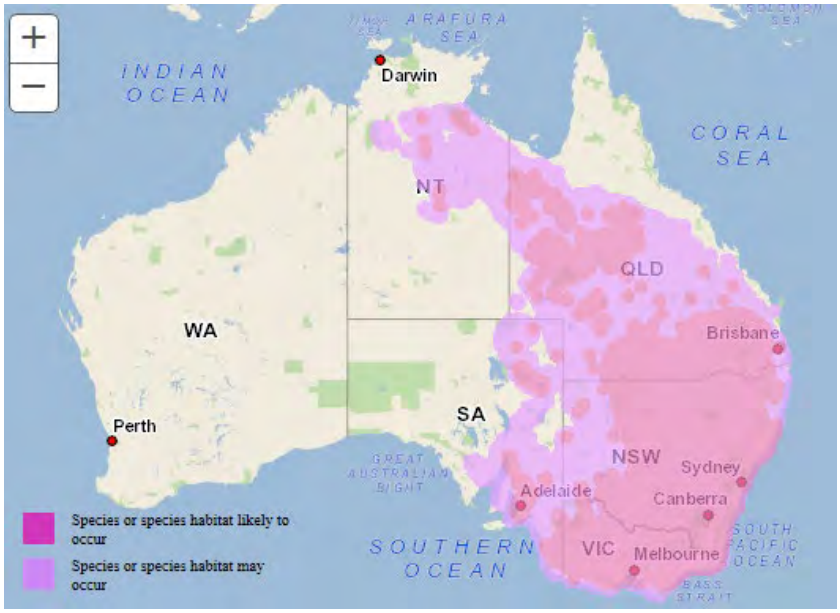


Figure D-1.27 Current distribution map for Painted Honeyeater taken from the SPRAT

- **DESCRIPTION OF THE SPECIFIC PROPOSED AVOIDANCE AND MITIGATION MEASURES TO DEAL WITH RELEVANT IMPACTS OF THE ACTION**

The proposed avoidance and mitigation measures are outlined in Section 8 & 10 of the BDAR. Detailed avoidance description for impacts relating to biodiversity values (including threatened species) are outlined in Section 8. Mitigation measures to be implemented are outlined in Section 11. No specific measures for the Painted Honeyeater are identified.

- **IDENTIFICATION OF SIGNIFICANT RESIDUAL ADVERSE IMPACTS LIKELY TO OCCUR AFTER THE PROPOSED ACTIVITIES TO AVOID AND MITIGATE ALL IMPACTS ARE TAKEN INTO ACCOUNT**

The residual impact to the Painted Honeyeater is likely to be minimal. The proposed action would potentially clear vegetation within suitable habitat.

- **A DESCRIPTION OF ANY OFFSETS PROPOSED TO ADDRESS RESIDUAL ADVERSE SIGNIFICANT IMPACTS AND HOW THESE OFFSETS WILL BE ESTABLISHED**

Details of offset requirements and obligations for this species as a result of residual impacts due the proposed action is addressed in Section 12 of the BDAR.

- **DETAILS OF HOW THE CURRENT PUBLISHED NSW BIODIVERSITY ASSESSMENT METHOD (BAM) HAS BEEN APPLIED IN ACCORDANCE WITH THE OBJECTS OF THE EPBC ACT TO OFFSET SIGNIFICANT RESIDUAL ADVERSE IMPACTS**

The BDAR specifically addresses Section 11 of the BAM and provides information on the application of the no net loss standard and the Proposal biodiversity offset obligations. Credit calculations were quantified using the BAM-C Version 1.2.7.2.

- **DETAILS OF THE OFFSET PACKAGE TO COMPENSATE FOR SIGNIFICANT RESIDUAL IMPACTS INCLUDING DETAILS OF THE CREDIT PROFILES REQUIRED TO OFFSET THE ACTION IN ACCORDANCE WITH THE BAM AND/OR MAPPING AND DESCRIPTIONS OF THE EXTENT AND CONDITION OF THE RELEVANT HABITAT AND/OR THREATENED COMMUNITIES OCCURRING ON PROPOSED OFFSET SITES**

Section 12.6 of the BDAR outlined the biodiversity offset strategy for the proposal. The offset obligations will be met through implementing a combination of the following offset delivery options, being:

- the purchase and retirement of existing biodiversity credits currently available on the biodiversity credit register
- establishing a biodiversity stewardship site(s) on lands with like for like biodiversity values to those impacted by the proposal
- through making a payment into the Biodiversity Conservation Fund.

D-1.2.28 Plains-wanderer (*Pedionomus torquatus*)

Listed as Critically Endangered under the EPBC Act, listed as Endangered under the BC Act.

D-1.2.28.1 Description

Plains Wanderers are ground dwelling birds living in semi-arid, lowland native grasslands that typically occur on hard red-brown soils in Queensland, New South Wales, Victoria and South Australia. Habitat structure appears to play a more important role than plant species composition. Preferred grassland habitat of the Plains Wanderer typically comprises 50% bare ground, 10% fallen litter, and 40% herbs, forbs and grasses (TSSC, 2015). Surveys indicate that Plains Wanderers appear to avoid being in close proximity to living or dead trees, with no records of any birds within 300 m of trees of 10 m or greater in height across their strongholds in New South Wales and Victoria. In the Riverina region, the home range of individual Plains Wanderers vary in size from 7–21 hectares (DoE & DEWNR, 2016).

They feed on a mixture of seeds, leaves and invertebrates, with seeds and leaves accounting for nearly 60% of the annual diet. Seeds and leaves are taken from grasses (including native species of *Austrostipa, Sporobolus, Panicum, Austrodanthonia,* and *Eragrostis* and occasionally exotic species of *Vulpia*), chenopods (including species of *Atriplex, Maireana, Chenopodium* and *Sclerolaena*) and other plants (such as native species of *Asperula, Galium,* and *Euphorbia* and possibly exotic species of *Spergularia* and *Carthamus*). They occasionally occur in other types of habitat such as in stubble; amongst low cereal crops; and in low, sparse chenopod shrubland (DoE & DEWNR, 2016).

Plains Wanderers breed in solitary pairs, although females may be polyandrous, and create nests in the ground in the form of a scrape lined with grass, amongst native grasses and herbs and sometimes crops (TSSC, 2015).

Threats to this species include:

- habitat loss and fragmentation as a result of land conversion for the cultivation of crops, including the introduction of pasture species, weeds, and woody vegetation
- inappropriate grazing, including both over and under grazing by domestic livestock and rabbits.
- low population size, which increases the risk of extinction
- predation by foxes, cats, and birds of prey
- pesticide use, particularly for the historical control of the Australian plague locust
- planting and natural recruitment of trees in or near native grasslands.

D-1.2.28.2 Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

Documents relevant to assessment of this species are as follows:

- Conservation Advice *Pedionomus torquatus* plains-wanderer (DoE 2015). In effect under the EPBC Act from 08-Jul-2015
- There is no approved Listing Advice for this species
- National Recovery Plan for the Plains-wanderer (DoE & DEWNR, 2016).

D-1.2.28.3 Specific impacts

Three birds were recorded at Bundure TSR. Field verified habitat was mapped but is patchy throughout the area between the Cobb Highway in the west to beyond the Gums TSR in the east.

D-1.2.28.4 Significant impact assessment

An action is likely to have a significant impact on a Critically Endangered species if there is a real chance or possibility that it will:

- **LEAD TO A LONG-TERM DECREASE IN THE SIZE OF A POPULATION**

There is a cluster of ALA and OEH records within the Proposal study area, specifically south of Hay, west of Coleambally and north of Deniliquin. The proposed action would potentially impact areas where this species has been mapped as likely to occur in the National Recovery Plan (DoE & DEWNR, 2016). Further field studies are required to understand population numbers in these areas predicted to be impacted. Nevertheless, the habitat requirements of the species are known and accurately mapped, and the distributions of individuals is largely governed by the quality of habitat, which is determined by climatic conditions and land management actions affecting habitat quality. The proposed Proposal area will not significantly impact upon the Plains-wanderer as every effort has been made to avoid important habitat, such that impacts to habitat have been reduced from 26.1 ha down to 0.41 ha (approximately 65 m x 65 m)

- **REDUCE THE AREA OF OCCUPANCY OF THE SPECIES**

Plains wanderers have an average home range size of 12 hectares (DoE & DEWNR, 2016). The proposed action is likely to reduce the area of occupancy of a field verified habitat by approximately 0.41 ha.

- **FRAGMENT AN EXISTING POPULATION INTO TWO OR MORE POPULATIONS**

The Plains Wanderer is affected by fragmentation primarily due to land conversion for agriculture, which involves land clearing in large patches causing isolation of populations (DoE & DEWNR, 2016). As clearing associated with the proposed action is generally limited to the installation of towers and narrow access tracks, clearing wide tracts of suitable grassland habitat would be avoided and removal of vegetation is not expected to occur at a large enough scale to cause isolation and fragmentation of populations of the Plains Wanderer. In addition, the majority of the Proposal study area is centred on an existing high-voltage transmission line and other linear infrastructure such as roads, which minimises the potential for any substantial additional fragmentation to occur.

- **ADVERSELY AFFECT HABITAT CRITICAL TO THE SURVIVAL OF A SPECIES**

According to the National Recovery Plan for the Plains Wanderer, habitat critical to the survival of the species includes any region where the species is mapped as likely to occur, and any newly discovered locations that extend the likely range of the Plains Wanderer (DoE & DEWNR, 2016). The proposed action will impact habitat areas where this species is known to occur. The proposed action would impact core habitat areas for the Plains Wanderer being the area south of Hay, west of Coleambally and north of Deniliquin, as identified by ESS (2020). Therefore, the proposed action has the potential to adversely affect 0.41 ha of habitat critical to the survival of the species.

- **DISRUPT THE BREEDING CYCLE OF A POPULATION**

Mitigation measures are recommended in the EIS, including targeted surveys for nests prior to clearing as well as prioritizing avoidance of clearing native grassland habitat suitable for foraging and breeding during detailed design if the species is found to occur within the Proposal study area. This will minimise disruption to breeding cycles for this species.

- **MODIFY, DESTROY, REMOVE OR ISOLATE OR DECREASE THE AVAILABILITY OR QUALITY OF HABITAT TO THE EXTENT THAT THE SPECIES IS LIKELY TO DECLINE**

As vegetation clearing will be generally limited to narrow bands of vegetation, the removal of tracts large enough to cause the species to decline is unlikely.

The proposed action is unlikely to result in the modification, removal, isolation, or decreased availability or quality of habitat to the extent that the species is likely to decline.

- **RESULT IN INVASIVE SPECIES THAT ARE HARMFUL TO A CRITICALLY ENDANGERED OR ENDANGERED SPECIES BECOMING ESTABLISHED IN THE ENDANGERED OR CRITICALLY ENDANGERED SPECIES' HABITAT**

Mitigation measures are recommended in the EIS to prevent invasive weeds and vertebrate pests such as rabbits, cats and foxes establishing in habitat areas.

- **INTRODUCE DISEASE THAT MAY CAUSE THE SPECIES TO DECLINE**

There are no known diseases causing potential species decline to the Plains Wanderer.

- **INTERFERE SUBSTANTIALLY WITH THE RECOVERY OF THE SPECIES**

National Recovery Plan for the Plains Wanderer identifies a number of actions and priorities for recovery for the species (DoE & DEWNR, 2016). The proposed action would interfere with Strategy 3 which is to Enhance protection, improve the quality and increase the extent of habitat suitable for the plains-wanderer. The proposed action would result in the removal of habitat within core habitat areas being the area south of Hay, west of Coleambally and north of Deniliquin, as identified by ESS (2020). Therefore, the proposed action would interfere with the recovery of this species.

- **CONCLUSION**

The National Recovery Plan (DoE & DEWNR, 2016) for the Plains Wanderer identified habitat critical to the survival of the species includes any region where the species is mapped as likely to occur. Field studies and detailed habitat assessments identified habitat for this species within these regions. Impacting such areas would also interfere with the recovery of this species at a local scale. Nevertheless, the proposed action has been managed to reduce the loss of Plains-wanderer habitat from 26.1 ha down to 0.41 ha, such that the Proposal is considered unlikely to represent a significant impact on Plains Wanderer populations in areas where important habitat is mapped.

D-1.2.28.5 NSW Assessment Bilateral requirements

For each of the EPBC Act listed threatened species and communities and migratory species likely to be impacted by the action the EIS must provide a separate*:*

- **DESCRIPTION OF THE HABITAT (INCLUDING IDENTIFICATION AND MAPPING OF SUITABLE BREEDING HABITAT, SUITABLE FORAGING HABITAT, IMPORTANT POPULATIONS AND HABITAT CRITICAL FOR SURVIVAL), WITH CONSIDERATION OF, AND REFERENCE TO, ANY RELEVANT COMMONWEALTH GUIDELINES AND POLICY STATEMENTS INCLUDING LISTING ADVICE, CONSERVATION ADVICE AND RECOVERY PLAN**

A description of habitat for this species, important populations, habitat critical for survival and relevant Commonwealth documents are provided in Section D-1.2.28.2, with a map showing its modelled distribution provided in Figure D-1.28. A map showing the field verified locations of this vegetation within the study area is provided in Appendix D-2.

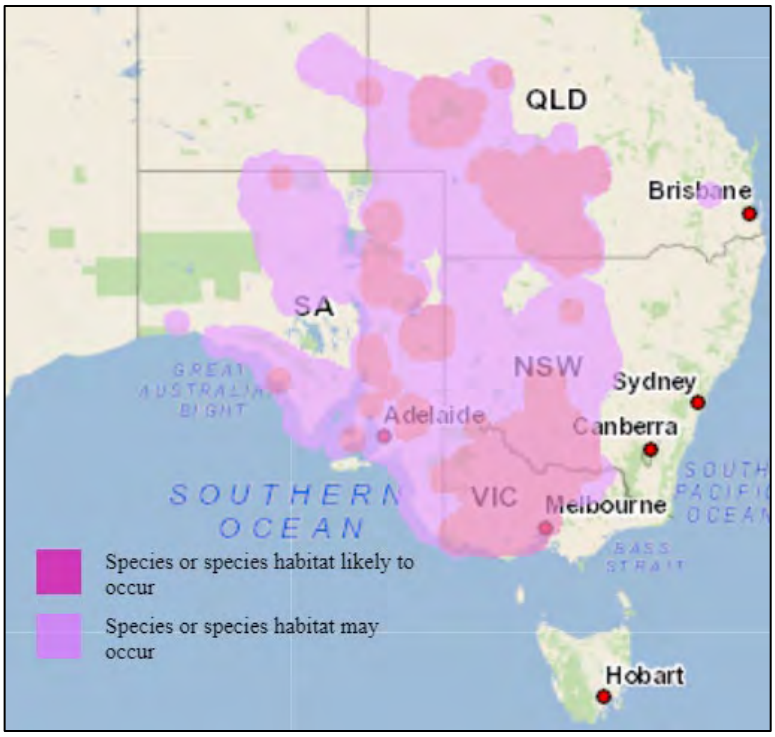


Figure D-1.28 Current distribution map for Plains Wanderer (DAWE 2021)

- **DETAILS OF THE SCOPE, TIMING AND METHODOLOGY FOR STUDIES OR SURVEYS USED AND HOW THEY ARE CONSISTENT WITH (OR JUSTIFICATION FOR DIVERGENCE FROM) PUBLISHED AUSTRALIAN GOVERNMENT GUIDELINES AND POLICY STATEMENTS**

Field survey techniques used to undertake surveys were in general accordance with the *NSW guide for the BAM* (Department of Planning, Industry and Environment, 2020) with a detailed field verification method provided in Section 5.2 of the BDAR. Mapping of native vegetation and habitat extent within the Proposal site is required under section 4.1 of the BAM, with detailed requirements outlined in section 3.2 of the BAM 2020 Operational Manual. Field data was used to assign condition classes for any given observed habitat patch, where relevant.

Specific search methodologies, relevant surveyed habitats and survey effort for this species include:

- Nocturnal surveys were conducted in suitable habitat on foot or driving slowly on access tracks.
- Fauna was detected by a combination of sighting methods, both spotlight searches and searches with thermal imaging scope
- Survey locations were assessed during daylight hours to gauge habitat quality
- Oolambeyan National Park was surveyed as a reference location to gauge Plains-wanderer activity
- Liaison with David Parker, Senior Threatened Species Officer, Office of Environment and Heritage (NSW) who manages Plains-wanderer recovery and management, to confirm survey strategies and habitat condition.

- **DESCRIPTION OF THE SPECIFIC IMPACTS AND ITS REGARD TO THE FULL NATIONAL EXTENT OF THE SPECIES OR COMMUNITY'S RANGE**

The direct impacts of the Proposal on *Plains Wanderer* include removal of approximately 0.41 ha of habitat. The area of potential impact for *Plains Wanderer* is mapped in Appendix D-2 shows the current known generalised distribution, with the estimated habitat extent unknown (DAWE 2021).

- **DESCRIPTION OF THE SPECIFIC PROPOSED AVOIDANCE AND MITIGATION MEASURES TO DEAL WITH RELEVANT IMPACTS OF THE ACTION**

The proposed avoidance and mitigation measures are outlined in Section 8 & 10 of the BDAR. Detailed avoidance description for impacts relating to biodiversity values (including threatened species) are outlined in Section 8. Regarding specific measures for this community, the following relevant mitigation measures are recommended for any related residual impacts to the species:

- positioning of the Proposal area to minimise clearance of this species' habitat
- establishment of no-go zones to protect mapped patches of habitat during construction.

- **IDENTIFICATION OF SIGNIFICANT RESIDUAL ADVERSE IMPACTS LIKELY TO OCCUR AFTER THE PROPOSED ACTIVITIES TO AVOID AND MITIGATE ALL IMPACTS ARE TAKEN INTO ACCOUNT**

The residual impact to *Plains Wanderer* is estimated at 0.41 ha of habitat removal.

- **A DESCRIPTION OF ANY OFFSETS PROPOSED TO ADDRESS RESIDUAL ADVERSE SIGNIFICANT IMPACTS AND HOW THESE OFFSETS WILL BE ESTABLISHED**

Details of offset requirements and obligations for this species as a result of residual impacts due the proposed action is addressed in Section 12 of the BDAR. Twenty-nine species credits are required to offset the residual impacts to *Plains-wanderer.*

- **DETAILS OF HOW THE CURRENT PUBLISHED NSW BIODIVERSITY ASSESSMENT METHOD (BAM) HAS BEEN APPLIED IN ACCORDANCE WITH THE OBJECTS OF THE EPBC ACT TO OFFSET SIGNIFICANT RESIDUAL ADVERSE IMPACTS**

The BDAR specifically addresses Section 11 of the BAM and provides information on the application of the no net loss standard and the Proposal biodiversity offset obligations. Credit calculations were quantified using the BAM-C Version 1.3.0.00.

- **DETAILS OF THE OFFSET PACKAGE TO COMPENSATE FOR SIGNIFICANT RESIDUAL IMPACTS INCLUDING DETAILS OF THE CREDIT PROFILES REQUIRED TO OFFSET THE ACTION IN ACCORDANCE WITH THE BAM AND/OR MAPPING AND DESCRIPTIONS OF THE EXTENT AND CONDITION OF THE RELEVANT HABITAT AND/OR THREATENED COMMUNITIES OCCURRING ON PROPOSED OFFSET SITES**

Section 12 of the BDAR outlines the biodiversity offset strategy for the proposal. The offset obligations will be met through implementing a combination of the following offset delivery options, being:

- the purchase and retirement of existing biodiversity credits currently available on the biodiversity credit register
- establishing a biodiversity stewardship site(s) on lands with like for like biodiversity values to those impacted by the proposal
- through making a payment into the Biodiversity Conservation Fund.

D-1.2.29 Regent Parrot (Eastern) (*Polytelis anthopeplus monarchoides*)

The Regent Parrot (eastern) is listed as Vulnerable under the EPBC Act and Endangered under the BC Act.

D-1.2.29.1 Description

The eastern subspecies of the Regent Parrot is confined to the semi-arid interior of south eastern mainland Australia. In NSW, it is confined to the southern Lower Western Region, mainly along the Murray River, from Kyalite, north west to Mallee Cliffs State Forest, and is also recorded near Wentworth and the Rufous River. Away from the Murray River, the subspecies is recorded at isolated localities including west of Moonlight Lake, Arumpo Station, and near Pooncarie. The current population size is estimated at 1500 breeding pairs (Baker-Gabb *et al.,* 2011).

Within this range, the eastern Regent Parrot occurs in riverine and mallee woodlands and forests, including River Red Gum (*Eucalyptus camaldulensis*) forests or woodlands and adjacent Black Box (*Eucalyptus largiflorens*) woodlands, and open mallee woodland or shrubland usually with a ground cover of spinifex (*Triodia*) or other grasses, supporting various eucalypts, especially Christmas Mallee (*Eucalyptus socialis*) and Yellow Mallee (*Eucalyptus costata*) Mallee, as well as Belah (*Allocasuarina cristata*), Buloke (*A. luehmannii*) or Slender Cypress Pine (*Callitris preissii*). As mallee habitats provide important foraging grounds, this species is dependent on mallee woodlands for survival (Baker-Gabb *et al.,* 2011).

Regent Parrot breeding is colonial, with up to 27 nests recorded in one colony. Nests are usually within 150 meters of each other with up to five nests recorded in a single tree. Nests are primarily located in hollow limbs, and sometimes located in a hollow entrance in the trunk. Large (mean 160 cm DBH), tall (mean 28 m), mature, healthy River Red Gums with many hollows, usually close to water are generally preferred (Baker-Gabb *et al.,* 2011).

Threats for the Regent Parrot include:

- clearing, degradation of mallee woodland and River Red Gums containing suitable nesting hollows along major rivers
- loss of habitat – loss of flyways between mallee woodland feeding and roosting areas and River Red Gum nesting areas
- altered hydrological regimes affecting River Red Gums and woodlands
- wildfires reducing the availability of seeds over large areas of mallee, and loss of nesting trees
- competition for nest hollows with feral birds such as Common Starling (*Sturnus vulgaris*) and Rock Dove (*Columba livia*), and native birds such as Little Corella (*Cacatua sanguinea*) and Yellow Rosella (*Platycercus elegans flaveolus*), and feral bees
- invasive plants causing competition in recruitment of River Red Gums
- mortality from vehicle strike (Baker-Gabb *et al.,* 2011).

D-1.2.29.2 Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- There is no approved Conservation Advice for this species.
- There is no Listing Advice for this species.
- The National Recovery Plan for the Regent Parrot (eastern subspecies) *Polytelis anthopeplus monarchoides* (Baker-Gabb & Hurley, 2011) was reviewed as part of this assessment.

Relevant adopted/made threat abatement plans include:

- Threat abatement plan for competition and land degradation by rabbits (Department of the Environment and Energy, 2016a).

Relevant survey guidelines for this species include:

- *Survey Guidelines for Australia's Threatened Birds* (Department of the Environment, Water, Heritage and the Arts, 2010).

D-1.2.29.3 Is this part of an important population?

Under the Act, important populations are:

- likely to be key source populations either for breeding or dispersal
- likely to be necessary for maintaining genetic diversity
- at or near the limit of the species range.

This species was recorded during surveys. There are multiples records within and near the Proposal study area. The Regent Parrot (eastern) is restricted to a single population occurring in inland south-eastern Australia in the lower Murray-Darling basin region of South Australia, New South Wales and Victoria. Due to the restriction of this subspecies geographic range and fact that the entire subspecies is considered to be a single population (Baker-Gabb *et al.*, 2011), this population, including individuals occurring within the Proposal study area, can be considered as an important population under the criteria outlined in the Significant Impact Guidelines.

D-1.2.29.4 Specific impacts

This species was recorded at several locations over the 2019-2021 survey period from the Murrumbidgee crossing in the east to Monak and Red Cliff in the west associated with riparian River Red Gum/Black Box or Mallee habitats. Impacts may include clearance of Mallee and River Red Gum habitat suitable for foraging and nesting. Potential direct impacts may include injury or mortality during clearing works if conducted through the breeding season.

The potential for this species to receive injury or mortality from colliding with the future transmission lines is considered to be relatively low in Mallee areas as the birds generally fly just above Mallee canopies when using those habitats. When flying, it is most likely to fly about the mallee canopy and not to the height of the powerlines themselves, particularly when this species is known to move through intact areas of woodland and forest along intact wildlife corridors. Striking powerlines is not known to be a regular impact to this species. Within River Red Gum communities, the species flies at elevations below the canopy top and may be at risk of collision with powerline infrastructure.

This species primarily inhabits and breeds within River Red Gum areas such as those along the Murrumbidgee River, which is traversed by the Proposal area to the south of Balranald where the existing power easement exists. Principal foraging habitat is Mallee Woodlands, though foraging also occurs in riverine forests and woodlands. Mallee Woodland within 20 kilometres of nesting sites is critical foraging habitat for breeding birds. Birds move between the riverine nesting habitat and foraging sites along corridors of natural vegetation. Outside the breeding season birds may move away from the riverine plain, with birds observed in mallee over 60 kilometres from the river. However, there are very few records in NSW away from the Murray River during the non-breeding season and it has been speculated that most birds may join non-breeding flocks in Victoria. To the west of the Murrumbidgee River crossing, the Proposal area traverses through Mallee woodlands where Regent Parrots have been observed to sometimes occur during the, likely for foraging and moving through such habitats during twilight, presumably to roost in mallee communities.

Across three IBRA subregions, South Olary Plain, Lachlan and Murrumbidgee, a total of 32.91 ha of riparian vegetation communities, representing potential breeding habitat for the Regent Parrot, will be removed.

D-1.2.29.5 Significant impact assessment

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- **LEAD TO A LONG-TERM DECREASE IN THE SIZE OF AN IMPORTANT POPULATION**

This species was recorded during surveys either moving across or within mallee habitats associated with the Proposal study area during the day and moving across both mallee habitats and riparian habitats at the end of the day, when birds would be moving to roosting areas. Without preclearance surveys, the proposed action has the potential to injure individuals during clearing works, and there is a very small risk of powerline strike in tall riparian forests during the life of the transmission line. Nevertheless, it is considered unlikely that the proposed action would lead to a long-term decrease in the size of an important population.

- **REDUCE THE AREA OF OCCUPANCY OF AN IMPORTANT POPULATION**

The area of occupancy for the Regent Parrot is estimated to be 50,000 hectares (DoEE, 2019). Outside of the study area birds were observed using River Red Gum habitats at Euston and Robinvale, including nesting behaviour at Euston, and Mallee habitat to the south of Robinvale at Toltol 140 Bushland Reserve. Birds were also observed in both Mallee and Black Box habitat associated with the Sturt Highway south of the western sections of the Proposal area. The proposed action has potential to reduce the area of occupancy for this species to a minor degree where canopied habitats occur within the Proposal area. The proposed action would impact potential foraging habitat (i.e. Mallee Woodlands) and potential riparian breeding habitats associated with the Murrumbidgee River.

- **FRAGMENT AN EXISTING IMPORTANT POPULATION INTO TWO OR MORE POPULATIONS**

The Proposal study area is located within an already fragmented and disturbed landscape, thereby limiting the potential for any substantial additional fragmentation to occur. Given the ability for the Regent Parrot to disperse over and around cleared areas when are not large in extent, it is considered unlikely that the proposed action would fragment an existing important population of this species.

- **ADVERSELY AFFECT HABITAT CRITICAL TO THE SURVIVAL OF A SPECIES**

The recovery plan for this species (Baker-Gabb 2011) notes that the following are habitats critical to the survival of the eastern Regent Parrot:

- all known sites for nesting, food resources, water, shelter, essential travel routes, dispersal, and buffer areas, and
- all potential eastern Regent Parrot habitat within its 'current normal range'

The proposed action would impact on foraging habitat, such as mallee woodland, and potential riparian breeding habitat present within the proposal's Proposal area.

- **DISRUPT THE BREEDING CYCLE OF AN IMPORTANT POPULATION**

Mitigation measures recommended include pre-clearing surveys to identify any hollows containing breeding pairs prior to clearing, and if possible, and avoid clearing such trees where practicable. It is recommended to avoid clearing during the main breeding period of August to December.

The proposed action may impact upon the breeding cycle of locally present individuals by reducing the amount of foraging habitat for breeding birds in the areas within reach of the Murrumbidgee and Murray rivers, and by removing roosting and breeding habitat, particularly near watercourses.

- **MODIFY, DESTROY, REMOVE OR ISOLATE OR DECREASE THE AVAILABILITY OR QUALITY OF HABITAT TO THE EXTENT THAT THE SPECIES IS LIKELY TO DECLINE**

The proposed action would reduce the availability of suitable foraging habitat on a relatively small scale. However, given the surrounding landscape, it is unlikely that the proposed action would modify the existing environment to the extent that the species is likely to decline.

- **RESULT IN INVASIVE SPECIES THAT ARE HARMFUL TO A VULNERABLE SPECIES BECOMING ESTABLISHED IN THE VULNERABLE SPECIES' HABITAT**

The proposed action is considered unlikely to cause the establishment of competitive feral birds such as the Common Starling, Common Myna and Rock Dove.

- **INTRODUCE DISEASE THAT MAY CAUSE THE SPECIES TO DECLINE**

There are no known diseases causing potential species decline to the Regent Parrot.

- **INTERFERE SUBSTANTIALLY WITH THE RECOVERY OF THE SPECIES**

The proposed action is considered likely to interfere to a minor degree with the National Recovery Program or the Saving our Species program for the Regent Parrot by removal of critical habitat. The proposed action is contrary to the following action: protecting actual and potential nesting colonies, flight paths to foraging areas, and foraging habitat within 20 km of nest sites.

- **CONCLUSION**

This species was recorded flying over the Proposal area during surveys and the Proposal traverses habitats within the limited range of Regent Parrots within the wider locality. The Proposal would impact on foraging habitat such as Mallee Woodland, which is present in the Proposal area, this habitat is considered important to locally breeding birds as Mallee woodland within 20 kilometres of nesting sites (Murray River) is critical foraging habitat for breeding birds. The Proposal will also remove riparian habitats associated with the Murrumbidgee River south of Balranald, which represents potential breeding habitat for the Regent Parrot.

Mitigation measures have been included in the EIS such as pre-clearing surveys to identify any hollows containing breeding pairs prior to clearing, and if possible, avoid clearing such trees, especially in breeding season.

Overall, while an area of potential habitat will be impacted, no Regent Parrots have not yet been observed landing in the study area and contextually the area of potential breeding habitat to be impacted is small. In conclusion it is considered that a significant impact is not likely and ongoing measures such as hollow / nesting assessment and avoidance of clearing during breeding season will ensure that the species is appropriately protected to the greatest extent possible.

D-1.2.29.6 NSW Assessment Bilateral requirements

For each of the EPBC Act listed threatened species and communities and migratory species likely to be impacted by the action the EIS must provide a separate:

- **DESCRIPTION OF THE HABITAT (INCLUDING IDENTIFICATION AND MAPPING OF SUITABLE BREEDING HABITAT, SUITABLE FORAGING HABITAT, IMPORTANT POPULATIONS AND HABITAT CRITICAL FOR SURVIVAL), WITH CONSIDERATION OF, AND REFERENCE TO, ANY RELEVANT COMMONWEALTH GUIDELINES AND POLICY STATEMENTS INCLUDING LISTING ADVICE, CONSERVATION ADVICE AND RECOVERY PLAN**

A description of habitat for this sub-species of the Regent Parrot, important populations, habitat critical for survival and relevant Commonwealth documents are provided in Section 5.6.4.17 of the BDAR, with a map showing its modelled distribution provided in Figure D-1.29 below. A map showing the field verified locations of this vegetation within the study area is provided in Appendix D-2. Relevant Commonwealth guidelines and policy statements, including listing advice, conservation advice and recovery plan is provided in Section D-1.2.29.2 above.

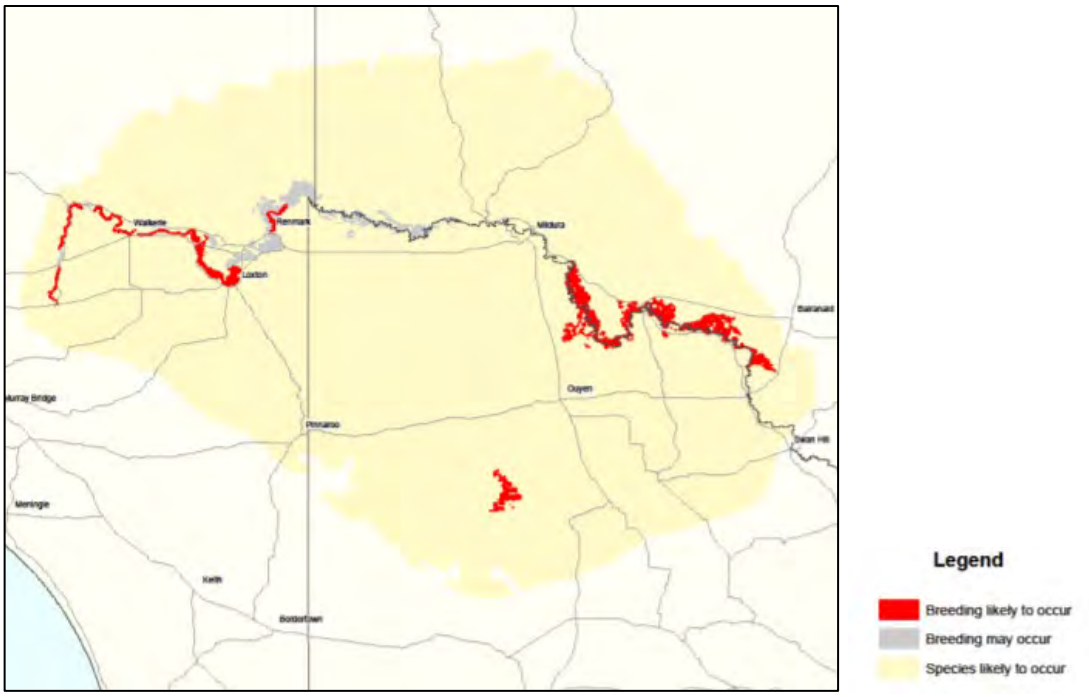


Figure D-1.29 Current distribution map for Regent Parrot (Baker-Gabb et. al. 2011)

- **DETAILS OF THE SCOPE, TIMING AND METHODOLOGY FOR STUDIES OR SURVEYS USED AND HOW THEY ARE CONSISTENT WITH (OR JUSTIFICATION FOR DIVERGENCE FROM) PUBLISHED AUSTRALIAN GOVERNMENT GUIDELINES AND POLICY STATEMENTS**

Field survey techniques used to undertake surveys were in general accordance with the *NSW guide for the BAM* (Department of Planning, Industry and Environment, 2020) with a detailed field verification method provided in Section 5.2 of the BDAR. Mapping of native vegetation and habitat extent within the Proposal site is required under section 4.1 of the BAM, with detailed requirements outlined in section 3.2 of the BAM 2020 Operational Manual. Field data was used to assign condition classes for any given observed habitat patch, where relevant.

Specific search methodologies, relevant surveyed habitats and survey effort for this species include:

- 20 min/2 ha bird surveys in mallee woodlands (65 surveys)
- Opportunistic bird surveys in mallee woodlands (641 person hrs)
- 20 min/2 ha bird surveys in riparian woodlands (2 surveys)
- Opportunistic bird surveys in riparian woodlands (68 person hrs)

- **DESCRIPTION OF THE SPECIFIC IMPACTS AND ITS REGARD TO THE FULL NATIONAL EXTENT OF THE SPECIES OR COMMUNITY'S RANGE**

The direct impacts of the Proposal on *Regent Parrot* include removal of approximately 32.91 ha of potential breeding habitat. The area of occupancy for the Regent Parrot is estimated to be 50,000 hectares (DoEE, 2019). The area of potential impact for *Regent Parrot* is mapped in Appendix D-2. Figure D-1.29 shows the current known generalised distribution of the eastern subspecies of the Regent Parrot (DAWE 2021).

- **DESCRIPTION OF THE SPECIFIC PROPOSED AVOIDANCE AND MITIGATION MEASURES TO DEAL WITH RELEVANT IMPACTS OF THE ACTION**

The proposed avoidance and mitigation measures are outlined in Section 8 & 10 of the BDAR. Detailed avoidance description for impacts relating to biodiversity values (including threatened species) are outlined in Section 8 of the BDAR. Regarding specific measures for this community, the following relevant mitigation measures are recommended for any related residual impacts to the species:

- positioning of the Proposal area to minimise clearance of this species' habitat
- establishment of no-go zones to protect mapped patches of habitat during construction.

- **IDENTIFICATION OF SIGNIFICANT RESIDUAL ADVERSE IMPACTS LIKELY TO OCCUR AFTER THE PROPOSED ACTIVITIES TO AVOID AND MITIGATE ALL IMPACTS ARE TAKEN INTO ACCOUNT**

The residual impact to *Regent Parrot* is estimated at 32.91 ha of potential breeding habitat removal.

- **A DESCRIPTION OF ANY OFFSETS PROPOSED TO ADDRESS RESIDUAL ADVERSE SIGNIFICANT IMPACTS AND HOW THESE OFFSETS WILL BE ESTABLISHED**

Details of offset requirements and obligations for this species as a result of residual impacts due the proposed action is addressed in Section 12 of the BDAR. Breeding habitat impacts generated eight hundred and seventy-one (871) species credits to offset the residual impacts to *Regent Parrot.*

- **DETAILS OF HOW THE CURRENT PUBLISHED NSW BIODIVERSITY ASSESSMENT METHOD (BAM) HAS BEEN APPLIED IN ACCORDANCE WITH THE OBJECTS OF THE EPBC ACT TO OFFSET SIGNIFICANT RESIDUAL ADVERSE IMPACTS**

The BDAR specifically addresses Section 11 of the BAM and provides information on the application of the no net loss standard and the Proposal biodiversity offset obligations. Credit calculations were quantified using the BAM-C Version 1.3.0.00.

- **DETAILS OF THE OFFSET PACKAGE TO COMPENSATE FOR SIGNIFICANT RESIDUAL IMPACTS INCLUDING DETAILS OF THE CREDIT PROFILES REQUIRED TO OFFSET THE ACTION IN ACCORDANCE WITH THE BAM AND/OR MAPPING AND DESCRIPTIONS OF THE EXTENT AND CONDITION OF THE RELEVANT HABITAT AND/OR THREATENED COMMUNITIES OCCURRING ON PROPOSED OFFSET SITES**

Section 12 of the BDAR outlines the biodiversity offset strategy for the proposal. The offset obligations will be met through implementing a combination of the following offset delivery options, being:

- the purchase and retirement of existing biodiversity credits currently available on the biodiversity credit register
- establishing a biodiversity stewardship site(s) on lands with like for like biodiversity values to those impacted by the proposal
- through making a payment into the Biodiversity Conservation Fund.

D-1.2.30 Superb Parrot (*Polytelis swainsonii*)

The Superb Parrot is listed as Vulnerable under the EPBC Act and BC Act.

D-1.2.30.1 Description

The Superb Parrot is a distinctive large, bright grass-green parrot with a long, narrow tail and sharply back-angled wings in flight. The Superb Parrot is found throughout central to south-eastern inland NSW.

On the South-western Slopes their core breeding area is roughly bounded by Cowra and Yass in the east, and Grenfell, Cootamundra and Coolac in the west. The other main breeding sites are in the Riverina along the corridors of the Murray, Edward and Murrumbidgee Rivers where birds are present all year round. Superb Parrots inhabit Box-Gum, Box-Cypress-pine and Boree Woodlands and River Red Gum Forest. In the Riverina the birds nest in the hollows of large trees (dead or alive) in mainly tall riparian River Red Gum Forest or Woodland between September and January. This species typically forages up to 10 km from nesting sites, primarily in grassy Box-Gum Woodland.

D-1.2.30.2 Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- Conservation Advice *Polytelis swainsonii* superb parrot (TSSC 2016). In effect under the EPBC Act from 02-May-2016
- There is no adopted or made Recovery Plan for this species, although a superseded plan exists: National Recovery Plan for the Superb Parrot (Baker-Gabb, D. 2011)
- No Threat Abatement Plan has been identified as being relevant for this species.

D-1.2.30.3 Is this part of an important population?

In accordance with the Matters of National Environmental Significance, Significant Impact Guidelines 1.1, the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the guidelines as a population that is necessary for a species' long-term survival and recovery (Department of the Environment, 2013).

Under the Act, important populations are:

- likely to be key source populations either for breeding or dispersal
- likely to be necessary for maintaining genetic diversity
- at or near the limit of the species range.

This species was recorded during ecological surveys and is known to occur within the region and utilise habitat for foraging and breeding. There are many records within and near the Proposal study area, specifically concentrated from southwest of Coleambally to Wagga Wagga. There are three main breeding areas identified for this species, one of which is adjacent to the proposed study area and mapped along the Murrumbidgee River, between Wagga Wagga and Toganmain Station.

As it is unclear how important these breeding areas are for dispersal, a precautionary approach has been taken and it is assumed that the study area contains an important population within the meaning of the guideline.

D-1.2.30.4 Specific impacts

Vegetation clearing for transmission line towers and associated infrastructure such as access roads and laydown areas, may reduce the availability of foraging habitat and large hollow-bearing trees as roosting and breeding habitat. Potential direct impacts may include injury or mortality during clearing works.

An area of approximately 41.69 ha of potential breeding habitat for the Superb Parrot will be impacted up on by the Proposal, generating some 1263 credits in offset calculations.

D-1.2.30.5 Significant assessment

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- **LEAD TO A LONG-TERM DECREASE IN THE SIZE OF AN IMPORTANT POPULATION**

This species was recorded during surveys. There are many records within and near the Proposal study area, specifically concentrated from Coleambally to Wagga Wagga. The proposed action has potential to impact breeding and foraging habitat for this species, which may include injury or mortality to a small number of individuals during clearing works. However, is it considered unlikely that the proposed action would lead to a long-term decrease in the size of an important population due to the frequency of observations and availability of surrounding habitat.

- **REDUCE THE AREA OF OCCUPANCY OF AN IMPORTANT POPULATION**

The proposed action is considered likely to impact foraging habitat for this species, within Box Gum Woodland and Red River Gum Forest, within 10 km from known nesting sites in riparian habitats, which are considered important habitat to this species. The proposed action has potential to reduce the area of occupancy for this species in this location.

- **FRAGMENT AN EXISTING IMPORTANT POPULATION INTO TWO OR MORE POPULATIONS**

The Proposal study area already occurs within a fragmented and disturbed landscape, thereby limiting the potential for any substantial additional fragmentation to occur. Given the ability for the Superb Parrot to disperse over and around cleared areas, and clearing will be limited to linear impacts, is it considered unlikely that the action would lead to a long-term decrease in the area of occupancy for Superb Parrots or fragment an existing important population of this species.

- **ADVERSELY AFFECT HABITAT CRITICAL TO THE SURVIVAL OF A SPECIES**

The proposed action would impact on foraging habitat, such as Box-Gum Woodland and Red River Gum Forest. The species is only known to forage up to 10 km from nesting sites. One of the three key breeding sites (Murrumbidgee River) is just outside the proposed study area near Wagga Wagga. If the proposed action potentially impacts suitable foraging habitat within 10 km of this key breeding site, the proposed action may adversely affect critical habitat for this species in this locality.

- **DISRUPT THE BREEDING CYCLE OF AN IMPORTANT POPULATION**

The proposed action may impact upon breeding cycle of locally occurring individuals by removing hollow-bearing trees and reducing foraging habitat for breeding birds near to the Murrumbidgee River. If the proposed action removes potential roosting and breeding habitat, particularly near watercourses this may disrupt and deter breeding in this area. Therefore, the proposed action may disrupt the breeding cycle of this species in this locality.

Mitigation measures are included in the EIS such as pre-clearing surveys to identify any hollows containing breeding pairs prior to clearing, and if possible, avoid clearing such trees.

- **MODIFY, DESTROY, REMOVE OR ISOLATE OR DECREASE THE AVAILABILITY OR QUALITY OF HABITAT TO THE EXTENT THAT THE SPECIES IS LIKELY TO DECLINE**

The proposed action would reduce the availability of suitable foraging and roosting habitat on a small scale. However, given the surrounding landscape and habitat availability, it is unlikely that the proposed action would cause change to the extent that the species is likely to decline.

- **RESULT IN INVASIVE SPECIES THAT ARE HARMFUL TO A VULNERABLE SPECIES BECOMING ESTABLISHED IN THE VULNERABLE SPECIES' HABITAT**

The proposed action is considered unlikely to cause the establishment of competitive feral birds, and other vertebrate pests such as cats and foxes.

- **INTRODUCE DISEASE THAT MAY CAUSE THE SPECIES TO DECLINE**

Psittacine beak and feather disease (PBFD): Superb parrots are susceptible to PBFD, a fatal disease confined to old and new world parrots. PBFD is typically transferred between adults and nestlings. The ongoing loss of nest hollows is likely to intensify competition and use of nest trees, and thus may increase the likelihood of transmission of the disease.

- **INTERFERE SUBSTANTIALLY WITH THE RECOVERY OF THE SPECIES**

The proposed action is considered likely to interfere to a minor degree with the National Recovery Program (DSE 2011) or the Saving our Species program for the Superb Parrot.

The proposed action is contrary to the following action within the National Recovery Program: protect known and potential remnant Superb Parrot habitat, particularly Box-Gum, Box-Ironbark and Weeping Myall Woodland and River Red Gum Forest, with large hollow-bearing trees.

- **CONCLUSION**

This species was recorded during surveys and is known to utilise the Proposal study area and habitat within the locality. The proposed action is likely to impact foraging habitat, such as Box-Gum Woodland and Red River Gum Forest and may impact potential breeding habitat.

Mitigation measures are recommended in the EIS such as pre-clearing surveys to identify any hollows containing breeding pairs prior to clearing, and if possible, avoid clearing such trees.

Overall, while an area of potential habitat will be impacted, contextually the area of potential breeding habitat to be impacted is small. In conclusion it is considered that a significant impact is not likely and ongoing measures such as hollow / nesting assessment and avoidance of clearing during breeding season will ensure that the species is appropriately protected to the greatest extent possible.

D-1.2.30.6 NSW Assessment Bilateral requirements

For each of the EPBC Act listed threatened species and communities and migratory species likely to be impacted by the action the EIS must provide a separate:

- **DESCRIPTION OF THE HABITAT (INCLUDING IDENTIFICATION AND MAPPING OF SUITABLE BREEDING HABITAT, SUITABLE FORAGING HABITAT, IMPORTANT POPULATIONS AND HABITAT CRITICAL FOR SURVIVAL), WITH CONSIDERATION OF, AND REFERENCE TO, ANY RELEVANT COMMONWEALTH GUIDELINES AND POLICY STATEMENTS INCLUDING LISTING ADVICE, CONSERVATION ADVICE AND RECOVERY PLAN**

A description of habitat for this species, important populations, habitat critical for survival and relevant Commonwealth documents are provided in Section D-1.2.30.2, with a map showing its modelled distribution provided in Figure D-1.30. A map showing the field verified locations of this vegetation within the study area is provided in Appendix D-2.

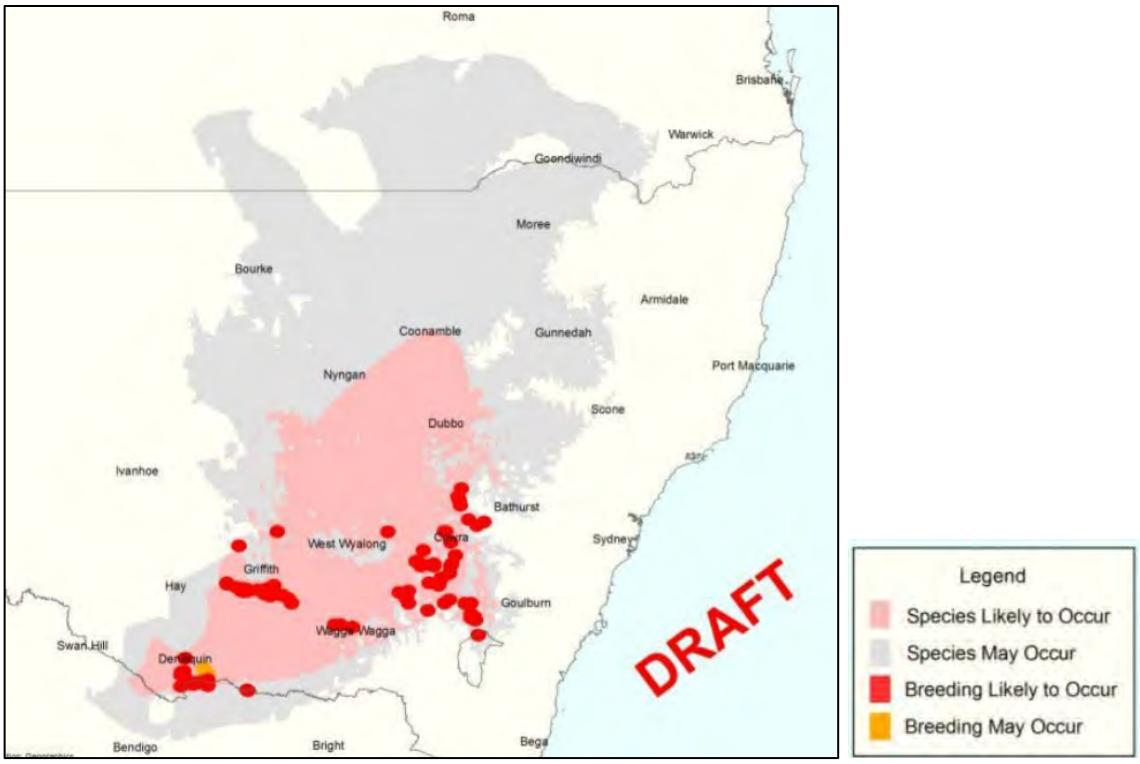


Figure D-1.30 Draft current distribution map for Superb Parrot (Baker-Gabb et. al. 2011)

- **DETAILS OF THE SCOPE, TIMING AND METHODOLOGY FOR STUDIES OR SURVEYS USED AND HOW THEY ARE CONSISTENT WITH (OR JUSTIFICATION FOR DIVERGENCE FROM) PUBLISHED AUSTRALIAN GOVERNMENT GUIDELINES AND POLICY STATEMENTS**

Field survey techniques used to undertake surveys were in general accordance with the *NSW guide for the BAM* (Department of Planning, Industry and Environment, 2020) with a detailed field verification method provided in Section 5.2 of the BDAR. Mapping of native vegetation and habitat extent within the Proposal site is required under section 4.1 of the BAM, with detailed requirements outlined in section 3.2 of the BAM 2020 Operational Manual. Field data was used to assign condition classes for any given observed habitat patch, where relevant.

Specific search methodologies, relevant surveyed habitats and survey effort for this species include:

- Formal 20 min/2 ha bird surveys were conducted throughout the range of the Superb Parrot; 2 surveys in riparian habitats and 23 surveys within grassy woodland habitats.
- A minimum of 279 hrs of opportunistic survey was conducted across riparian (68 hrs) and grassy woodland (211 hrs) throughout the range of the Superb Parrot.

- **DESCRIPTION OF THE SPECIFIC IMPACTS AND ITS REGARD TO THE FULL NATIONAL EXTENT OF THE SPECIES OR COMMUNITY'S RANGE**

The direct impacts of the Proposal on *Superb Parrot* include removal of approximately 41.69 ha of potential breeding habitat. The area of potential impact for *Superb Parrot* is mapped in Appendix D-2. Figure D-1.30 shows the current known generalised distribution, with the estimated habitat extent unknown (DAWE 2021). Population numbers are estimated to range from 5,000–8,000 birds (Baker-Gabb et. al. 2011).

- **DESCRIPTION OF THE SPECIFIC PROPOSED AVOIDANCE AND MITIGATION MEASURES TO DEAL WITH RELEVANT IMPACTS OF THE ACTION**

The proposed avoidance and mitigation measures are outlined in Section 8 & 10 of the BDAR. Detailed avoidance description for impacts relating to biodiversity values (including threatened species) are outlined in Section 8. Regarding specific measures for this community, the following relevant mitigation measures are recommended for any related residual impacts to the species:

- positioning of the Proposal area to minimise clearance of this species' habitat
- establishment of no-go zones to protect mapped patches of habitat during construction.

- **IDENTIFICATION OF SIGNIFICANT RESIDUAL ADVERSE IMPACTS LIKELY TO OCCUR AFTER THE PROPOSED ACTIVITIES TO AVOID AND MITIGATE ALL IMPACTS ARE TAKEN INTO ACCOUNT**

The residual impact to *Superb Parrot* is estimated at the removal of 41.69 ha of potential breeding habitat.

- **A DESCRIPTION OF ANY OFFSETS PROPOSED TO ADDRESS RESIDUAL ADVERSE SIGNIFICANT IMPACTS AND HOW THESE OFFSETS WILL BE ESTABLISHED**

Details of offset requirements and obligations for this species as a result of residual impacts due the proposed action is addressed in Section 12 of the BDAR. 1263 species credits are required to offset the residual impacts to breeding habitat for the *Superb Parrot.*

- **DETAILS OF HOW THE CURRENT PUBLISHED NSW BIODIVERSITY ASSESSMENT METHOD (BAM) HAS BEEN APPLIED IN ACCORDANCE WITH THE OBJECTS OF THE EPBC ACT TO OFFSET SIGNIFICANT RESIDUAL ADVERSE IMPACTS**

The BDAR specifically addresses Section 11 of the BAM and provides information on the application of the no net loss standard and the Proposal biodiversity offset obligations. Credit calculations were quantified using the BAM-C Version 1.3.0.00.

- **DETAILS OF THE OFFSET PACKAGE TO COMPENSATE FOR SIGNIFICANT RESIDUAL IMPACTS INCLUDING DETAILS OF THE CREDIT PROFILES REQUIRED TO OFFSET THE ACTION IN ACCORDANCE WITH THE BAM AND/OR MAPPING AND DESCRIPTIONS OF THE EXTENT AND CONDITION OF THE RELEVANT HABITAT AND/OR THREATENED COMMUNITIES OCCURRING ON PROPOSED OFFSET SITES**

Section 12 of the BDAR outlines the biodiversity offset strategy for the proposal. The offset obligations will be met through implementing a combination of the following offset delivery options, being:

- the purchase and retirement of existing biodiversity credits currently available on the biodiversity credit register
- establishing a biodiversity stewardship site(s) on lands with like for like biodiversity values to those impacted by the proposal
- through making a payment into the Biodiversity Conservation Fund.

D-1.2.31 Australian Painted Snipe (*Rostratula australis*)

The Australasian Painted Snipe is listed as Endangered under the EPBC Act and the BC Act.

D-1.2.31.1 Description

The Australian painted snipe occurs in shallow freshwater (occasionally brackish) wetlands, both ephemeral and permanent, such as lakes, swamps, claypans, inundated or waterlogged grassland/saltmarsh, dams, rice crops, sewage farms and bore drains, generally with a good cover of grasses, rushes and reeds, low scrub, Muehlenbeckia spp. (lignum), open timber or samphire. It has been recorded at wetlands in all states and territories and is most common in eastern Australia (Department of Sustainability Environment Water Population and Communities 2013).

Important areas for this species in the past have included the Murray-Darling Basin (particularly the Riverina of Victoria and New South Wales), Queensland Channel Country, Fitzroy Basin of Central Queensland, south-eastern South Australia and adjacent parts of Victoria (Department of Sustainability Environment Water Population and Communities 2013). Records published over the past twenty years provide evidence for Australian painted snipe occurring more widely and frequently in the remote arid and tropical regions of Australia than was previously thought (Department of Sustainability Environment Water Population and Communities 2013).

This species has some scattered records throughout the broader region surrounding the study area.

D-1.2.31.2 Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- The *Approved Conservation Advice for Rostratula australis (Australian painted snipe)* (Department of Sustainability Environment Water Population and Communities 2013) was reviewed as part of this assessment.
- The *Commonwealth Listing Advice on Rostratula australis (Australian Painted Snipe)* (Threatened Species Scientific Committee 2013) was reviewed as part of this assessment.
- There is no adopted or made Recovery Plan for this species.
- No Threat Abatement Plan has been identified as being relevant for this species

Relevant survey guidelines for this species include:

- *Survey Guidelines for Australia's Threatened Birds* (Department of the Environment Water Heritage and the Arts 2010).

D-1.2.31.3 Specific impacts

Australian Painted Snipe has potential habitat within the study area in the Lachlan, Murrumbidgee and Lower Slopes subregions in the form of associated PCTs 5, 7, 8, 11, 13, 17, 24, 47, 53, 160, 182, 249 and ephemeral wetlands which may be intermittently used under suitable conditions. Australian Painted Snipe was considered to have a moderate likelihood of using these habitats on an intermittent basis. This species was not recorded within the study area despite targeted surveys and no direct impacts are likely to occur from the Proposal to habitats in which this species is most likely to occur. However, this assessment has been completed as a precautionary measure as records do occur in association with riverine and riparian habitats in the broader region.

D-1.2.31.4 Significant impact criteria

An action is likely to have a significant impact on an Endangered or Critically Endangered species if there is a real chance or possibility that it will:

- **LEAD TO A LONG-TERM DECREASE IN THE SIZE OF A POPULATION**

This species has not been recorded within the Proposal study area. Associated PCTs including PCT 5, 7, 8, 11, 13, 17, 24, 47, 53, 160, 182 and 249 and ephemeral wetlands presenting potential habitat for the species were present within the Proposal study area and may be used by the species on an intermittent basis under suitable conditions. However, there will be no direct impacts to those permanent water bodies that are likely to provide suitable habitat for this species, and the Proposal is unlikely to result in fragmentation between habitats beyond that already existing in the landscape. As there will be no direct impacts to permanent water bodies that are likely to provide suitable habitat for this species the Proposal is considered unlikely to significantly decrease the size of any population that may occur. Mitigation measures will also be implemented to prevent indirect impacts to any adjacent areas of retained habitat.

- **FRAGMENT AN EXISTING POPULATION INTO TWO OR MORE POPULATIONS**

The Proposal study area occurs within an existing fragmented and disturbed landscape, thereby limiting the potential for any substantial additional fragmentation to occur. In addition, the Proposal is unlikely to have any direct impact to aquatic/riparian habitat most likely to be used by this species. Given the capacity for Australian Painted Snipe to disperse over and around these cleared areas, and the cleared areas do not occur as large broad acre areas, is it considered unlikely that the action would result in increased fragmentation to an existing population of this species.

- **REDUCE THE AREA OF OCCUPANCY OF THE SPECIES**

This species has not been recorded within the Proposal study area Associated PCTs including PCT 5, 7, 8, 11, 13, 17, 24, 47, 53, 160, 182 and 249 and ephemeral wetlands presenting potential habitat for the species were present within the Proposal study area and may be used by the species on an intermittent basis under suitable conditions. However, there will be no direct impacts to any aquatic habitat likely to be utilised by this species - the maximum aquatic impact would be the removal or trimming of tree canopy on riverbanks to facilitate the construction and operation of the powerlines spanning riparian areas. As such, the Proposal is considered unlikely to reduce the area of the occupancy for this species.

The species is widespread and is not considered to have a limited geographic distribution. Its current extent of occurrence estimated to be 7,100,000 km^2 and the species' area of occupancy is estimated to be 2,000 km^2 (Department of Sustainability Environment Water Population and Communities 2013).

- **FRAGMENT AN EXISTING POPULATION INTO TWO OR MORE POPULATIONS**

The Proposal study area is within an already fragmented and disturbed landscape, thereby limiting the potential for any substantial additional fragmentation to occur. In addition, the Proposal is unlikely to have any direct impact to aquatic/riparian habitat most likely to be used by this species. Given the capacity for Australian Painted Snipe to disperse over and around these cleared areas, and the cleared areas do not occur as large broad acre areas, is it considered unlikely that the action would result in increased fragmentation to an existing population of this species.

- **ADVERSELY AFFECT HABITAT CRITICAL TO THE SURVIVAL OF A SPECIES**

Habitat critical to the survival of a species refers to areas that are necessary:

- for activities such as foraging, breeding, roosting, or dispersal
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
- to maintain genetic diversity and long-term evolutionary development, or
- for the reintroduction of populations or recovery of the species or ecological community. (Department of the Environment Water Heritage and the Arts 2013).

There is no habitat listed as critical to the survival of these species under the EPBC Act (Department of Agriculture Water and the Environment 2021). The most important habitat listed for this species, in regard to breeding is ephemeral wetlands of the Murray-Darling Basin (Department of Sustainability Environment Water Population and Communities 2013). Though the Proposal does occur through these areas of identified critical habitat, no waterbodies suitable for use by this species are likely to be directly impacted as a result of the proposal. Consequently, the proposed action is unlikely to adversely affect habitat critical to the survival of the species.

- **DISRUPT THE BREEDING CYCLE OF A POPULATION**

No waterbodies will be directly impacted so it is considered unlikely that the action would adversely disrupt the breeding cycle of any important population of the species. Mitigation measures will be implemented to prevent indirect impacts to any adjacent areas of retained habitat.

- **MODIFY, DESTROY, REMOVE OR ISOLATE OR DECREASE THE AVAILABILITY OR QUALITY OF HABITAT TO THE EXTENT THAT THE SPECIES IS LIKELY TO DECLINE**

Ephemeral wetlands presenting potential habitat for the species were present within the Proposal study area and may be used by the species on an intermittent basis under suitable conditions. However, there will be no direct impacts to any aquatic habitat likely to be utilised by this species - the maximum aquatic impact would be the removal or trimming of tree canopy on riverbanks to facilitate the construction and operation of the powerlines spanning riparian areas. As there will be no direct impacts to water bodies that are likely to provide suitable habitat for this species the Proposal is considered unlikely to result in the modification, removal, isolation, or decreased availability or quality of habitat to the extent that the species is likely to decline. Mitigation measures will be implemented to prevent indirect impacts adjacent areas of retained habitat.

- **RESULT IN INVASIVE SPECIES THAT ARE HARMFUL TO A CRITICALLY ENDANGERED OR ENDANGERED SPECIES BECOMING ESTABLISHED IN THE ENDANGERED OR CRITICALLY ENDANGERED SPECIES' HABITAT**

Adhering to mitigation measures such as weed and pest management plans, and vehicle weed hygiene, would prevent invasive weeds and vertebrate pests such as cats and foxes establishing in wetland habitat areas.

- **INTRODUCE DISEASE THAT MAY CAUSE THE SPECIES TO DECLINE**

There are no known diseases causing potential species decline to the Australian Painted Snipe.

- **INTERFERE SUBSTANTIALLY WITH THE RECOVERY OF THE SPECIES**

There is no adopted or made Recovery Plan for this species. The proposed action would not interfere with the regional priority actions for recovery identified in the approved conservation advice (Department of Sustainability Environment Water Population and Communities 2013) or with any actions identified under the NSW Saving Our Species recovery strategy (Office of Environment & Heritage 2017). As such, the proposed action is unlikely to interfere with the recovery of the species.

- **CONCLUSION**

This species has not been recorded within the Proposal study area. Potential habitat occurs within the study area in the Lachlan, Murrumbidgee and Lower Slopes subregions in the form of associated PCTs 5, 7, 8, 11, 13, 17, 24, 47, 53, 160, 182, 249 and ephemeral wetlands which may be intermittently used under suitable conditions. Australian Painted Snipe was considered to have a moderate likelihood of using these habitats on an intermittent basis. No direct impacts are likely to occur from the Proposal to habitats in which this species is most likely to occur and mitigation measures will be implemented to prevent indirect impacts to adjacent areas of retained habitat.

Given that there would be no direct impact to waterbodies and mitigation measures will be implemented to prevent indirect impacts to adjacent areas of retained habitat it is unlikely that the proposed action would have significant impact on the species.

D-1.2.31.5 NSW Assessment Bilateral requirements

- **DESCRIPTION OF THE HABITAT (INCLUDING IDENTIFICATION AND MAPPING OF SUITABLE BREEDING HABITAT, SUITABLE FORAGING HABITAT, IMPORTANT POPULATIONS AND HABITAT CRITICAL FOR SURVIVAL), WITH CONSIDERATION OF, AND REFERENCE TO, ANY RELEVANT COMMONWEALTH GUIDELINES AND POLICY STATEMENTS INCLUDING LISTING ADVICE, CONSERVATION ADVICE AND RECOVERY PLAN**

The *Approved Conservation Advice for* Rostratula australis *(Australian painted snipe)* (Department of Sustainability Environment Water Population and Communities 2013) states that the Australian painted snipe occurs in shallow freshwater (occasionally brackish) wetlands, both ephemeral and permanent, such as lakes, swamps, claypans, inundated or waterlogged grassland/saltmarsh, dams, rice crops, sewage farms and bore drains, generally with a good cover of grasses, rushes and reeds, low scrub, Muehlenbeckia spp. (lignum), open timber or samphire (Department of Sustainability Environment Water Population and Communities 2013). It has been recorded at wetlands in all states and territories and is most common in eastern Australia (Department of Sustainability Environment Water Population and Communities 2013). Important areas for this species in the past have included the Murray-Darling Basin (particularly the Riverina of Victoria and New South Wales), Queensland Channel Country, Fitzroy Basin of Central Queensland, south-eastern South Australia and adjacent parts of Victoria (Department of Sustainability Environment Water Population and Communities 2013). Records published over the past twenty years provide evidence for Australian painted snipe occurring more widely and frequently in the remote arid and tropical regions of Australia than was previously thought (Department of Sustainability Environment Water Population and Communities 2013). The *Commonwealth Listing Advice on Rostratula australis (Australian Painted Snipe)* (Threatened Species Scientific Committee 2013) provides a similar description.

There is no adopted or made Recovery Plan for this species. No Threat Abatement Plan has been identified as being relevant for this species.

Associated PCTs including PCTs 5, 7, 8, 11, 13, 17, 24, 47, 53, 160, 182, 249 and ephemeral wetlands presenting potential habitat for the species are present in the study area which may be intermittently used under suitable conditions. However, no direct impacts are likely to occur from the Proposal to habitats in which this species is most likely to occur and mitigation measures will be implemented to prevent indirect impacts to adjacent areas of retained habitat. Consequently, no significant impact to habitat as a result of the Proposal is expected.

- **DETAILS OF THE SCOPE, TIMING AND METHODOLOGY FOR STUDIES OR SURVEYS USED AND HOW THEY ARE CONSISTENT WITH (OR JUSTIFICATION FOR DIVERGENCE FROM) PUBLISHED AUSTRALIAN GOVERNMENT GUIDELINES AND POLICY STATEMENTS**

Threatened bird surveys completed within the Proposal study area were carried out in accordance with the *Survey Guidelines for Australia's Threatened Birds* (Department of the Environment Water Heritage and the Arts 2010). Habitat assessments were undertaken to assess the likelihood of threatened species of animal (those species known or predicted to occur within the locality from the literature and database review) occurring within the Proposal study area. Fauna habitat assessments were the primary assessment tool in assessing whether threatened species were likely to occur within the Proposal study area. The primary technique used for surveying birds were 20-minute diurnal bird searches. The survey effort for Australian Painted Snipe is outlined in Table D-1.19.

Table D-1.19 Summary of survey effort for Australasian Bittern

FAUNA GROUP	SURVEY TECHNIQUE	SURVEY EFFORT	OPTIMUM SURVEY PERIOD	DATES SURVEYED
Wetlands – Miscellaneous ecosystem may include PCT11 during times of inundation.				
Threatened Migratory and Nomadic resident shorebirds	Targeted wetland surveys and habitat assessments	1 x 20 min/2 ha formal bird surveys 34-person hours of opportunistic surveys	All year – where suitable conditions occur	20-22 July 2020 7 Dec 2021
Riverine Woodlands/wetlands –PCT11, PCT13, PCT15, PCT17, PCT63				
Wetland Birds	Targeted wetland surveys and habitat assessments	9 x 20 min/2 ha formal bird surveys 76-person hours of opportunistic surveys	All year – where suitable conditions occur	20-22 July 2020 7 Dec 2021

– **DESCRIPTION OF THE SPECIFIC IMPACTS AND ITS REGARD TO THE FULL NATIONAL EXTENT OF THE SPECIES OR COMMUNITY'S RANGE**

Species associated PCTs including PCTs 5, 7, 8, 11, 13, 17, 24, 47, 53, 160, 182, 249 and ephemeral wetlands presenting potential habitat for the species are present in the study area which may be intermittently used under suitable conditions. However, no direct impacts are likely to occur from the Proposal to habitats in wetland habitats most likely to be used by the species and no significant impact is likely to occur.

Figure D-1.31 shows the current known generalised distribution from the Departments Species of National Environmental Significance dataset which is an indicative distribution map of the present distribution of the species based on best available knowledge. Any population of Australian Painted Snipe within the Proposal study area would not be near the edge of the extent of the known distribution of the species.

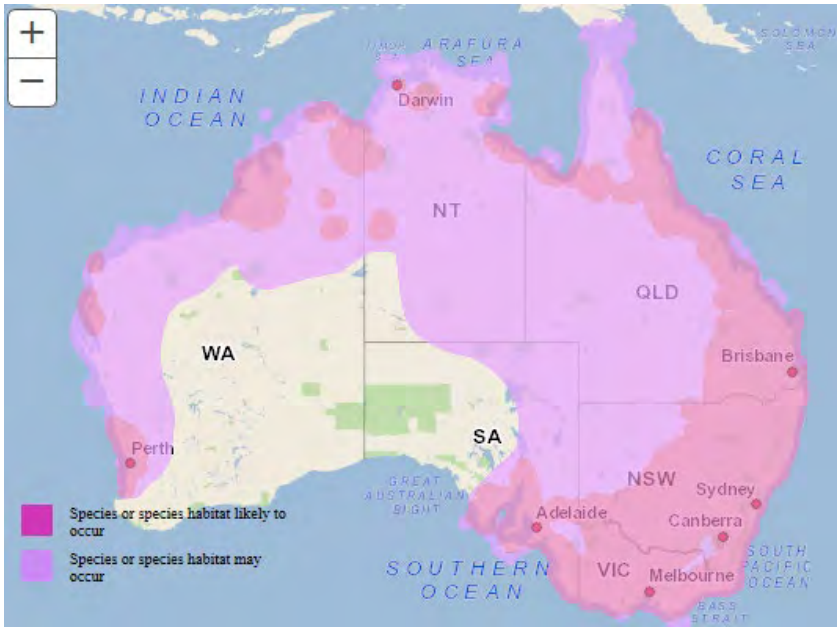


Figure D-1.31 Current distribution map for Australian Painted Snipe taken from the SPRAT

- **DESCRIPTION OF THE SPECIFIC PROPOSED AVOIDANCE AND MITIGATION MEASURES TO DEAL WITH RELEVANT IMPACTS OF THE ACTION**

The proposed avoidance and mitigation measures are outlined in Section 8 & 10 of the BDAR. Detailed avoidance description for impacts relating to biodiversity values (including threatened species) are outlined in Section 8. Mitigation measures to be implemented are outlined in Section 11. No specific measures for the Australian Painted Snipe are identified.

- **IDENTIFICATION OF SIGNIFICANT RESIDUAL ADVERSE IMPACTS LIKELY TO OCCUR AFTER THE PROPOSED ACTIVITIES TO AVOID AND MITIGATE ALL IMPACTS ARE TAKEN INTO ACCOUNT**

Details of offset requirements and obligations for this species as a result of residual impacts due the proposed action is addressed in Section 12 of the BDAR. No species credits are required to offset the residual impacts to the *Australian Painted Snipe*..

- **A DESCRIPTION OF ANY OFFSETS PROPOSED TO ADDRESS RESIDUAL ADVERSE SIGNIFICANT IMPACTS AND HOW THESE OFFSETS WILL BE ESTABLISHED**

Details of offset requirements and obligations for this species as a result of residual impacts due the proposed action is addressed in Section 12 of the BDAR.

- **DETAILS OF HOW THE CURRENT PUBLISHED NSW BIODIVERSITY ASSESSMENT METHOD (BAM) HAS BEEN APPLIED IN ACCORDANCE WITH THE OBJECTS OF THE EPBC ACT TO OFFSET SIGNIFICANT RESIDUAL ADVERSE IMPACTS**

The BDAR specifically addresses Section 11 of the BAM and provides information on the application of the no net loss standard and the Proposal biodiversity offset obligations. Credit calculations were quantified using the BAM-C Version 1.3.0.00.

- **DETAILS OF THE OFFSET PACKAGE TO COMPENSATE FOR SIGNIFICANT RESIDUAL IMPACTS INCLUDING DETAILS OF THE CREDIT PROFILES REQUIRED TO OFFSET THE ACTION IN ACCORDANCE WITH THE BAM AND/OR MAPPING AND DESCRIPTIONS OF THE EXTENT AND CONDITION OF THE RELEVANT HABITAT AND/OR THREATENED COMMUNITIES OCCURRING ON PROPOSED OFFSET SITES**

Section 12 of the BDAR outlines the biodiversity offset strategy for the proposal. The offset obligations will be met through implementing a combination of the following offset delivery options, being:

- the purchase and retirement of existing biodiversity credits currently available on the biodiversity credit register
- establishing a biodiversity stewardship site(s) on lands with like for like biodiversity values to those impacted by the proposal
- through making a payment into the Biodiversity Conservation Fund.

D-1.2.32 Koala (*Phascolarctos cinereus*)

Koala is listed as Vulnerable under the EPBC Act and the BC Act.

D-1.2.32.1 Description

The range of the Koala differs slightly between the biological species range and listed species range. The biological species range extends from north-eastern Queensland to the south-east corner of SA. Several sub-populations of the biological species occur outside this range in south-eastern SA (i.e., Kangaroo Island) and some parts of Victoria, due to translocations. The listed species range extends from north-eastern Queensland to the Victorian border.

Distribution of the Koala is influenced by altitude (generally limited to <800 m above sea level) tied to temperature. Distribution is also influenced by leaf moisture at the western and northern ends of the range. Koala population density is typically greater towards the coast than inland in these areas (Department of Agriculture Water and the Environment 2021).

In NSW, Koala populations are found on the central and north coasts, southern highlands, southern and northern tablelands, Blue Mountains, southern coastal forests and some smaller populations on the plains west of the Great Dividing Range (Department of Planning Industry and Environment 2021).

Koalas naturally inhabit a range of temperate, sub-tropical and tropical forest, woodland and semi-arid communities dominated by Eucalyptus species. They are a leaf-eating specialist that feed primarily during dawn, dusk or night. Koalas feed primarily on the foliage of *Eucalyptus spp*; though may sometimes consume *Corymbia spp*., *Angophora spp*. and *Lophostemon spp*. and occasionally *Leptospermum spp*. and *Melaleuca spp*. Individual Koalas typically get their nutrition from just one or a few species present at a site (Department of Agriculture Water and the Environment 2021).

Koalas typically give birth between October and May and can potentially produce one offspring each year. Young remain in the pouch for 6-8 months then remain with their mothers until they become dependent at about 12 months of age (Department of Agriculture Water and the Environment 2021)..

D-1.2.32.2 Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- The *Approved Conservation Advice for* Phascolarctos cinereus *(combined populations in Queensland, New South Wales and the Australian Capital Territory* (Commonwealth of Australia 2012) was reviewed as part of this assessment.
- The *Listing advice for* Phascolarctos cinereus *(Koala)* (NSW Scientific Commitee 2019) was reviewed as part of this assessment.
- There is no adopted or made Recovery Plan for this species.

No threat abatement plan has been identified as being relevant for this species.

Relevant survey guidelines for this species include:

- *Survey Guidelines for Australia's Threatened Mammals* (Ausgrid 2011).

D-1.2.32.3 Specific impacts

There are PCT's within the study that have habitat attributes that are favoured by Koalas, including PCTs – 5, 7, 8, 11, 13, 15, 74, 75, 76, 80, 110, 249, 267, 277. Koala records in the localities that the Proposal area traverses are sparse. To the east of Lockhart there is a record from 1920 and there are five records from the vicinity of Wagga Wagga, four from 2004 and the fifth record is from 1965 (Atlas of Living Australia, 16-12-2021). Although there are no current local records for Koala on fauna data bases, land holders in the Bundure locality of study area report Koalas occurring along the riparian corridor of Colombo Creek. While the majority of the study area does not contain vegetation patches of sufficient size or of sufficient continuity to allow Koalas to link patches long-term, a few riparian corridors offer continuous vegetation, which may support sparse populations of Koala on the Murrumbidgee, Colombo Creek and Yanco Creek. Vegetation clearing will be undertaken for transmission line towers and associated infrastructure such as access tracks, and canopy trees will be managed through the life of the Proposal to prevent electricity arcing to earth. The Proposal will widen the power easement corridor at the Murrumbidgee crossing and introduce corridors at Colombo and Yanco Creeks, although they will be relatively narrow in width. Clearing of trees for the Proposal and its ongoing maintenance will not represent a sufficient loss of vegetation to prevent Koalas from moving between patches.

Vegetation clearing will reduce the availability of potential habitat for local Koala populations, if present, by a very small extent. Potential direct impacts, although highly unlikely, could include injury or mortality during clearing works.

D-1.2.32.4 Is this an important population?

In accordance with the Significant Impact Guidelines the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the guidelines as a population that is necessary for a species' long-term survival and recovery (Department of Environment Water Heritage and the Arts 2008). Under the EPBC Act, important populations are:

- likely to be key source populations either for breeding or dispersal
- likely to be necessary for maintaining genetic diversity
- at or near the limit of the species range.

This species was not recorded in the Proposal study area despite targeted surveys. Predicted habitat is available in multiple PCTs within the Murrumbidgee, Lower Slopes and Inland Slopes subregions. Scattered old records and potential habitat occur in the east of the study area. The study area also intersects one LGA protected under the Koala State Environmental Planning Policy (Koala Habitat Protection) 2021. The Koala is highly rare in the vicinity of the study area and any individuals persisting may be important for enabling the species to continue in the region.

D-1.2.32.5 Significant impact criteria

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- **LEAD TO A LONG-TERM DECREASE IN THE SIZE OF AN IMPORTANT POPULATION**

The proposed action is unlikely to have the potential to cause injury or mortality to individuals during clearing works, and is it considered unlikely that the proposed action would lead to a long-term decrease in the size of an important population.

- **REDUCE THE AREA OF OCCUPANCY OF AN IMPORTANT POPULATION**

Not considered to be part of an important population. The proposed action is unlikely to significantly reduce the area of occupancy for this species in this location considering the available habitat in the surrounding landscape.

- **FRAGMENT AN EXISTING IMPORTANT POPULATION INTO TWO OR MORE POPULATIONS**

Not considered to be part of an important population. The maximum cleared area for a single tower footprint or laydown area would not exceed 0.5 ha, and the easement width of the transmission line would be a maximum of approximately 80 meters (with full clearing not always being required). The Proposal study area is within an already fragmented and disturbed landscape, thereby limiting the potential for any substantial additional fragmentation to occur. Given this species ability to disperse over and around these cleared areas, it is considered unlikely that the proposed action would fragment an existing important population of this species significantly beyond current fragmentation.

- **ADVERSELY AFFECT HABITAT CRITICAL TO THE SURVIVAL OF A SPECIES**

No critical habitat is currently listed for this species (Department of Agriculture Water and the Environment 2021). Habitat critical to the survival of a species also refers to areas that are necessary:

- for activities such as foraging, breeding, roosting, or dispersal
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
- to maintain genetic diversity and long-term evolutionary development, or
- for the reintroduction of populations or recovery of the species or ecological community.

The habitat within the subject land represents a small component of locally available habitat for the species and the species is very sporadically throughout habitat in the broader region. As such, the habitat within the subject land is unlikely to be significant in terms of species dispersal, genetic diversity, reintroduction, recovery or long-term maintenance. Preferred feed tree species occur widely within the region. The subject land may be used on an intermittent basis during local movements but is unlikely to be significant in terms of species dispersal, genetic diversity,

reintroduction, recovery or long-term maintenance. The Proposal is therefore unlikely affect habitat of critical importance to these species.

- **DISRUPT THE BREEDING CYCLE OF AN IMPORTANT POPULATION**

Not applicable as an 'important population' is unlikely to exist in the subject land (see above).

- **MODIFY, DESTROY, REMOVE OR ISOLATE OR DECREASE THE AVAILABILITY OR QUALITY OF HABITAT TO THE EXTENT THAT THE SPECIES IS LIKELY TO DECLINE**

The lack of recent records within the locality and lack of highly suitable habitat within the subject land mean the area is likely to be used rarely, if at all. Although the site does contain preferred feed tree species, similar and preferable habitat occurs more widely within the region. The subject land may be used on an intermittent basis during local movements, but it is not likely to represent important habitat for this species. Considering the mobile nature of the species, the existing fragmentation within the subject land and the fact that similar and higher quality habitat exists within the region, the Proposal is unlikely to fragment, remove or modify the habitat in a way that will cause this species to decline.

- **RESULT IN INVASIVE SPECIES THAT ARE HARMFUL TO A VULNERABLE SPECIES BECOMING ESTABLISHED IN THE VULNERABLE SPECIES' HABITAT**

Habitat for the species in the subject land is varied in condition with much of the woodland and agricultural landscape in modified or poor condition, and many patches dominated by exotic ground species. Weed and pest faunal species are both currently present throughout the landscape and it is considered unlikely that the Proposal would substantially change the composition of the species' habitat within the landscape or increase the spread and establishment of invasive species (i.e. predators) that could threaten the survival of the species. There is potential for the Proposal works to introduce additional weeds and pathogens within the Proposal site and surrounding locality – mitigation measures outlined in the would be put in place for the proposed works to address this and any other potential pest introduction.

- **INTRODUCE DISEASE THAT MAY CAUSE THE SPECIES TO DECLINE**

It is considered unlikely that the subject land would significantly fragment a Koala population to the point where dispersal is limited and therefore disease transmission between individuals is increased. As *Chlamydia* bacteria in Koalas and Koala Retrovirus is primarily transmitted between Koala individuals (Department of Environment & Climate Change 2008), it is unlikely that the Proposal would introduce disease that may cause the species to decline.

- **INTERFERE SUBSTANTIALLY WITH THE RECOVERY OF THE SPECIES**

There is currently no adopted or made recovery plan for this species. The approved conservation advice for the species (Department of Sustainability Environment Water Population and Communities 2012) identifies a number of priority actions for the species across NSW, the ACT and Queensland to assist in recovery. The Proposal is unlikely to substantially interfere with any of these actions.

- **CONCLUSION**

This species was not recorded in the Proposal study area despite targeted SAT surveys in remnant patches of vegetation. The Proposal area is not at the limit of the known range of this species, nor would any population occurring within the Proposal area be a key source population for breeding and genetic maintenance. No important koala habitat occurs within the subject land and it is considered that the Proposal would not reduce the area of occupancy of this species given that higher quality habitat occurs in the locality and greater region. The Proposal is unlikely to represent significant increases to habitat isolation and or fragmentation. Considering the mobility of the species, the Proposal would not impact the long-term survival of populations in the locality (if they exist) and is unlikely to further create a movement barrier for these species. Considering these factors, the Proposal is considered unlikely to have a significant impact on this species

D-1.2.32.6 NSW Assessment Bilateral requirements

- **DESCRIPTION OF THE HABITAT (INCLUDING IDENTIFICATION AND MAPPING OF SUITABLE BREEDING HABITAT, SUITABLE FORAGING HABITAT, IMPORTANT POPULATIONS AND HABITAT CRITICAL FOR SURVIVAL), WITH CONSIDERATION OF, AND REFERENCE TO, ANY RELEVANT COMMONWEALTH GUIDELINES AND POLICY STATEMENTS INCLUDING LISTING ADVICE, CONSERVATION ADVICE AND RECOVERY PLAN**

The *Approved Conservation Advice for* Phascolarctos cinereus *(combined populations of Queensland, New South Wales and the Australian Capital Territory) (koala Northern Designatable Unit)* (Commonwealth of Australia 2012) provides a broad habitat description for the species (inclusive of the combined populations of Queensland, NSW and ACT) indicating that the species is found in a wide range of temperate, sub-tropical and tropical forest, woodland and semi-arid communities dominated by species from the genus *Eucalyptus* and that distribution of koalas is affected by altitude (limited to <800m ASL), temperature and, at the western and northern ends of the range, leaf moisture. The *Commonwealth Listing Advice for* Phascolarctos cinereus *(Koala)* (NSW Scientific Commitee 2019) supports this description. There is no adopted or made Recovery Plan for this species.

This species was not recorded within the study area despite targeted surveys. There is potential foraging habitat for Koalas in the form of PCTs – 5, 7, 8, 11, 13, 15, 74, 75, 76, 80, 110, 249, 267, 277. Scattered old records exist for this species within the locality, primarily around Wagga Wagga in the east of the study area. Vegetation clearing will be undertaken for transmission line towers and associated infrastructure such as access tracks and laydown areas. A map of suitable habitat for this species is provided in Figure D-1.32.

- **DETAILS OF THE SCOPE, TIMING AND METHODOLOGY FOR STUDIES OR SURVEYS USED AND HOW THEY ARE CONSISTENT WITH (OR JUSTIFICATION FOR DIVERGENCE FROM) PUBLISHED AUSTRALIAN GOVERNMENT GUIDELINES AND POLICY STATEMENTS**

Habitat assessments were undertaken to assess the likelihood of threatened species of animal (those species known or predicted to occur within the locality from the literature and database review) occurring within the Proposal study area. Fauna habitat assessments were the primary assessment tool in assessing whether threatened species were likely to occur within the Proposal study area. Additional techniques used for surveying mammals included call spotlighting, Koala SAT surveys and remote cameras.

The survey effort for Koala is outlined in Table D-1.20.

Table D-1.20 Summary of survey effort for the Koala

FAUNA GROUP	SURVEY TECHNIQUE	SURVEY EFFORT	OPTIMUM SURVEY PERIOD	DATES SURVEYED
Riverine Woodlands/wetlands –PCT5, PCT7, PCT8, PCT11, PCT13, PCT15, PCT249				
Koala	Koala SAT surveys	6 SAT Survey sites	All year	Dec 2021
Grassy Woodlands – PCT74, PCT75, PCT76, PCT80, PCT110, PCT267, PCT277				
Koala	Koala SAT surveys	10 SAT Survey sites	All year	Dec 2021

- **DESCRIPTION OF THE SPECIFIC IMPACTS AND ITS REGARD TO THE FULL NATIONAL EXTENT OF THE SPECIES OR COMMUNITY'S RANGE**

The proposed action would clear 137.12 ha of vegetation representing suitable foraging habitat for this species, roughly evenly distributed between grassy woodlands and riverine woodlands. These impacts are captured in Section 12 of the BDAR.

Figure D-1.32 shows the current known generalised distribution from the Departments Species of National Environmental Significance dataset which is an indicative distribution map of the present distribution of the species based on best available knowledge. The Proposal study area is inside the known limit of the species distribution.

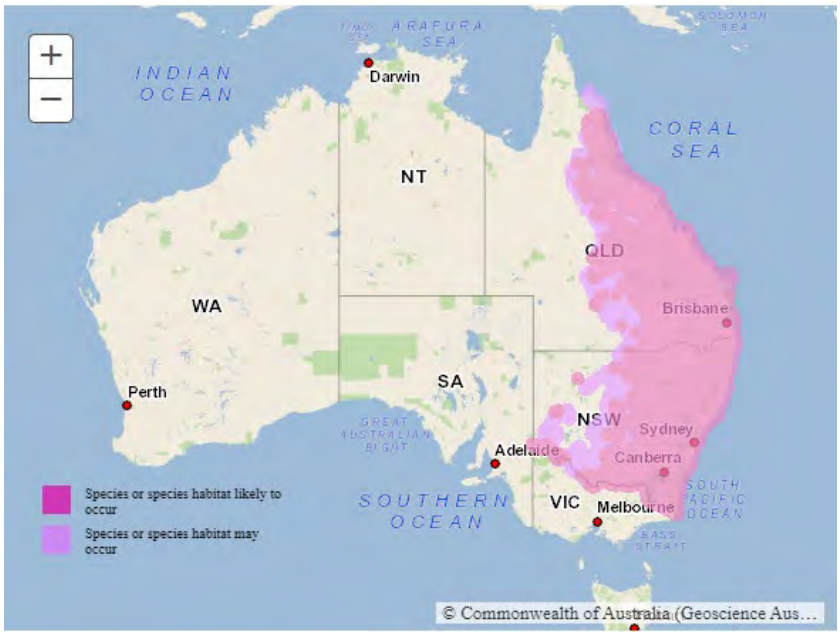


Figure D-1.32 Current distribution map for Koala taken from the SPRAT

- **DESCRIPTION OF THE SPECIFIC PROPOSED AVOIDANCE AND MITIGATION MEASURES TO DEAL WITH RELEVANT IMPACTS OF THE ACTION**

The proposed avoidance and mitigation measures are outlined in Section 8 & 10 of the BDAR. Detailed avoidance description for impacts relating to biodiversity values (including threatened species) are outlined in Section 8. Mitigation measures to be implemented are outlined in Section 11. No specific measures for the Koala are identified.

- **IDENTIFICATION OF SIGNIFICANT RESIDUAL ADVERSE IMPACTS LIKELY TO OCCUR AFTER THE PROPOSED ACTIVITIES TO AVOID AND MITIGATE ALL IMPACTS ARE TAKEN INTO ACCOUNT**

Details of offset requirements and obligations for this species as a result of residual impacts due the proposed action is addressed in Section 12 of the BDAR. No species credits are required to offset the residual impacts to Koala..

- **A DESCRIPTION OF ANY OFFSETS PROPOSED TO ADDRESS RESIDUAL ADVERSE SIGNIFICANT IMPACTS AND HOW THESE OFFSETS WILL BE ESTABLISHED**

Details of offset requirements and obligations for this species as a result of residual impacts due the proposed action is addressed in Section 12 of the BDAR.

- **DETAILS OF HOW THE CURRENT PUBLISHED NSW BIODIVERSITY ASSESSMENT METHOD (BAM) HAS BEEN APPLIED IN ACCORDANCE WITH THE OBJECTS OF THE EPBC ACT TO OFFSET SIGNIFICANT RESIDUAL ADVERSE IMPACTS**

The BDAR specifically addresses Section 11 of the BAM and provides information on the application of the no net loss standard and the Proposal biodiversity offset obligations. Credit calculations were quantified using the BAM-C Version 1.3.0.00.

- **DETAILS OF THE OFFSET PACKAGE TO COMPENSATE FOR SIGNIFICANT RESIDUAL IMPACTS INCLUDING DETAILS OF THE CREDIT PROFILES REQUIRED TO OFFSET THE ACTION IN ACCORDANCE WITH THE BAM AND/OR MAPPING AND DESCRIPTIONS OF THE EXTENT AND CONDITION OF THE RELEVANT HABITAT AND/OR THREATENED COMMUNITIES OCCURRING ON PROPOSED OFFSET SITES**

Section 12 of the BDAR outlines the biodiversity offset strategy for the proposal. The offset obligations will be met through implementing a combination of the following offset delivery options, being:

- the purchase and retirement of existing biodiversity credits currently available on the biodiversity credit register
- establishing a biodiversity stewardship site(s) on lands with like for like biodiversity values to those impacted by the proposal
- through making a payment into the Biodiversity Conservation Fund.

D-1.2.33 Grey-headed Flying-fox (*Pteropus poliocephalus*)

Grey-headed Flying-fox is listed as Vulnerable under the EPBC Act and the BC Act.

D-1.2.33.1 Description

The Grey-headed Flying-fox is endemic to Australia. The distribution of the species extends from the coastal belt from Rockhampton in central Queensland to Melbourne in Victoria. The species has occasional occurrences into South Australia, Bass Strait islands and mainland Tasmania. It is infrequently found west of the Great Dividing Range. Only a small proportion of this range is used at any one time, as the species selectively forages where food is available. Patterns of occurrence and migration are broadly associated with the flowering and fruiting of certain plants and relative abundance within its distribution vary widely between seasons and between years. At a local scale, the species is generally present intermittently and irregularly.

Grey-headed Flying-foxes are canopy-feeding frugivores and nectarivores, which utilise a range of vegetation communities including rainforests, open forests, closed and open woodlands, Melaleuca swamps and Banksia woodlands. They also feed on commercial fruit crops and on introduced tree species in urban areas. The primary food source is blossom from Eucalyptus. Roost sites are typically located near water. Roost vegetation includes rainforest patches, stands of Melaleuca, mangroves and riparian vegetation, though highly modified vegetation may be used in urban and suburban areas.

Grey-headed Flying-foxes mate in early autumn, after which time larger camps break up, reforming in late spring/early summer, as food resources become more abundant. Following six months of gestation females typically give birth to a single young each year in October (Department of Agriculture Water and the Environment 2021).

D-1.2.33.2 Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- There is no approved Conservation Advice for this species.
- The *Commonwealth Listing advice on* Pteropus poliocephalus *(Grey-headed Flying-fox)* (Threatened Species Scientific Committee 2001) was reviewed as part of this assessment.
- The National Recovery Plan for the Grey-headed Flying-fox *Pteropus poliocephalus* (Department of Agriculture Water and the Environment 2021) was reviewed as part of this assessment.

No threat abatement plan has been identified as being relevant for this species.

Relevant survey guidelines for this species include:

- *Survey guidelines for Australia's threatened bats* (Department of Environment Water Heritage and the Arts 2010)
- *Survey Guidelines for Australia's Threatened Mammals* (Ausgrid 2011).

D-1.2.33.3 Specific impacts

Grey-headed Flying-foxes have potential habitat within the Lower Slopes and Inland Slopes subregions in the form of associated PCTs – 5, 76, 267 and Forests and Woodlands. Scattered records exist for this species toward the far east of the study area and roosting is known to occur within the locality. Vegetation clearing will be undertaken for transmission line towers and associated infrastructure such as access roads and laydown areas, in habitat including PCT, 5, 76 and 267. This species has not been recorded within the study area.

Vegetation clearing may reduce the availability of potential habitat for Grey-headed Flying Foxes, if present. Potential direct impacts may include injury or mortality during clearing works.

D-1.2.33.4 Is this an important population?

In accordance with the Significant Impact Guidelines the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the guidelines as a population that is necessary for a species' long-term survival and recovery (Department of Environment Water Heritage and the Arts 2008). Under the EPBC Act, important populations are:

- likely to be key source populations either for breeding or dispersal
- likely to be necessary for maintaining genetic diversity
- at or near the limit of the species range.

Grey-headed Flying-foxes occur across a range of habitats where their favoured food, eucalypt blossom occurs. They set up roosting camps in association with blossom availability, which are usually situated in dense vegetation and associated with water. Grey-headed Flying-foxes can migrate up to 75 km north during the winter and during this time young flying-foxes establish camps. The Grey-headed Flying-fox exists as one interconnected population along the east coast of Australia. Therefore, it is considered as an important population.

D-1.2.33.5 Significant impact criteria

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- **LEAD TO A LONG-TERM DECREASE IN THE SIZE OF AN IMPORTANT POPULATION**

The proposed action will result in the direct removal of 10.04 ha of potential foraging habitat for the Grey-headed Flying Fox. Given the mobility of this species and the availability of higher quality habitat within the surrounding region, the removal of this small proportion of habitat is unlikely to lead to a long-term decrease in the size of an important population.

- **REDUCE THE AREA OF OCCUPANCY OF AN IMPORTANT POPULATION**

The proposed action is unlikely to significantly reduce the area of occupancy for this species in this location considering the available habitat in the surrounding landscape, and the mobile nature of the species. No individual of this species would be restricted to habitat within the study area.

- **FRAGMENT AN EXISTING IMPORTANT POPULATION INTO TWO OR MORE POPULATIONS**

The maximum cleared area for a single tower footprint or laydown area would not exceed 0.5 ha, and the easement width of the transmission line would be a maximum of approximately 80 meters (with full clearing not always being required). The Proposal study area is within an already fragmented and disturbed landscape, thereby limiting the potential for any substantial additional fragmentation to occur. Given this species ability to disperse over and around these cleared areas, it is considered unlikely that the proposed action would fragment an existing important population of this species.

- **ADVERSELY AFFECT HABITAT CRITICAL TO THE SURVIVAL OF A SPECIES**

Habitat critical to the survival of a species also refers to areas that are necessary:

- for activities such as foraging, breeding, roosting, or dispersal
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
- to maintain genetic diversity and long term evolutionary development, or
- for the reintroduction of populations or recovery of the species or ecological community.

According to the national recovery plan for the species, habitat critical to the survival of the Grey-headed Flying- fox includes:

Important winter and spring vegetation communities including those that contain *Eucalyptus tereticornis*, *E. albens*, *E. crebra, E. fibrosa*, *E. melliodora*, *E. paniculata, E. pilularis, E. robusta, E. seeana, E. sideroxylon, E. siderophloia, Banksia integrifolia, Castanospermum australe, Corymbia citriodora citriodora, C. eximia, C. maculata, Grevillea robusta, Melaleuca quinquenervia* or *Syncarpia glomulifera.* Habitat critical to survival also include communities that:

- contain native species that are known to be productive as foraging habitat during the final weeks of gestation, and during the weeks of birth, lactation and conception (August to May)
- contain native species used for foraging and occur within 20 km of a nationally important camp as identified on the Department's interactive flying-fox web viewer, or
- contain native and or exotic species used for roosting at the site of a nationally important Grey-Headed Flying-Fox camp as identified on the Department's interactive flying-fox web viewer.

Under these definitions the habitat to be removed could be considered habitat critical to the survival of the species. However, Proposal will remove only a small proportion, 10.04 ha of habitat, representing potential foraging and roosting habitat for this species. As this species is highly mobile, with individuals foraging up to 50 km from roost sites, it is likely that suitable foraging resources could be accessed widely throughout the locality and beyond. Consequently, the Proposal is therefore unlikely to significantly impact habitat of critical importance to this species.

- **DISRUPT THE BREEDING CYCLE OF AN IMPORTANT POPULATION**

One Grey headed Flying-fox camp (Wagga Wagga (641)) occurs within the locality, however this camp would not be impacted by the proposed action. The habitat to be directly impacted by the Proposal is minor and similar or higher quality foraging resources existing within the locality and broader region. Therefore, the proposed action is unlikely to disrupt the breeding cycle of the Grey-headed Flying-fox.

- **MODIFY, DESTROY, REMOVE OR ISOLATE OR DECREASE THE AVAILABILITY OR QUALITY OF HABITAT TO THE EXTENT THAT THE SPECIES IS LIKELY TO DECLINE**

The proposed action would reduce the availability of suitable foraging and roosting habitat on a small scale. However, given the surrounding landscape and habitat availability, it is unlikely that the proposed action would cause change to the extent that the species is likely to decline. Indirect impacts to areas of adjacent habitat would be managed through mitigation measures.

- **RESULT IN INVASIVE SPECIES THAT ARE HARMFUL TO A VULNERABLE SPECIES BECOMING ESTABLISHED IN THE VULNERABLE SPECIES' HABITAT**

Habitat for the species in the subject land is varied in condition with much of the woodland and agricultural landscape in modified or poor condition, and many patches dominated by exotic ground species. Weed and pest fauna species are both currently present throughout the landscape and it is considered unlikely that the Proposal would substantially change the composition of the species habitat within the landscape or increase the spread and establishment of invasive species (i.e. predators) that could threaten the survival of the species. There is potential for the Proposal works to introduce additional weeds and pathogens within the Proposal site and surrounding locality – mitigation measures outlined in the would be put in place for the proposed works to address this and any other potential pest introduction.

- **INTRODUCE DISEASE THAT MAY CAUSE THE SPECIES TO DECLINE**

There are no known diseases causing potential species that are likely to threaten the Grey-headed Flying-fox. Spread of pathogens or disease would be minimised through mitigation measures.

- **INTERFERE SUBSTANTIALLY WITH THE RECOVERY OF THE SPECIES**

The National Recovery Plan for the Grey-headed Flying-fox '*Pteropus poliocephalus*' (Department of Agriculture Water and the Environment 2021) outlines the following actions to improve the national population trend of this species:

- identify, protect and increase key foraging and roosting habitat
- improve the community's capacity to coexist with flying-foxes; and
- increase awareness about flying-foxes, the threats they face and the important ecosystem services they provide as seed dispersers and pollinators.

The Proposal may interfere slightly with the first action 'identify, protect and increase key foraging and roosting habitat', however, due to the small amount of foraging and roosting habitat to be removed and the availability of this habitat within the locality and broader region, this impact is unlikely to significantly hinder recovery efforts for the species.

- **CONCLUSION**

This species was not recorded in the Proposal study area despite targeted surveys. The extent of native vegetation clearing and habitat removal associated with the Proposal study area is small (10.04 ha) in terms of the available habitat for these species within the surrounding landscape. The Proposal study area is not at the limit of the known range of this species, nor would any population associated with the Proposal be key source population for breeding and genetic maintenance. The Proposal is unlikely to represent significant increases to habitat isolation and or fragmentation. Considering the mobility of the species, the Proposal would not impact the long-term survival of populations in the locality and is unlikely to further create a movement barrier for these species. Although the loss of foraging and roosting habitat for Grey-headed Flying-fox is considered to be an incremental loss of suitable habitat locally, the Proposal is not likely to have a significant impact upon Grey-headed Flying-fox.

D-1.2.33.6 NSW Assessment Bilateral requirements

- **DESCRIPTION OF THE HABITAT (INCLUDING IDENTIFICATION AND MAPPING OF SUITABLE BREEDING HABITAT, SUITABLE FORAGING HABITAT, IMPORTANT POPULATIONS AND HABITAT CRITICAL FOR SURVIVAL), WITH CONSIDERATION OF, AND REFERENCE TO, ANY RELEVANT COMMONWEALTH GUIDELINES AND POLICY STATEMENTS INCLUDING LISTING ADVICE, CONSERVATION ADVICE AND RECOVERY PLAN**

There is no approved conservation advice for this species. The *Commonwealth Listing advice on* Pteropus poliocephalus *(Grey-headed Flying-fox)* (Threatened Species Scientific Committee 2001) does not provide a habitat description for the species. The National Recovery Plan for the Grey-headed Flying-fox *Pteropus poliocephalus* (Department of Agriculture Water and the Environment 2021) outlines habitat critical to the survival of the Grey-headed Flying- fox as:

Important winter and spring vegetation communities including those that contain *Eucalyptus tereticornis*, *E. albens*, *E. crebra, E. fibrosa*, *E. melliodora*, *E. paniculata, E. pilularis, E. robusta, E. seeana, E. sideroxylon, E. siderophloia, Banksia integrifolia, Castanospermum australe, Corymbia citriodora citriodora, C. eximia, C. maculata, Grevillea robusta, Melaleuca quinquenervia* or *Syncarpia glomulifera.* Habitat critical to survival also include communities that:

- contain native species that are known to be productive as foraging habitat during the final weeks of gestation, and during the weeks of birth, lactation and conception (August to May)
- contain native species used for foraging and occur within 20 km of a nationally important camp as identified on the Department's interactive flying-fox web viewer, or
- contain native and or exotic species used for roosting at the site of a nationally important Grey-Headed Flying-Fox camp as identified on the Department's interactive flying-fox web viewer.

Important habitat under this document also refers to nationally important Flying-fox camps. These camps are those that have contained ≥ 10,000 Grey-headed Flying-foxes in more than one year in the last 10 years or have been occupied by more than 2,500 Grey-headed Flying-foxes permanently or seasonally every year for the last 10 years.

Grey-headed Flying-foxes were not recorded within the study area despite targeted surveys. There is potential foraging and roosting resources in the form of associated PCTs – 5, 76, 267, and Forests and Woodlands. Scattered records exist for this species toward the far east of the study area and roosting is known to occur within the locality. The habitat to be removed by the Proposal could be considered habitat critical to the survival of the species, however, Proposal will remove only a small proportion, 10.04 ha of habitat, representing potential foraging and roosting habitat for this species. As this species is highly mobile, with individuals foraging up to 50 km from roost sites, it is likely that suitable foraging resources could be accessed widely throughout the locality and beyond. Consequently, the impact to this habitat would not be considered significant.

A map of suitable habitat for this species is provided in Figure D-1.33.

- **DETAILS OF THE SCOPE, TIMING AND METHODOLOGY FOR STUDIES OR SURVEYS USED AND HOW THEY ARE CONSISTENT WITH (OR JUSTIFICATION FOR DIVERGENCE FROM) PUBLISHED AUSTRALIAN GOVERNMENT GUIDELINES AND POLICY STATEMENTS**

Habitat assessments were undertaken to assess the likelihood of threatened species of animal (those species known or predicted to occur within the locality from the literature and database review) occurring within the Proposal study area. Fauna habitat assessments were the primary assessment tool in assessing whether threatened species were likely to occur within the Proposal study area. Additional techniques used for surveying mammals included call playbacks, spotlighting, pitfall and funnel traps and Elliot traps.

The survey effort for Grey-headed Flying-fox is outlined in Table D-1.21.

Table D-1.21 Summary of survey effort for Grey-headed Flying-fox

FAUNA GROUP	SURVEY TECHNIQUE	SURVEY EFFORT	OPTIMUM SURVEY PERIOD	DATES SURVEYED
Riverine Woodlands – PCT5				
Nocturnal blossom nomads	Spotlighting	6 person hours 6 person hours	All year when blossom is available	20 Feb 2020 20 Jul 2020
Grassy Woodlands – PCT76, PCT267				
Nocturnal blossom nomads	Spotlighting	3 person hours	All year when blossom is available	Sep 2021

- **DESCRIPTION OF THE SPECIFIC IMPACTS AND ITS REGARD TO THE FULL NATIONAL EXTENT OF THE SPECIES OR COMMUNITY'S RANGE**

The proposed action would clear 13.55 ha of vegetation representing suitable foraging and roosting habitat for this species. These impacts are captured in Section 12 of the BDAR.

Figure D-1.33 shows the current known generalised distribution from the Departments Species of National Environmental Significance dataset which is an indicative distribution map of the present distribution of the species based on best available knowledge. The Proposal study area is inside the known limit of the species distribution.

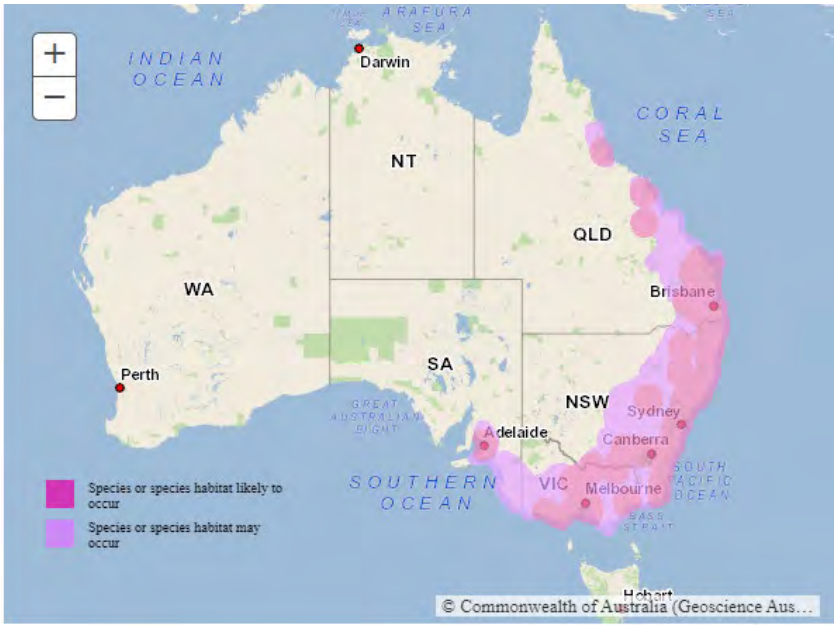


Figure D-1.33 Current distribution map for Grey-Headed Flying-fox taken from the SPRAT

- **DESCRIPTION OF THE SPECIFIC PROPOSED AVOIDANCE AND MITIGATION MEASURES TO DEAL WITH RELEVANT IMPACTS OF THE ACTION**

The proposed avoidance and mitigation measures are outlined in Section 8 & 10 of the BDAR. Detailed avoidance description for impacts relating to biodiversity values (including threatened species) are outlined in Section 8. Mitigation measures to be implemented are outlined in Section 11. No specific measures for the Grey-headed Flying-fox are identified.

- **IDENTIFICATION OF SIGNIFICANT RESIDUAL ADVERSE IMPACTS LIKELY TO OCCUR AFTER THE PROPOSED ACTIVITIES TO AVOID AND MITIGATE ALL IMPACTS ARE TAKEN INTO ACCOUNT**

Details of offset requirements and obligations for this species as a result of residual impacts due the proposed action is addressed in Section 12 of the BDAR. No species credits are required to offset the residual impacts to Grey-headed Flying-foxes.

- **A DESCRIPTION OF ANY OFFSETS PROPOSED TO ADDRESS RESIDUAL ADVERSE SIGNIFICANT IMPACTS AND HOW THESE OFFSETS WILL BE ESTABLISHED**

Details of offset requirements and obligations for this species as a result of residual impacts due the proposed action is addressed in Section 12 of the BDAR.

- **DETAILS OF HOW THE CURRENT PUBLISHED NSW BIODIVERSITY ASSESSMENT METHOD (BAM) HAS BEEN APPLIED IN ACCORDANCE WITH THE OBJECTS OF THE EPBC ACT TO OFFSET SIGNIFICANT RESIDUAL ADVERSE IMPACTS**

The BDAR specifically addresses Section 11 of the BAM and provides information on the application of the no net loss standard and the Proposal biodiversity offset obligations. Credit calculations were quantified using the BAM-C Version 1.3.0.00.

- **DETAILS OF THE OFFSET PACKAGE TO COMPENSATE FOR SIGNIFICANT RESIDUAL IMPACTS INCLUDING DETAILS OF THE CREDIT PROFILES REQUIRED TO OFFSET THE ACTION IN ACCORDANCE WITH THE BAM AND/OR MAPPING AND DESCRIPTIONS OF THE EXTENT AND CONDITION OF THE RELEVANT HABITAT AND/OR THREATENED COMMUNITIES OCCURRING ON PROPOSED OFFSET SITES**

Section 12 of the BDAR outlines the biodiversity offset strategy for the proposal. The offset obligations will be met through implementing a combination of the following offset delivery options, being:

- the purchase and retirement of existing biodiversity credits currently available on the biodiversity credit register
- establishing a biodiversity stewardship site(s) on lands with like for like biodiversity values to those impacted by the proposal
- through making a payment into the Biodiversity Conservation Fund.

D-1.2.34 Corben's Long-eared Bat (*Nyctophilus corbeni*)

Corben's long-eared Bat is listed as Vulnerable under the EPBC Act and the BC Act.

D-1.2.34.1 Description

Corben's long-eared Bat is patchily distributed across southern central Queensland, central western New South Wales, north-western Victoria and eastern South Australia, with most of its range within the Murray Darling Basin. This microbat species is uncommon and has been mainly recorded within the Nandewar area and Brigalow Belt South bioregion. They are found in a wide range of inland woodlands, including box/ironbark/cypress pine woodlands, Buloke woodlands, Brigalow woodland, Belah woodland, smooth-barked apple woodland, river red gum forest, black box woodland, and various types of tree mallee, and prefers old growth, dense vegetation. The core population is located in Pilliga Scrub, over 700 km north east of the proposal study area (Threatened Species Scientific Committee 2015).

Corben's Long-eared Bat is an insectivorous microbat, foraging on beetles, bugs, moths, grasshoppers and crickets. They roost solitary or in groups up to 20 individuals, predominantly in hollows of dead trees or dead sprouts of live trees. Studies show that most roost sites are used just for a single day and large distances are travelled at night, with consecutive roost sites generally within 4 kilometres (Threatened Species Scientific Committee 2015).

D-1.2.34.2 Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- the *Conservation Advice Nyctophilus corbeni south-eastern long-eared bat* (Threatened Species Scientific Committee 2015) was reviewed as part of this assessment.
- the *Commonwealth Listing Advice on ten species of Bats* (Benson 2001) was reviewed as part of this assessment.
- there is no adopted or made Recovery Plan for this species.

No threat abatement plan has been identified as being relevant for this species.

Relevant survey guidelines for this species include:

- *Survey Guidelines for Australia's Threatened Bats* (Department of Environment Water Heritage and the Arts 2010).

D-1.2.34.3 Specific impacts

Vegetation clearing for transmission line towers and associated infrastructure, such as access roads and laydown areas, in habitat including PCT's 22, 23, 28, 58, 75, 80, 110, 170, 171, 172, 199, 249 and 267. Two Corben's Long-eared Bats were capture during harp trapping surveys in PCT 170 and PCT 171 or ecotones of both PCTs on a property north-east of Balranald.

Vegetation clearing may reduce the availability of foraging habitat and hollow bearing trees as roosting habitat (possibly breeding habitat) for the species. Approximately 605.62 ha of habitat may be affected. Potential direct impacts may include injury or death during clearing works.

D-1.2.34.4 Is this an important population?

In accordance with the Significant Impact Guidelines the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the guidelines as a population that is necessary for a species' long-term survival and recovery (Department of the Environment, 2013). Under the EPBC Act, important populations are:

- likely to be key source populations either for breeding or dispersal
- likely to be necessary for maintaining genetic diversity
- at or near the limit of the species range.

This species was recorded in the proposal study area during targeted harp trapping surveys. Additionally, there are records within the locality of the proposal study area, primarily to the north and west of the study area, as well as in Cocopara Nature Reserve in the north. There are no important populations outlined in the SPRAT profile or DPIE profile for Corben's Long-eared Bat. The proposal study area occurs towards the southern extent of the species range, but records extend beyond this. This location is not at the limit of the known range of this species, nor would any population here be key source population for breeding and genetic maintenance given the species ability to disperse for foraging and breeding. Therefore, any population utilising the proposal study area it is not considered to be an important population.

D-1.2.34.5 Significant impact criteria

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- **LEAD TO A LONG-TERM DECREASE IN THE SIZE OF AN IMPORTANT POPULATION**

The proposed action has potential to cause injury or death to individuals during clearing works, but is it considered unlikely that the proposed action would lead to a long-term decrease in the size of an important population.

- **REDUCE THE AREA OF OCCUPANCY OF AN IMPORTANT POPULATION**

Not considered to be part of an important population. The proposed action is unlikely to significantly reduce the area of occupancy for this species in this location considering the available habitat in the surrounding landscape.

- **FRAGMENT AN EXISTING IMPORTANT POPULATION INTO TWO OR MORE POPULATIONS**

Not considered to be part of an important population. The proposal study area is within an already fragmented and disturbed landscape, thereby limiting the potential for any substantial additional fragmentation to occur. Given this species ability to disperse over and around these cleared areas, it is considered unlikely that the proposed action would fragment an existing important population of this species.

- **ADVERSELY AFFECT HABITAT CRITICAL TO THE SURVIVAL OF A SPECIES**

No critical habitat is listed for this species under the EPBC Act. Due to the availability of surrounding habitat and its movement between roost hollows, this habitat is unlikely to be considered critical for the survival of the species.

- **DISRUPT THE BREEDING CYCLE OF AN IMPORTANT POPULATION**

Not considered to be part of an important population.

- **MODIFY, DESTROY, REMOVE OR ISOLATE OR DECREASE THE AVAILABILITY OR QUALITY OF HABITAT TO THE EXTENT THAT THE SPECIES IS LIKELY TO DECLINE**

The proposed action is likely to impact suitable foraging and roosting habitat for Corben's Long-eared Bat. However, given the availability of surrounding habitat and dispersive nature of this species, it is unlikely that the action would cause the species to decline.

- **RESULT IN INVASIVE SPECIES THAT ARE HARMFUL TO A VULNERABLE SPECIES BECOMING ESTABLISHED IN THE VULNERABLE SPECIES' HABITAT**

Adhering to mitigation measures, such as weed and pest management plans, and vehicle weed hygiene, would prevent invasive weeds and vertebrate pests such as cats and foxes further establishing within the proposal study area.

- **INTRODUCE DISEASE THAT MAY CAUSE THE SPECIES TO DECLINE**

There are no known diseases causing potential species decline to Corben's Long-eared Bat.

- **INTERFERE SUBSTANTIALLY WITH THE RECOVERY OF THE SPECIES**

No recovery plan has been prepared for this species under the EPBC Act. The proposal does not occur within any priority management areas for the species under the NSW Saving Our Species recovery strategy. Consequently, the proposed action is unlikely to significantly interfere with the recovery of the species.

- **CONCLUSION**

This species was recorded in the proposal study area during targeted harp trapping surveys, with additional records in the locality of the proposal. The proposal study area is not at the limit of the known range of these species, nor would any population here be key source population for breeding and genetic maintenance given the species ability to disperse for foraging and breeding. Although potentially suitable foraging, roosting, and possibly breeding habitat for Corben's Long-eared Bat woodland in woodland areas may be impacted by the proposed action, it is not considered essential to survival of this species within the area. Although clearing of potential habitat may occur, the detailed design would avoid where possible clearing higher quality habitat to prevent significant loss of habitat. It is considered unlikely that the proposed action would have a significant impact on this species.

D-1.2.34.6 NSW Assessment Bilateral requirements

- **DESCRIPTION OF THE HABITAT (INCLUDING IDENTIFICATION AND MAPPING OF SUITABLE BREEDING HABITAT, SUITABLE FORAGING HABITAT, IMPORTANT POPULATIONS AND HABITAT CRITICAL FOR SURVIVAL), WITH CONSIDERATION OF, AND REFERENCE TO, ANY RELEVANT COMMONWEALTH GUIDELINES AND POLICY STATEMENTS INCLUDING LISTING ADVICE, CONSERVATION ADVICE AND RECOVERY PLAN**

The *Conservation Advice Nyctophilus corbeni south-eastern long-eared bat* (Threatened Species Scientific Committee 2015) provides broad habitat descriptions for the species indicating that the species is found in a wide range of inland woodland vegetation types. These include box/ironbark/cypress pine woodlands, Buloke woodlands, Brigalow woodland, Belah woodland, smooth-barked apple woodland, river red gum forest, black box woodland, and various types of tree mallee. The *Commonwealth Listing Advice on ten species of Bats* (Benson 2001) does not provide habitat information. There is no adopted or made Recovery Plan for this species.

This species was recorded within PCT 170 and PCT 171 or ecotones of both PCTs during the surveys. Predicted habitat occurs within PCT's 22, 23, 28, 58, 75, 80, 110, 170 and 249.

- **DETAILS OF THE SCOPE, TIMING AND METHODOLOGY FOR STUDIES OR SURVEYS USED AND HOW THEY ARE CONSISTENT WITH (OR JUSTIFICATION FOR DIVERGENCE FROM) PUBLISHED AUSTRALIAN GOVERNMENT GUIDELINES AND POLICY STATEMENTS**

Habitat assessments were undertaken to assess the likelihood of threatened species of animal (those species known or predicted to occur within the locality from the literature and database review) occurring within the proposal study area. Fauna habitat assessments were the primary assessment tool in assessing whether threatened species were likely to occur within the proposal study area.

Although many microchiropteran bat species are detectable through use of Anabat call detection methodologies, the vocal differences between *Nyctophilus* spp. are too subtle to reliably differentiate between the various species. Therefore, surveys for Corben's Long-eared Bat needed to be conducted with a methodology that enabled bats to be identified in the hand.

Harp traps are excellent for capture and release of microchiropteran bats and they are well suited to the capture of *Nyctophilus* spp. due to their propensity to use lower forest strata for their foraging habits. Site selection for the setting of harp traps included a number of rationales, such as targeting of those woodland habitats in areas where hollow-bearing trees provide potential roosting sites and where suitable flyways were detected. Harp traps were set at each location over a single night period during November and December 2019, February and March 2020 and March 2021 (surveys best conducted between October and April). Captured bats were identified to species level, sexed, measured and weighed. Bats were released immediately after processing during dark conditions.

The survey effort for Corben's Long-eared Bat is outlined in Table D-1.22.

Table D-1.22 Summary of survey effort for Corben's Long-eared Bat

FAUNA GROUP	SURVEY TECHNIQUE	SURVEY EFFORT	OPTIMUM SURVEY PERIOD	DATES SURVEYED
Riverine Woodlands/wetlands – PCT5, PCT7, PCT8, PCT11, PCT13, PCT15, PCT249				
Microchiropteran bats	Harp trap and Anabat surveys Active Anabat Walkabout survey	2 x Harp site locations 1 x Anabat location 1 person hour of active Anabat Walkabout survey	All year	Dec 2019 Feb 2020 Mar 2021
Arid Woodlands/Shrublands – PCT22, PCT23, PCT26, PCT28, PCT58, PCT143, PCT170, PCT171, PCT172, PCT199				
Microchiropteran bats	Harp trap and Anabat surveys	23 x Harp trap locations 24 x Anabat trap nights	All year	Dec 2019 Feb 2020 Mar 2020 Mar 2021
Grassy Woodlands – PCT74, PCT75, PCT76, PCT80, PCT267, PCT277				
Microchiropteran bats	Harp trap and Anabat surveys	2 x Harp trap locations 2 x Anabat trap nights	All year	Dec 2019

- **DESCRIPTION OF THE SPECIFIC IMPACTS AND ITS REGARD TO THE FULL NATIONAL EXTENT OF THE SPECIES OR COMMUNITY'S RANGE**

The proposed action would impact approximately 605.62 ha of vegetation representing suitable habitat for this species. These impacts are captured in Section 9 and 12 of the BDAR. Figure D-1.34 shows the current known generalised distribution from the Department's Species Profile and Threats Database, which is an indicative distribution map of the present distribution of the species based on the best available knowledge.

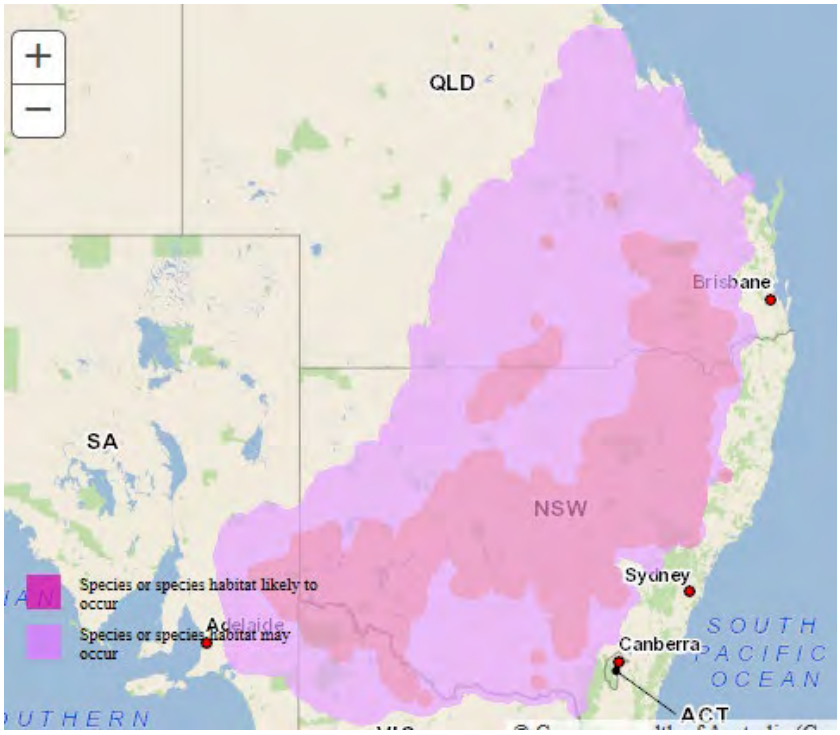


Figure D-1.34 Current distribution map for Corben's Long-eared Bat taken from the SPRAT

- **DESCRIPTION OF THE SPECIFIC PROPOSED AVOIDANCE AND MITIGATION MEASURES TO DEAL WITH RELEVANT IMPACTS OF THE ACTION**

The proposed avoidance and mitigation measures are outlined in Section 8 and 10 of the BDAR. Detailed avoidance description for impacts relating to biodiversity values (including threatened species) are outlined in Section 8. Mitigation measures to be implemented are outlined in Section 10. Specifically, the following relevant mitigation measures are recommended for any related residual impacts to the species:

- Development and implementation of a Biodiversity Management Plan (BMP) to minimise and manage the clearing of native vegetation and habitat and implement measures in avoiding, protecting and mitigating works associated threatened species habitat.
- Supplementary Hollow and Nest Strategy would be prepared to minimise and offset habitat loss to hollow-dependent fauna in accordance with the Biodiversity Management Plan and would include the following requirements:
  - survey of tree hollows and nests within the proposed clearing extents
  - identify the size, type, number and location of nest boxes required based on the results of the ecological surveys and active hollow resources in adjacent areas
  - appropriately sized nest boxes would be installed within the vicinity of hollow-bearing trees (subject to landowner agreement and suitable existing trees being present) no more than two weeks prior to clearing of the tree
  - nest boxes would also include the re-use of existing hollows salvaged prior to or during clearing where practicable.

- **IDENTIFICATION OF SIGNIFICANT RESIDUAL ADVERSE IMPACTS LIKELY TO OCCUR AFTER THE PROPOSED ACTIVITIES TO AVOID AND MITIGATE ALL IMPACTS ARE TAKEN INTO ACCOUNT**

This species was recorded within Mallee woodland associated with PCT 170 and PCT 171 or ecotones of both PCTs during the surveys. Residual impacts would involve the removal of other associated habitat in the form of PCT 22, 23, 28, 58, 75, 80, 110, 172, 199, 249 and 267. Mitigation measures in regard to threatened species and their habitats are outlined in Section 10 of the BDAR. Relevant mitigation measures for the mentioned species are stated above.

- **A DESCRIPTION OF ANY OFFSETS PROPOSED TO ADDRESS RESIDUAL ADVERSE SIGNIFICANT IMPACTS AND HOW THESE OFFSETS WILL BE ESTABLISHED**

Details of offset requirements and obligations for this species as a result of residual impacts due the proposed action is addressed in Section 12 of the BDAR.

- **DETAILS OF HOW THE CURRENT PUBLISHED NSW BIODIVERSITY ASSESSMENT METHOD (BAM) HAS BEEN APPLIED IN ACCORDANCE WITH THE OBJECTS OF THE EPBC ACT TO OFFSET SIGNIFICANT RESIDUAL ADVERSE IMPACTS**

Any offsets proposed for impacts to EPBC Act listed threatened species will be done in accordance with the NSW BOS, the NSW Assessment Bilateral Agreement – Amending Agreement No. 1, and NSW BC Regulation. Further details on required offsets is provided in Chapter 12. Credit calculations were quantified using the BAM-C Version 1.3.0.00.

- **DETAILS OF THE OFFSET PACKAGE TO COMPENSATE FOR SIGNIFICANT RESIDUAL IMPACTS INCLUDING DETAILS OF THE CREDIT PROFILES REQUIRED TO OFFSET THE ACTION IN ACCORDANCE WITH THE BAM AND/OR MAPPING AND DESCRIPTIONS OF THE EXTENT AND CONDITION OF THE RELEVANT HABITAT AND/OR THREATENED COMMUNITIES OCCURRING ON PROPOSED OFFSET SITES**

Details of offset requirements and obligations for the species as a result of residual impacts due the proposed action is addressed in Section 12 of the BDAR. The BDAR specifically addresses Section 11 of the BAM and provides information on the application of the no net loss standard and the proposal's biodiversity offset obligations. Credit calculations were quantified using the BAM-C Version 1.3.0.00.

Corben's Long-eared Bat is classified as a predicted ecosystem credit species under the BC Act. Under the BC Act and the Biodiversity Offsets Scheme, the impacts associated with vegetation impacts (including removal of predicted threatened species habitat) will be offset. Credit calculations were quantified using the BAM-C Version 1.3.0.00. The following PCTs, which align to Corben's Long-eared Bat, will be offset under the scheme, including: PCT 22, 23, 28, 58, 75, 80, 110, 172, 199, 249 and 267.

The proposal offset obligations will be met through implementing a combination of the following offset delivery options, being:

- the purchase and retirement of existing biodiversity credits currently available on the biodiversity credit register
- establish a biodiversity stewardship site(s) on lands with like for like biodiversity values to those impacted by the proposal
- through making a payment into the Biodiversity Conservation Fund.

D-1.2.35 Spotted-tailed Quoll (southeastern mainland population) (*Dasyurus maculatus maculatus*)

The Spotted-tailed Quoll (southeastern mainland population) is listed as Vulnerable under the BC Act and Endangered under the EPBC Act.

D-1.2.35.1 Description

The Spotted-tailed Quoll (southeastern mainland population) is a nocturnal carnivorous marsupial that occurs from southern Queensland to south-western Victoria. This species typically feeds on a wide variety of prey including small mammals (<5 kg), birds, reptiles, fish, amphibian and invertebrates (Threatened Species Conservation Advice 2020). They occur as solitary animals in low density with home ranges of up to a few thousand hectares for males and several hundred hectares for females (Threatened Species Conservation Advice 2020). Spotted-tailed Quoll's inhabitant a wide range of vegetation types including closed forests, tall eucalypt forest, open woodlands, open forests, drier rainshadow woodlands and coastal heathlands (Threatened Species Conservation Advice 2020).

Since European settlement, habitat reduction and fragmentation for the Spotted-tailed Quoll has led to an estimated 50-90% reduction in population for mainland Australia and 25-50% reduction for populations in NSW (Threatened Species Conservation Advice 2020).

D-1.2.35.2 Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- The *Conservation Advice Dasyurus maculatus maculatus (southeastern mainland population*) (Threatened Species Conservation Advice 2020) was reviewed as part of this assessment. The Conservation Advice does not contain listing advice for this species.
- *National Recovery Plan for the Spotted-tailed Quoll Dasyurus maculatus* (Department of Environment 2016)

Relevant adopted/made threat abatement plans include:

- Threat abatement plan for predation by feral cats (Department of the Environment 2015).
- Threat abatement plan for predation by the European red fox (Department of the Environment Water Heritage and the Arts 2008).

Relevant survey guidelines for this species include:

- *Survey guidelines for Australia's threatened mammals: Guidelines for detecting mammals listed under the Environment Protection and Biodiversity Conservation Act 1999* (Department of Sustainability Environment Water Population and Communities 2011).

D-1.2.35.3 Specific impacts

The Spotted-tailed Quoll has potential habitat in the form of associated PCTs within the study area including PCT 5, 110, 249, 267 and 277. The majority of the habitats associated with the study areas occur as disturbed, fragmented patches within an otherwise agricultural (cropping) landscape.

D-1.2.35.4 Significant impact criteria

An action is likely to have a significant impact on an Endangered or Critically Endangered species if there is a real chance or possibility that it will:

- **LEAD TO A LONG-TERM DECREASE IN THE SIZE OF A POPULATION**

The proposed action is unlikely to have the potential to cause injury or mortality to individuals during clearing works, and it is considered unlikely that the proposed action would lead to a long-term decrease in the size of a population.

- **REDUCE THE AREA OF OCCUPANCY OF THE SPECIES**

The proposed action is unlikely to significantly reduce the area of occupancy for this species in this location considering the available habitat in the surrounding landscape.

- **FRAGMENT AN EXISTING POPULATION INTO TWO OR MORE POPULATIONS**

The maximum cleared area for a single tower footprint or laydown area would not exceed 0.5 ha, and the easement width of the transmission line would be a maximum of approximately 80 meters (with full clearing not always being required). The proposal study area is within an already fragmented and disturbed landscape, thereby limiting the potential for any substantial additional fragmentation to occur. Given this species ability to disperse over and around these cleared areas, and their large home ranges, it is considered unlikely that the proposed action would fragment an existing population significantly beyond current fragmentation.

- **ADVERSELY AFFECT HABITAT CRITICAL TO THE SURVIVAL OF A SPECIES**

The National Recovery Plan (Department of Environment 2016) identifies important populations considered to be of particular importance to the survival and recovery of the species. The nearest important population occurs at Kosciuszko National Park / Snowy Mountains Byadbo, which is approximately 200 kms to the east of the far eastern end of the proposal (Department of Environment 2016). Habitat in the proposal area represents a small component of locally available habitat for this species.

- **DISRUPT THE BREEDING CYCLE OF A POPULATION**

Although potential habitat for the Spotted-tailed Quoll was recorded in the proposal study area, in the form of PCT 5, 110, 249, 267 and 277, the species was not recorded during targeted survey. The majority of the habitats associated with the study area occur as disturbed, fragmented patches within an otherwise agricultural (cropping) landscape. The potential impact to approximately 15.54 ha of marginal habitat is considered unlikely to disrupt the breeding cycle of the species.

- **MODIFY, DESTROY, REMOVE OR ISOLATE OR DECREASE THE AVAILABILITY OR QUALITY OF HABITAT TO THE EXTENT THAT THE SPECIES IS LIKELY TO DECLINE**

The proposed action is likely to impact potentially suitable habitat for the Spotted-tailed Quoll. The subject land may be used on an intermittent basis during local movements, but it is not likely to represent important habitat for this species. Considering the mobile nature of the species, the existing fragmentation within the subject land and the fact that similar and higher quality habitat exists within the region, the proposal is unlikely to fragment, remove or modify the habitat in a way that will cause this species to decline. In addition, and to facilitate woodland connectivity, it is proposed that series of connectivity corridors near tower locations that occur in woodland vegetation would be developed as part of a Connectivity Strategy under the Biodiversity Management Plan.

- **RESULT IN INVASIVE SPECIES THAT ARE HARMFUL TO A CRITICALLY ENDANGERED OR ENDANGERED SPECIES BECOMING ESTABLISHED IN THE ENDANGERED OR CRITICALLY ENDANGERED SPECIES' HABITAT**

Habitat for the species in the subject land is varied in condition with much of the woodland and agricultural landscape in modified or poor condition, and many patches dominated by exotic ground species. Weed and pest faunal species are both currently present throughout the landscape and it is considered unlikely that the proposal would substantially change the composition of the species' habitat within the landscape or increase the spread and establishment of invasive species (i.e. predators) that could threaten the survival of the species. There is potential for the proposal to introduce additional weeds and pathogens within the proposal area and surrounding locality. Mitigation measures outlined in Chapter 10 of the BDAR would be implemented for the proposal to address potential invasive species introduction.

- **INTRODUCE DISEASE THAT MAY CAUSE THE SPECIES TO DECLINE**

There are no known diseases causing potential species decline to the Spotted-tailed Quoll.

- **INTERFERE SUBSTANTIALLY WITH THE RECOVERY OF THE SPECIES**

The proposed action goes against the third recovery objective of the National Recovery Plan (Department of Environment 2016), which seeks to reduce the rate of habitat loss and fragmentation on private land.

- **CONCLUSION**

This species was not recorded in the proposal study area despite targeted surveys in remnant patches of vegetation. Although potentially suitable habitat was recorded in the proposal study area in association with PCT 5, 110, 249, 267 and 277, no important Spotted-tailed Quoll habitat occurred therein. It is unlikely that any population in the proposal area would be a key source population for breeding and genetic maintenance given the species ability to disperse for foraging and breeding. It is considered that the proposal would not reduce the area of occupancy of this species given that higher quality habitat occurs in the locality and greater region. The proposal is unlikely to represent significant increases to habitat isolation and or fragmentation. Considering the mobility of the species, the proposal would not impact the long-

term survival of populations in the locality and is unlikely to further create a movement barrier for these species. Considering these factors, the proposal is considered unlikely to have a significant impact on this species.

D-1.2.35.5 NSW Assessment Bilateral requirements

- **DESCRIPTION OF THE HABITAT (INCLUDING IDENTIFICATION AND MAPPING OF SUITABLE BREEDING HABITAT, SUITABLE FORAGING HABITAT, IMPORTANT POPULATIONS AND HABITAT CRITICAL FOR SURVIVAL), WITH CONSIDERATION OF, AND REFERENCE TO, ANY RELEVANT COMMONWEALTH GUIDELINES AND POLICY STATEMENTS INCLUDING LISTING ADVICE, CONSERVATION ADVICE AND RECOVERY PLAN**

The *Approved Conservation Advice for Dasyurus maculatus maculatus* (Southeastern mainland population) (Threatened Species Conservation Advice 2020) provides a broad habitat description for the species indicating that the species is a mainly forest dependent species but occurs in a variety of habitats, including closed forests (temperate and sub-tropical rainforest), tall eucalypt forests, open woodlands, open forests and coastal heathlands (Threatened Species Conservation Advice 2020). The National Recovery Plan (Department of Environment 2016) supports this description, but add that the wide range of habitat types all appear to be characterised by relatively high (>600 mm/year) and predictable seasonal rainfall.

The species was not recorded in the proposal study area despite targeted surveys. Although potential habitat for the Spotted-tailed Quoll in the form of PCT 5, 110, 249, 267 and 277 was recorded in the study area, the majority of the habitats associated with the study area occur as disturbed, fragmented patches within an otherwise agricultural (cropping) landscape. Scattered old records exist for this species within the locality, primarily around Wagga Wagga in the east of the study area. Vegetation clearing will be undertaken for transmission line towers and associated infrastructure such as access tracks and laydown areas. A map of suitable habitat for this species is provided in Figure D-1.35.

- **DETAILS OF THE SCOPE, TIMING AND METHODOLOGY FOR STUDIES OR SURVEYS USED AND HOW THEY ARE CONSISTENT WITH (OR JUSTIFICATION FOR DIVERGENCE FROM) PUBLISHED AUSTRALIAN GOVERNMENT GUIDELINES AND POLICY STATEMENTS**

Habitat assessments were undertaken to assess the likelihood of threatened species of animal (those species known or predicted to occur within the locality from the literature and database review) occurring within the proposal study area. Fauna habitat assessments were the primary assessment tool in assessing whether threatened species were likely to occur within the proposal study area. Additional techniques used for surveying mammals included, spotlighting and remote camera traps (Table D-1.23).

Table D-1.23 Summary of survey effort for Spotted-tailed Quoll

FAUNA GROUP	SURVEY TECHNIQUE	SURVEY EFFORT	OPTIMUM SURVEY PERIOD	DATES SURVEYED
Riverine Woodland – PCT 5, PCT 249				
Woodland Mammals	Spotlighting	6 person hours nocturnal survey	All year	24 and 25 Aug 2021
Grassy Woodland – PCT 267, PCT 277				
Woodland Mammals	Spotlighting	6 person hours nocturnal survey	All year	11 Feb 2020

FAUNA GROUP	SURVEY TECHNIQUE	SURVEY EFFORT	OPTIMUM SURVEY PERIOD	DATES SURVEYED
	Remote camera traps	8,912 camera trap nights		20 Jul 2020 26 Apr – 3 May 2021 26 Apr – 7 Aug 2021 (cameras) 26 May – 8 Nov 2021 (cameras) 6-8 Dec 2021
Rocky Woodlands – PCT 110				
Woodland Mammals	Spotlighting	3 person hours of nocturnal survey	All year	2 Sep 2021
	Remote camera traps	600 camera trap nights		26 Apr – 4 Aug 2021

- **DESCRIPTION OF THE SPECIFIC IMPACTS AND ITS REGARD TO THE FULL NATIONAL EXTENT OF THE SPECIES OR COMMUNITY'S RANGE**

The proposed action would clear 15.54 ha of vegetation representing suitable habitat for this species. These impacts are captured in Section 12 of the BDAR. Figure D-1.35 shows the current known generalised distribution in NSW from the OEH Threatened Species Profile page, which is an indicative distribution map of the present distribution of the species in NSW based on the best available knowledge.

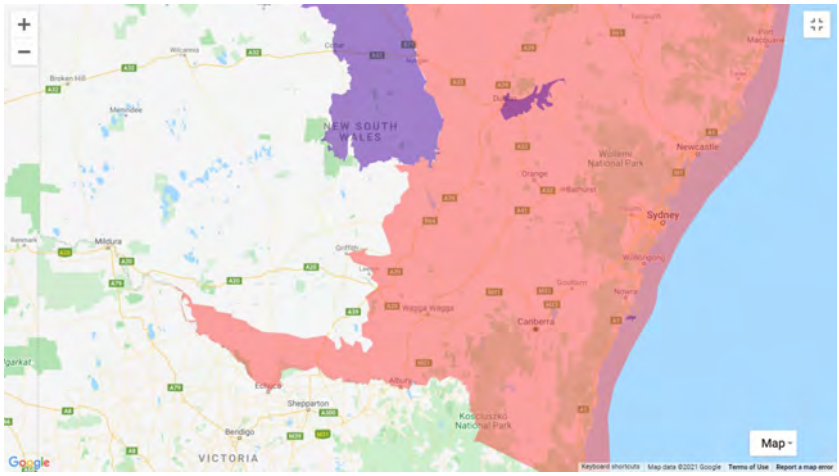


Figure D-1.35 Current distribution map for Spotted-tailed Quoll taken from OEH Threatened Species Profile

- **DESCRIPTION OF THE SPECIFIC PROPOSED AVOIDANCE AND MITIGATION MEASURES TO DEAL WITH RELEVANT IMPACTS OF THE ACTION**

The proposed avoidance and mitigation measures are outlined in Section 8 and 10 of the BDAR. Detailed avoidance description for impacts relating to biodiversity values (including threatened species) are outlined in Section 8. Mitigation measures to be implemented are outlined in Section 10. Specifically, the following relevant mitigation measures are recommended for any related residual impacts to the species:

- Development and implementation of a Biodiversity Management Plan to minimise and manage the clearing of native vegetation and habitat and implement measures in avoiding, protecting and mitigating works associated threatened species habitat.

- To facilitate woodland connectivity, it is proposed that series of connectivity corridors near tower locations that occur in woodland vegetation would be developed as part of a Connectivity Strategy under the Biodiversity Management Plan.

- **IDENTIFICATION OF SIGNIFICANT RESIDUAL ADVERSE IMPACTS LIKELY TO OCCUR AFTER THE PROPOSED ACTIVITIES TO AVOID AND MITIGATE ALL IMPACTS ARE TAKEN INTO ACCOUNT**

This species was not recorded in the proposal study area during surveys. Residual impacts would involve the removal of potentially suitable habitat in the form of PCT 22, 23, 28, 58, 75, 80, 110, 170, 171, 172, 199, 249 and 267. Mitigation measures in regard to threatened species and their habitats are outlined in Section 10 of the BDAR. Relevant mitigation measures for the mentioned species are stated above.

- **A DESCRIPTION OF ANY OFFSETS PROPOSED TO ADDRESS RESIDUAL ADVERSE SIGNIFICANT IMPACTS AND HOW THESE OFFSETS WILL BE ESTABLISHED**

Details of offset requirements and obligations for this species as a result of residual impacts due the proposed action is addressed in Section 12 of the BDAR. No species credits are required to offset the residual impacts to Spotted-tailed Quoll.

- **DETAILS OF HOW THE CURRENT PUBLISHED NSW BIODIVERSITY ASSESSMENT METHOD (BAM) HAS BEEN APPLIED IN ACCORDANCE WITH THE OBJECTS OF THE EPBC ACT TO OFFSET SIGNIFICANT RESIDUAL ADVERSE IMPACTS**

Any offsets proposed for impacts to EPBC Act listed threatened species will be done in accordance with the NSW BOS, the NSW Assessment Bilateral Agreement – Amending Agreement No. 1, and NSW BC Regulation. The BDAR specifically addresses Section 11 of the BAM and provides information on the application of the no net loss standard and the proposal biodiversity offset obligations. Credit calculations were quantified using the BAM-C Version 1.3.0.00.

- **DETAILS OF THE OFFSET PACKAGE TO COMPENSATE FOR SIGNIFICANT RESIDUAL IMPACTS INCLUDING DETAILS OF THE CREDIT PROFILES REQUIRED TO OFFSET THE ACTION IN ACCORDANCE WITH THE BAM AND/OR MAPPING AND DESCRIPTIONS OF THE EXTENT AND CONDITION OF THE RELEVANT HABITAT AND/OR THREATENED COMMUNITIES OCCURRING ON PROPOSED OFFSET SITES**

Details of offset requirements and obligations for the species as a result of residual impacts due the proposed action is addressed in Section 12 of the BDAR. The BDAR specifically addresses Section 11 of the BAM and provides information on the application of the no net loss standard and the proposal's biodiversity offset obligations. Credit calculations were quantified using the BAM-C Version 1.3.0.00.

Spotted-tailed Quoll is classified as a predicted ecosystem credit species under the BC Act. Under the BC Act and the Biodiversity Offsets Scheme, the impacts associated with vegetation impacts (including removal of predicted threatened species habitat) will be offset. Credit calculations were quantified using the BAM-C Version 1.3.0.00. The following PCTs, which align to Spotted-tailed Quoll, will be offset under the scheme, including: PCT 5, 110, 249, 267 and 277.

Section 12 of the BDAR outlines the biodiversity offset strategy for the proposal. The offset obligations will be met through implementing a combination of the following offset delivery options, being:

- the purchase and retirement of existing biodiversity credits currently available on the biodiversity credit register
- establishing a biodiversity stewardship site(s) on lands with like for like biodiversity values to those impacted by the proposal
- through making a payment into the Biodiversity Conservation Fund.

D-1.2.36 Large-eared Pied Bat (*Chalinolobus dwyeri*)

The Large-eared Pied Bat is listed as Vulnerable under the BC Act and EPBC Act.

D-1.2.36.1 Description

The Large-eared Pied Bat is patchily distributed in central-eastern New South Wales and south-eastern and central Queensland, from the area bounded by Shoalwater Bay, north of Rockhampton, south to Ulladulla (Department of Agriculture Water and the Environment 2021). The species' area of occurrence is demarcated by areas supporting maternity roost sites, which is much smaller than the species' extent of occurrence, and its distribution could be considered severely fragmented with individuals occurring in small and somewhat isolated populations (Department of Agriculture Water and the Environment 2021). Large-eared Pied Bat's main strongholds occur in the Pilliga region and Sydney sandstone region.

The Large-eared Pied Bat is restricted by a combination of habitat factors, with a close association with sandstone escarpments for roost sites and fertile valleys for foraging; particularly where valleys support box gum woodland (Department of Agriculture Water and the Environment 2021). The species is dependent on the presence of diurnal roosts for shelter and they are known to roost in caves, overhangs, disused mine shafts and abandoned Fairy Martin nests. The Large-eared Pied Bat has been recorded foraging in a range vegetation types, including wet and dry sclerophyll forests, *Callitris* dominated forest, grassy woodlands, tall open forest, subtropical rainforest, sub-alpine woodland and sandstone outcrop country (Department of Agriculture Water and the Environment 2021).

D-1.2.36.2 Relevant commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- *Conservation Advice for* Chalinolobus dwyeri *(Large-eared Pied Bat)* (Department of Agriculture Water and the Environment 2021). Reviewed as part of this assessment.
- *Commonwealth Listing Advice on* Chalinolobus dwyeri *(Large-eared Pied Bat)* (Threatened Species Scientific Committee 2012). Reviewed as part of this assessment.
- *National recovery plan for the large-eared pied bat* Chalinolobus dwyeri (Department of Environment and Resource Management 2011). Reviewed as part of this assessment.

No threat abatement plan has been identified as being relevant for this species.

Relevant survey guidelines for this species include:

- *Survey Guidelines for Australia's Threatened Bats* (Department of Environment Water Heritage and the Arts 2010).

D-1.2.36.3 Specific impacts

The Large-eared Pied was not recorded in the proposal study area during targeted microchiropteran surveys. In addition, the proposal study area did not contain important geological features that may otherwise support maternity or diurnal root sites. The closest record of Large-eared Pied Bat occurs approximately 80 km to the north of the proposal, in the far east of the proposal study area (Department of Planning Industry and Environment 2021). Nevertheless, vegetation clearing for transmission line towers and associated infrastructure, such as access roads and laydown areas, may impact potentially suitable foraging habitat in the form of PCT 267 and PCT 277. Vegetation clearing may reduce the availability of potential foraging habitat for the species, with approximately 3.16 ha potentially impacted.

D-1.2.36.4 Is this an important population

In accordance with the Significant Impact Guidelines the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the guidelines as a population that is necessary for a species' long-term survival and recovery (Department of the Environment, 2013). Under the EPBC Act, important populations are:

- likely to be key source populations either for breeding or dispersal
- likely to be necessary for maintaining genetic diversity
- at or near the limit of the species range.

Currently, there is insufficient information available to be able to describe important populations of this species. Until such information is available, all populations of Large-eared Pied Bat should be considered important due to their likely role in maintaining population connectivity and genetic diversity necessary for the evolutionary potential of the species (Department of Agriculture Water and the Environment 2021). Therefore, whilst this species was not recorded in the proposal study area during targeted survey, any individuals that may occur therein would be considered part of an important population.

D-1.2.36.5 Significant impact criteria

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- **LEAD TO A LONG-TERM DECREASE IN THE SIZE OF AN IMPORTANT POPULATION**

The proposed action is unlikely to have the potential to cause injury or mortality to individuals during clearing works, and it is considered unlikely that the proposed action would lead to a long-term decrease in the size of a population.

- **REDUCE THE AREA OF OCCUPANCY OF AN IMPORTANT POPULATION**

The proposal study area did not contain important geological features that may otherwise support maternity or diurnal roost sites for the Large-eared Pied Bat and the species was not recorded during field surveys. The closest record of Large-eared Pied Bat occurs approximately 80 km to the north of the proposal, in the far east of the proposal study area (Department of Planning Industry and Environment 2021). Consequently, the proposed action is unlikely to significantly reduce the area of occupancy for this species in this location.

- **FRAGMENT AN EXISTING IMPORTANT POPULATION INTO TWO OR MORE POPULATIONS**

The maximum cleared area for a single tower footprint or laydown area would not exceed 0.5 ha, and the easement width of the transmission line would be a maximum of approximately 80 meters (with full clearing not always being required). The proposal study area is within an already fragmented and disturbed landscape, thereby limiting the potential for any substantial additional fragmentation to occur. It is considered unlikely that the proposed action would fragment an existing population significantly beyond current fragmentation.

- **ADVERSELY AFFECT HABITAT CRITICAL TO THE SURVIVAL OF A SPECIES**

No Critical Habitat as defined under section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat (Department of Agriculture Water and the Environment 2021).

The National Recovery Plan (Department of Environment and Resource Management 2011) suggests that sandstones cliffs and fertile wooded valley habitat within close proximity of each other should be considered habitat critical to the survival of the Large-eared Pied Bat. The closest area of potentially suitable habitat is likely to be associated with The Rock Nature Reserve, approximately 5 km south of the proposal area in the far east of the proposal alignment. Accordingly, the proposal is not considered likely to affect habitat critical to the survival of the Large-eared Pied Bat.

- **DISRUPT THE BREEDING CYCLE OF AN IMPORTANT POPULATION**

The proposal study area did not contain important geological features that may otherwise support maternity or diurnal root sites. Although the proposal will affect potentially suitable foraging habitat in the form of PCT 267 and PCT 277, an impact of approximately 3.16 ha is unlikely to disrupt the breeding cycle of an important population.

- **MODIFY, DESTROY, REMOVE OR ISOLATE OR DECREASE THE AVAILABILITY OR QUALITY OF HABITAT TO THE EXTENT THAT THE SPECIES IS LIKELY TO DECLINE**

The proposal study area did not contain important geological features that may otherwise support maternity or diurnal roost sites for the Large-eared Pied Bat. In addition, the species was not recorded during field surveys and the nearest record occurs approximately 80 km to the north of the proposal study area (Department of Planning Industry and Environment 2021). However, vegetation clearing for transmission line towers and associated infrastructure, such as access roads and laydown areas, may impact potentially suitable foraging habitat in the form of PCT 267 and PCT 277. However, it is unlikely that an impact to approximately 3.16 ha of potential foraging habitat will cause the species to decline.

- **RESULT IN INVASIVE SPECIES THAT ARE HARMFUL TO A VULNERABLE SPECIES BECOMING ESTABLISHED IN THE VULNERABLE SPECIES' HABITAT**

Habitat for the species in the proposal study area is varied in condition with much of the woodland and agricultural landscape in modified or poor condition, and many patches dominated by exotic ground species. Weed and pest faunal species are both currently present throughout the landscape and it is considered unlikely that the proposal would substantially change the composition of the species' habitat within the landscape or increase the spread and establishment of invasive species (i.e. predators) that could threaten the survival of the species. There is potential for the proposal to introduce additional weeds and pathogens within the proposal area and surrounding locality. Mitigation measures outlined in Chapter 10 of the BDAR would be implemented for the proposal to address potential invasive species introduction.

- **INTRODUCE DISEASE THAT MAY CAUSE THE SPECIES TO DECLINE**

There are no known diseases causing potential species decline to the Large-eared Pied Bat.

- **INTERFERE SUBSTANTIALLY WITH THE RECOVERY OF THE SPECIES**

The National Recovery Plan (Department of Environment and Resource Management 2011) identifies the following recovery objectives for the Large-eared Pied Bat.

- identify priority roost and maternity sites for protection
- implement conservation and management strategies for priority sites
- educate the community and industry to understand and participate in the conservation of the Large-eared Pied Bat
- research the Large-eared Pied Bat to augment biological and ecological data to enable conservation management
- determine the meta-population dynamics throughout the distribution of the Large-eared Pied Bat.

The Conservation Advice for Large-eared Pied Bat (Department of Agriculture Water and the Environment 2021) also considers that preventing vegetation clearing or logging of high value foraging habitat within the vicinity of known or potential roosts as an important conservation and management priority. Nevertheless, the proposed action will not interfere with the recovery of the Large-eared Pied Bat.

- **CONCLUSION**

The Large-eared Pied Bat was not recorded in the proposal study area during surveys and nearest species record occurred approximately 80 km to the north of the proposal, in the far east of the proposal study area. Although potentially suitable foraging habitat was recorded in the proposal study area in association with PCT 267 and PCT 277, no important Large-eared Pied Bat habitat occurred therein. The proposal study area did not contain important geological features that may otherwise support maternity or diurnal roost sites for the Large-eared Pied Bat. Nevertheless, vegetation clearing for transmission line towers and associated infrastructure, such as access roads and laydown areas, may impact approximately 3.16 ha of potentially suitable foraging habitat. Considering these factors, it is not likely that the proposal would have significant impact on the Large-eared Pied Bat.

D-1.2.36.6 NSW Assessment Bilateral requirements

- **DESCRIPTION OF THE HABITAT (INCLUDING IDENTIFICATION AND MAPPING OF SUITABLE BREEDING HABITAT, SUITABLE FORAGING HABITAT, IMPORTANT POPULATIONS AND HABITAT CRITICAL FOR SURVIVAL), WITH CONSIDERATION OF, AND REFERENCE TO, ANY RELEVANT COMMONWEALTH GUIDELINES AND POLICY STATEMENTS INCLUDING LISTING ADVICE, CONSERVATION ADVICE AND RECOVERY PLAN**

The *Conservation Advice for Chalinolobus dwyeri (Large-eared Pied Bat)* (Department of Agriculture Water and the Environment 2021) provides a broad habitat description for the species indicating that the species has a close association with sandstone escarpments (for roosts) and fertile valleys (for foraging), particularly where the valleys support box gum woodland.

The species was not recorded in the proposal study area during surveys and the closest record of Large-eared Pied Bat occurred approximately 80 km to the north of the proposal in the far east of the proposal study area. Although potentially suitable foraging habitat was recorded in the form of PCT 267 and PCT 277, the proposal study area did not contain important geological features that may otherwise support maternity or diurnal root sites. Vegetation clearing will be undertaken for transmission line towers and associated infrastructure such as access tracks and laydown areas. A map of suitable habitat for this species is provided in Figure D-1.36.

- **DETAILS OF THE SCOPE, TIMING AND METHODOLOGY FOR STUDIES OR SURVEYS USED AND HOW THEY ARE CONSISTENT WITH (OR JUSTIFICATION FOR DIVERGENCE FROM) PUBLISHED AUSTRALIAN GOVERNMENT GUIDELINES AND POLICY STATEMENTS**

Habitat assessments were undertaken to assess the likelihood of threatened species of animal (those species known or predicted to occur within the locality from the literature and database review) occurring within the proposal study area. Fauna habitat assessments were the primary assessment tool in assessing whether threatened species were likely to occur within the proposal study area. Additional techniques used for surveying mammals included harp trapping and Anabats (Table D-1.24).

Table D-1.24 Summary of survey effort for Large-eared Pied Bat

FAUNA GROUP	SURVEY TECHNIQUE	SURVEY EFFORT	OPTIMUM SURVEY PERIOD	DATES SURVEYED
Grassy Woodland – PCT 267, PCT 277				
Microchiropteran bats	Harp trap	2 x harp trap nights		Dec 2019
	Anabat	2 x Anabat nights		

- **DESCRIPTION OF THE SPECIFIC IMPACTS AND ITS REGARD TO THE FULL NATIONAL EXTENT OF THE SPECIES OR COMMUNITY'S RANGE**

The proposed action would clear 3.16 ha of vegetation representing potentially suitable foraging habitat for this species. These impacts are captured in Section 12 of the BDAR. Figure D-1.36 shows the current known generalised distribution from the Department's Species Profile and Threats Database, which is an indicative distribution map of the present distribution of the species based on the best available knowledge.

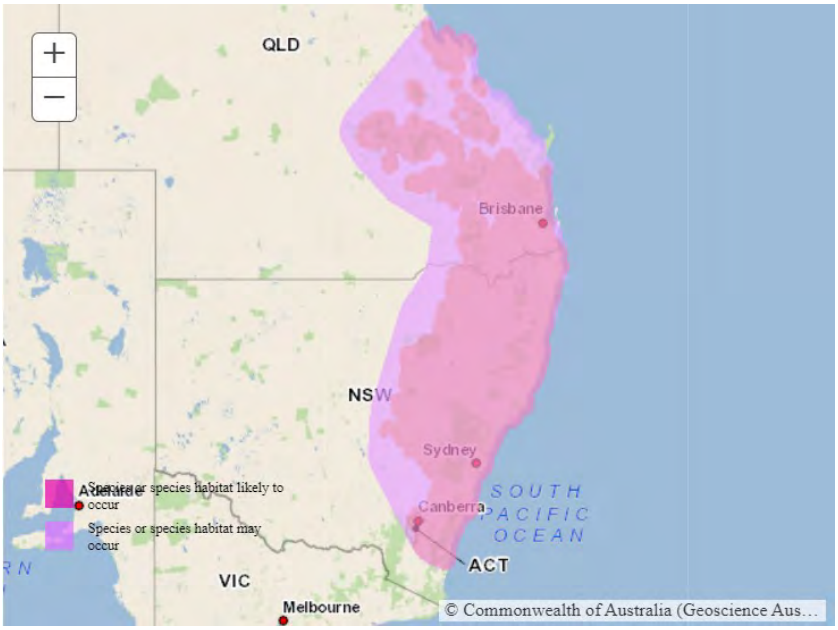


Figure D-1.36 Current distribution map for Large-eared Pied Bat taken from the SPRAT

- **DESCRIPTION OF THE SPECIFIC PROPOSED AVOIDANCE AND MITIGATION MEASURES TO DEAL WITH RELEVANT IMPACTS OF THE ACTION**

The proposed avoidance and mitigation measures are outlined in Section 8 and 10 of the BDAR. Detailed avoidance description for impacts relating to biodiversity values (including threatened species) are outlined in Section 8. Mitigation measures to be implemented are outlined in Section 10. No specific measures for the Large-eared Pied Bat are identified.

- **IDENTIFICATION OF SIGNIFICANT RESIDUAL ADVERSE IMPACTS LIKELY TO OCCUR AFTER THE PROPOSED ACTIVITIES TO AVOID AND MITIGATE ALL IMPACTS ARE TAKEN INTO ACCOUNT**

Details of offset requirements and obligations for this species as a result of residual impacts due the proposed action is addressed in Section 12 of the BDAR. A significant residual adverse impact to the Large-eared Pied Bat is not expected as a result of the proposal.

- **A DESCRIPTION OF ANY OFFSETS PROPOSED TO ADDRESS RESIDUAL ADVERSE SIGNIFICANT IMPACTS AND HOW THESE OFFSETS WILL BE ESTABLISHED**

Details of offset requirements and obligations for this species as a result of residual impacts due the proposed action is addressed in Section 12 of the BDAR. No species credits are required to offset the residual impacts to Large-eared Pied Bat.

- **DETAILS OF HOW THE CURRENT PUBLISHED NSW BIODIVERSITY ASSESSMENT METHOD (BAM) HAS BEEN APPLIED IN ACCORDANCE WITH THE OBJECTS OF THE EPBC ACT TO OFFSET SIGNIFICANT RESIDUAL ADVERSE IMPACTS**

Any offsets proposed for impacts to EPBC Act listed threatened species will be done in accordance with the NSW BOS, the NSW Assessment Bilateral Agreement – Amending Agreement No. 1, and NSW BC Regulation. The BDAR specifically addresses Section 11 of the BAM and provides information on the application of the no net loss standard and the proposal biodiversity offset obligations. Credit calculations were quantified using the BAM-C Version 1.3.0.00.

- **DETAILS OF THE OFFSET PACKAGE TO COMPENSATE FOR SIGNIFICANT RESIDUAL IMPACTS INCLUDING DETAILS OF THE CREDIT PROFILES REQUIRED TO OFFSET THE ACTION IN ACCORDANCE WITH THE BAM AND/OR MAPPING AND DESCRIPTIONS OF THE EXTENT AND CONDITION OF THE RELEVANT HABITAT AND/OR THREATENED COMMUNITIES OCCURRING ON PROPOSED OFFSET SITES**

Details of offset requirements and obligations for the species as a result of residual impacts due the proposed action is addressed in Section 12 of the BDAR. The BDAR specifically addresses Section 11 of the BAM and provides information on the application of the no net loss standard and the proposal's biodiversity offset obligations. Credit calculations were quantified using the BAM-C Version 1.3.0.00.

The proposal offset obligations will be met through implementing a combination of the following offset delivery options, being:

- the purchase and retirement of existing biodiversity credits currently available on the biodiversity credit register
- establish a biodiversity stewardship site(s) on lands with like for like biodiversity values to those impacted by the proposal
- through making a payment into the Biodiversity Conservation Fund.

D-1.2.37 Silver Perch (Bidyanus bidyanus)

The Silver Perch is listed as Critically Endangered under the EPBC Act.

D-1.2.37.1 Description

The most abundant remaining natural population of Silver Perch occurs in the central Murray River downstream of Yarrawonga Weir, as well as several of its anabranches and tributaries. The central Murray population is considered secure and self-sustaining. There have also been reports of self-sustaining populations in other rivers, including the MacIntyre and Macquarie Rivers in northern NSW and the Warrego River in Queensland, mostly from recreational anglers. It prefers fast-flowing waters but is also known from rivers, lakes and reservoirs.

D-1.2.37.2 Relevant commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- the *Conservation Advice* Bidyanus bidyanus *(silver perch)* (Department of the Environment 2013) was reviewed as part of this assessment.
- listing assessment information may be available in the approved Conservation Advice.
- there is no adopted or made Recovery Plan for this species.

No threat abatement plan has been identified as being relevant for this species.

Relevant survey guidelines for this species include:

- *Survey guidelines for Australia's threatened fish. EPBC Act survey guidelines 6.4* (Department of Sustainability Environment Water Population and Communities 2011).

D-1.2.37.3 Specific impacts

The maximum aquatic impact likely to occur to any of the potential aquatic habitat would be the removal or trimming of tree canopy on the riverbanks to facilitate the construction and operation of the powerlines spanning each riparian area. All trunk bases and understorey will would be retained in-situ adjoining the riverbanks. All potential erosion and sedimentation impacts would be managed and monitored to ensure that these do not impact the riparian areas. At most, any impact to water quality would be temporary and negligible. Each riparian area would continue to function as it currently functions.

D-1.2.37.4 Significant impact criteria

According to the *Matters of National Environmental Significance - Significant Impact Guidelines 1.1* (Department of the Environment Water Heritage and the Arts 2013), an action is likely to have a significant impact on an Endangered or Critically Endangered species if there is a real chance or possibility that it will:

- **LEAD TO A LONG-TERM DECREASE IN THE SIZE OF A POPULATION**

No significant impacts are anticipated for the species from the proposed action due to the avoidance of clearing and construction works within waterways, especially those containing potentially suitable habitat for the species. Therefore, the proposed action is considered unlikely to lead to a long-term decrease in the size of a population.

- **REDUCE THE AREA OF OCCUPANCY OF THE SPECIES**

No significant impacts are anticipated for the species from the proposed action due to the avoidance of clearing and construction works within waterways, especially those containing potentially suitable habitat for the species. Therefore, the proposed action is considered unlikely to reduce the area of occupancy of a species.

- **FRAGMENT AN EXISTING POPULATION INTO TWO OR MORE POPULATIONS**

No significant impacts are anticipated for the species from the proposed action due to the avoidance of clearing and construction works within waterways, especially those containing potentially suitable habitat for the species. Therefore, the proposed action is considered unlikely to fragment an existing population into two or more populations.

- **ADVERSELY AFFECT HABITAT CRITICAL TO THE SURVIVAL OF A SPECIES**

There is no habitat listed as critical to the survival of the species under the EPBC Act (Department of Agriculture Water and the Environment 2021) within the proposal study area. Habitat critical to the survival of a species also refers to areas that are necessary:

- for activities such as foraging, breeding, roosting, or dispersal
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
- to maintain genetic diversity and long-term evolutionary development, or
- for the reintroduction of populations or recovery of the species or ecological community.

Habitat within the proposal study area is not likely to be significantly impacted by minor clearing works from the proposal, which would be limited to the removal or trimming of tree canopy on riverbanks to facilitate the construction and operation of the powerlines spanning each riparian area, and potential erosion and sedimentation impacts would be managed through mitigation measures. Consequently, the proposal is unlikely to affect habitat critical to the survival of the species.

- **DISRUPT THE BREEDING CYCLE OF A POPULATION**

No significant impacts are anticipated for the species from the proposed action due to the avoidance of clearing and construction works within waterways, especially those containing potentially suitable habitat for the species. Therefore, the proposed action is unlikely to disrupt the breeding cycle of a population.

- **MODIFY, DESTROY, REMOVE OR ISOLATE OR DECREASE THE AVAILABILITY OR QUALITY OF HABITAT TO THE EXTENT THAT THE SPECIES IS LIKELY TO DECLINE**

The proposed action is likely to have minimal impact to wetlands, riverine, and waterways habitats suitable for the species. Therefore, the proposed action is unlikely to result in the modification, removal, isolation, or decreased availability or quality of habitat to the extent that the species is likely to decline.

- **RESULT IN INVASIVE SPECIES THAT ARE HARMFUL TO A CRITICALLY ENDANGERED OR ENDANGERED SPECIES BECOMING ESTABLISHED IN THE ENDANGERED OR CRITICALLY ENDANGERED SPECIES' HABITAT**

Mitigation measures would be employed as part of the proposal, including the implementation of weed and pest management plans, installation of vehicle wash stations to limit the spread of weeds, pathogens and disease. Sediment and control measures would be put in place around large-scale excavation works and stockpiles areas that occur within or in close proximity to these species' habitat to minimise sedimentation and hydrological impacts.

- **INTRODUCE DISEASE THAT MAY CAUSE THE SPECIES TO DECLINE**

There are no known diseases that are likely to increase in the area as a result of the proposal. Mitigation measures will be implemented as part of the CEMP for the proposal including weed and pathogen controls (i.e. vehicle and machinery cleaning protocols, sedimentation controls), which will minimise likelihood of introduction of disease.

- **INTERFERE SUBSTANTIALLY WITH THE RECOVERY OF THE SPECIES**

A NSW recovery plan (NSW Department of Primary Industries 2006) listing a number of recovery actions has been prepared for the Silver Perch. The recovery plan includes five recovery areas:

- research
- habitat protection and restoration
- introduced species and disease
- fishing, and
- aquaculture and stocking.

Owing to the small area of minor works around riparian vegetation trimming on riverbanks to be removed, the proposal is not likely to interfere with these recovery actions or significantly interfere with the recovery of this species.

- **CONCLUSION**

This species has the potential to occur within the proposal study area, however only within waterways which would be avoided. Where waterway crossings of the transmission line occur, the alignment would span these habitats only, and no towers or structures would be placed in waterways. Mitigation measures including weed and pest management plans, hygiene protocols and sediment control measures in close proximity to potential habitat would minimise indirect impacts to this species. Therefore, no significant impacts are anticipated, due to the avoidance of clearing and construction works within waterways containing potentially suitable habitat and implementation of mitigation measures.

D-1.2.38 Murray Hardyhead (*Craterocephalus fluviatilis*)

Murray Hardyhead is listed as Endangered under the EPBC Act.

D-1.2.38.1 Description

Murray Hardyhead live along the edges of slow-flowing lowland rivers, as well as in lakes, billabongs and backwaters. They are often found amongst aquatic weeds, in both fresh and quite saline waters. They were once widespread and abundant in the Murray and Murrumbidgee river systems in southern NSW and northern Victoria; however, they have suffered a serious population decline, and now seem to be limited to a few sites, mainly in northern Victoria. Since 2000, only one individual has been collected in extensive surveys in NSW.

D-1.2.38.2 Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- the *Approved Conservation Advice for* Craterocephalus fluviatilis *(Murray hardyhead)* (Department of Sustainability Environment Water Population and Communities 2012) was reviewed as part of this assessment. Listing advice for this species is also covered under this document
- the *Commonwealth Listing Advice on* Craterocephalus fluviatilis *(Murray Hardyhead)* (Threatened Species Scientific Committee 2012) was reviewed as part of this assessment.
- the *National Recovery Plan for the Murray Hardyhead,* Craterocephalus fluviatilis (Backhouse, Lyon et al. 2008) was reviewed as part of this assessment.

No threat abatement plan has been identified as being relevant for this species.

Relevant survey guidelines for this species include:

- *Survey guidelines for Australia's threatened fish. EPBC Act survey guidelines 6.4* (Department of Sustainability Environment Water Population and Communities 2011).

D-1.2.38.3 Specific impacts

The maximum aquatic impact likely to occur to any of the potential aquatic habitat would be the removal or trimming of tree canopy on the riverbanks to facilitate the construction and operation of the powerlines spanning each riparian area. All trunk bases and understorey will would be retained in-situ adjoining the riverbanks. All potential erosion and sedimentation impacts would be managed and monitored to ensure that these do not impact the riparian areas. At most, any impact to water quality would be temporary and negligible. Each riparian area would continue to function as it currently functions.

D-1.2.38.4 Significant impact criteria

According to the *Matters of National Environmental Significance - Significant Impact Guidelines 1.1* (Department of the Environment Water Heritage and the Arts 2013), an action is likely to have a significant impact on an Endangered or Critically Endangered species if there is a real chance or possibility that it will:

- **LEAD TO A LONG-TERM DECREASE IN THE SIZE OF A POPULATION**

No significant impacts are anticipated for these species from the proposed action due to the avoidance of clearing and construction works within waterways, especially those containing potentially suitable habitat for these species. Therefore, the proposed action is considered unlikely to lead to a long-term decrease in the size of a population.

- **REDUCE THE AREA OF OCCUPANCY OF THE SPECIES**

No significant impacts are anticipated for these species from the proposed action due to the avoidance of clearing and construction works within waterways, especially those containing potentially suitable habitat for these species. Therefore, the proposed action is considered unlikely to reduce the area of occupancy of a species.

- **FRAGMENT AN EXISTING POPULATION INTO TWO OR MORE POPULATIONS**

No significant impacts are anticipated for these species from the proposed action due to the avoidance of clearing and construction works within waterways, especially those containing potentially suitable habitat for these species. Therefore, the proposed action is considered unlikely to fragment an existing population into two or more populations.

- **ADVERSELY AFFECT HABITAT CRITICAL TO THE SURVIVAL OF A SPECIES**

There is no habitat listed as critical to the survival of the species under the EPBC Act (Department of Agriculture Water and the Environment 2021) within the proposal study area. Habitat critical to the survival of a species also refers to areas that are necessary:

- for activities such as foraging, breeding, roosting, or dispersal
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
- to maintain genetic diversity and long-term evolutionary development, or
- for the reintroduction of populations or recovery of the species or ecological community.

Habitat within the proposal study area is not likely to be significantly impacted by minor clearing works from the proposal, which would be limited to the removal or trimming of tree canopy on riverbanks to facilitate the construction and operation of the powerlines spanning each riparian area, and potential erosion and sedimentation impacts would be managed through mitigation measures. Consequently, the proposal is unlikely to affect habitat critical to the survival of the species.

- **DISRUPT THE BREEDING CYCLE OF A POPULATION**

No significant impacts are anticipated for this species from the proposed action due to the avoidance of clearing and construction works within waterways, especially those containing potentially suitable habitat for these species. Therefore, the proposed action is unlikely to disrupt the breeding cycle of a population.

- **MODIFY, DESTROY, REMOVE OR ISOLATE OR DECREASE THE AVAILABILITY OR QUALITY OF HABITAT TO THE EXTENT THAT THE SPECIES IS LIKELY TO DECLINE**

The proposed action is likely to have minimal impact to wetlands, riverine, and waterways habitats suitable for this species. Therefore, the proposed action is unlikely to result in the modification, removal, isolation, or decreased availability or quality of habitat to the extent that the species is likely to decline.

- **RESULT IN INVASIVE SPECIES THAT ARE HARMFUL TO A CRITICALLY ENDANGERED OR ENDANGERED SPECIES BECOMING ESTABLISHED IN THE ENDANGERED OR CRITICALLY ENDANGERED SPECIES' HABITAT**

Mitigation measures would be employed as part of the proposal, including the implementation of weed and pest management plans, installation of vehicle wash stations to limit the spread of weeds, pathogens and disease. Sediment and control measures would be put in place around large-scale excavation works and stockpiles areas that occur within or in close proximity to these species' habitat to minimise sedimentation and hydrological impacts.

- **INTRODUCE DISEASE THAT MAY CAUSE THE SPECIES TO DECLINE**

There are no known diseases that are likely to increase in the area as a result of the proposal. Mitigation measures will be implemented as part of the CEMP for the proposal, including weed and pathogen controls (i.e. vehicle and machinery cleaning protocols, sedimentation controls), which will minimise likelihood of introduction of disease.

- **INTERFERE SUBSTANTIALLY WITH THE RECOVERY OF THE SPECIES**

The Murray Hardyhead has a National Recovery Plan (Backhouse, Lyon et al. 2008), which listed a number of recovery objectives and actions for the species across its distribution. The recovery plan includes seven recovery areas:

- investigate and manage threats to populations and habitats
- determine population persistence and trends
- determine habitat preferences
- investigate important life history attributes
- establish and maintain the Murray Hardyhead in captivity
- establish new populations of Murray Hardyhead in the wild
- increase community awareness of Murray Hardyhead conservation.

It is unlikely that the proposed action (i.e. minor works around riparian vegetation trimming on riverbanks) would be significant to the species and will not interfere significantly with any of its management or recovery actions.

- **CONCLUSION**

This species has the potential to occur within the proposal study area, however only within waterways, which would be avoided and protected by the proposal. Where waterway crossings of the transmission line occur, the alignment would span these habitats only, and no towers or structures would be placed in waterways. Mitigation measures like weed and pest management plans, hygiene protocols and sediment control measures, in close proximity to potential habitat would minimise indirect impacts to these species. Therefore, no significant impacts are anticipated for this species, due to the avoidance of clearing and construction works within waterways containing potentially suitable habitat and implementation of mitigation measures.

D-1.2.39 Flathead Galaxias (*Galaxias rostratus*)

The Flathead Galaxias (*Galaxias rostratus*) is listed as Critically Endangered under the EPBC Act.

D-1.2.39.1 Description

Flathead Galaxias are known only from the southern half of the Murray-Darling Basin system, previously known to occur in the in the Macquarie, Lachlan, Murrumbidgee and Murray Rivers in NSW, though are now only known from the upper Murray River near Tintaldra and wetland areas near Howlong (Threatened Species Scientific Committee 2016, NSW Department of Primary Industries 2021). The species inhabits still or slow moving water bodies such as wetlands and lowland streams and use a range of habitats, including rock and sandy bottoms and aquatic vegetation.

D-1.2.39.2 Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- the approved *Conservation Advice for* Galaxias rostratus, *Flathead Galaxias* (Threatened Species Scientific Committee 2016) was reviewed as part of this assessment.
- the *Commonwealth Listing Advice on* Craterocephalus fluviatilis *(Murray Hardyhead)* (Threatened Species Scientific Committee 2012) was reviewed as part of this assessment.
- there is no adopted or made recovery plan for this species. As outlined in the Commonwealth Species Profile and Threats Database (SPRAT) for this species (Department of Agriculture Water and the Environment 2021), a recovery plan is not required as 'many of the threats to the Flathead Galaxias are threats to other EPBC Act-listed threatened fish species that occur within the Murray-Darling Basin. Actions and mechanisms that are being implemented through a variety of other existing programs (including in other species recovery plans, water management plans, actions being undertaken by relevant catchment management authorities) are likely to be of benefit to this species.'

No threat abatement plan has been identified as being relevant for this species.

Relevant survey guidelines for this species include:

- *Survey guidelines for Australia's threatened fish. EPBC Act survey guidelines 6.4* (Department of Sustainability Environment Water Population and Communities 2011).

D-1.2.39.3 Specific impacts

The maximum aquatic impact likely to occur to any of the potential aquatic habitat would be the removal or trimming of tree canopy on the riverbanks to facilitate the construction and operation of the powerlines spanning each riparian area. All trunk bases and understorey will would be retained in-situ adjoining the riverbanks. All potential erosion and sedimentation impacts would be managed and monitored to ensure that these do not impact the riparian areas. At most, any impact to water quality would be temporary and negligible. Each riparian area would continue to function as it currently functions.

D-1.2.39.4 Significant impact criteria

According to the *Matters of National Environmental Significance - Significant Impact Guidelines 1.1* (Department of the Environment Water Heritage and the Arts 2013), an action is likely to have a significant impact on an Endangered or Critically Endangered species if there is a real chance or possibility that it will:

- **LEAD TO A LONG-TERM DECREASE IN THE SIZE OF A POPULATION**

No significant impacts are anticipated for these species from the proposed action due to the avoidance of clearing and construction works within waterways, especially those containing potentially suitable habitat for these species. Therefore, the proposed action is considered unlikely to lead to a long-term decrease in the size of a population.

- **REDUCE THE AREA OF OCCUPANCY OF THE SPECIES**

No significant impacts are anticipated for these species from the proposed action due to the avoidance of clearing and construction works within waterways, especially those containing potentially suitable habitat for these species. Therefore, the proposed action is considered unlikely to reduce the area of occupancy of the species.

- **FRAGMENT AN EXISTING POPULATION INTO TWO OR MORE POPULATIONS**

No significant impacts are anticipated for these species from the proposed action due to the avoidance of clearing and construction works within waterways, especially those containing potentially suitable habitat for these species. Therefore, the proposed action is considered unlikely to fragment an existing population into two or more populations.

- **ADVERSELY AFFECT HABITAT CRITICAL TO THE SURVIVAL OF A SPECIES**

There is no habitat listed as critical to the survival of the species under the EPBC Act (Department of Agriculture Water and the Environment 2021) within the proposal study area. Habitat critical to the survival of a species also refers to areas that are necessary:

- for activities such as foraging, breeding, roosting, or dispersal
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
- to maintain genetic diversity and long-term evolutionary development, or
- for the reintroduction of populations or recovery of the species or ecological community.

Habitat within the proposal study area is not likely to be significantly impacted by minor clearing works from the proposal, which would be limited to the removal or trimming of tree canopy on riverbanks to facilitate the construction and operation of the powerlines spanning each riparian area, and potential erosion and sedimentation impacts would be managed through mitigation measures. Consequently, the proposal is unlikely to affect habitat critical to the survival of the species.

- **DISRUPT THE BREEDING CYCLE OF A POPULATION**

No significant impacts are anticipated for this species from the proposed action due to the avoidance of clearing and construction works within waterways, especially those containing potentially suitable habitat for these species. Therefore, the proposed action is unlikely to disrupt the breeding cycle of a population.

- **MODIFY, DESTROY, REMOVE OR ISOLATE OR DECREASE THE AVAILABILITY OR QUALITY OF HABITAT TO THE EXTENT THAT THE SPECIES IS LIKELY TO DECLINE**

The proposed action is likely to have minimal impact to wetlands, riverine, and waterways habitats suitable for this species. Therefore, the proposed action is unlikely to result in the modification, removal, isolation, or decreased availability or quality of habitat to the extent that the species is likely to decline.

- **RESULT IN INVASIVE SPECIES THAT ARE HARMFUL TO A CRITICALLY ENDANGERED OR ENDANGERED SPECIES BECOMING ESTABLISHED IN THE ENDANGERED OR CRITICALLY ENDANGERED SPECIES' HABITAT**

Mitigation measures would be employed as part of the proposal, including the implementation of weed and pest management plans, installation of vehicle wash stations to limit the spread of weeds, pathogens and disease. Sediment and control measures would be put in place around large-scale excavation works and stockpiles areas that occur within or in close proximity to these species' habitat to minimise sedimentation and hydrological impacts.

- **INTRODUCE DISEASE THAT MAY CAUSE THE SPECIES TO DECLINE**

There are no known diseases that are likely to increase in the area as a result of the proposal. Mitigation measures will be implemented as part of the CEMP for the proposal, including weed and pathogen controls (i.e. vehicle and machinery cleaning protocols, sedimentation controls), which will minimise likelihood of introduction of disease.

- **INTERFERE SUBSTANTIALLY WITH THE RECOVERY OF THE SPECIES**

There is currently no formal recovery plan for this species. The approved conservation advice for the species outlines a number of priority conservation and management actions intended to 'Halt decline and stabilise populations in the immediate term, then recover the range of the Flathead Galaxias to historical extent and rebuild populations' (Threatened Species Scientific Committee 2016). The proposal is unlikely to interfere with any of the recovery actions outlined.

- **CONCLUSION**

This species has the potential to occur within the proposal study area, however only within waterways, which would be avoided and protected by the proposal. Where waterway crossings of the transmission line occur, the alignment would span these habitats only, and no towers or structures would be placed in waterways. Mitigation measures like weed and pest management plans, hygiene protocols and sediment control measures, in close proximity to potential habitat would minimise indirect impacts to these species. Therefore, no significant impacts are anticipated for this species, due to the avoidance of clearing and construction works within waterways containing potentially suitable habitat and implementation of mitigation measures.

D-1.2.40 Murray Cod (*Maccullochella peelii*)

Murray Cod is listed as Vulnerable under the EPBC Act.

D-1.2.40.1 Description

Murray Cod, also referred to as cod or codfish, were once abundant throughout the Murray-Darling river system, but overfishing and environmental changes have drastically reduced its numbers. The species has been selectively stocked in other river systems in NSW, Victoria and Western Australia, but has generally failed to establish itself in those areas. Murray Cod generally prefer slow flowing, turbid water in streams and rivers, favouring deeper water around boulders, undercut banks, overhanging vegetation and logs. Small numbers are still present in the Nepean River and Yarra River.

D-1.2.40.2 Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- there is no approved Conservation Advice for this species.
- the *Commonwealth Listing Advice on* Maccullochella peelii peelii *(Murray Cod, Cod, Goodoo* (Threatened Species Scientific Committee 2013) was reviewed as part of this assessment.
- the *National Recovery Plan for the Murray Cod* Maccullochella peelii peelii (National Murray Cod Recovery Team 2010) was reviewed as part of this assessment.

No threat abatement plan has been identified as being relevant for this species.

Relevant survey guidelines for this species include:

- *Survey guidelines for Australia's threatened fish. EPBC Act survey guidelines 6.4* (Department of Sustainability Environment Water Population and Communities 2011).

D-1.2.40.3 Specific impacts

The maximum aquatic impact likely to occur to any of the potential aquatic habitat would be the removal or trimming of tree canopy on the riverbanks to facilitate the construction and operation of the powerlines spanning each riparian area. All trunk bases and understorey will would be retained in-situ adjoining the riverbanks. All potential erosion and sedimentation impacts would be managed and monitored to ensure that these do not impact the riparian areas. At most, any impact to water quality would be temporary and negligible. Each riparian area would continue to function as it currently functions.

D-1.2.40.4 Is this an important population?

In accordance with the *Matters of National Environmental Significance - Significant Impact Guidelines 1.1* (Department of the Environment Water Heritage and the Arts 2013), the presence of an important population must be identified prior to addressing the significance impact criteria. An important population is defined in the guidelines as a population that is necessary for a species' long-term survival and recovery (Department of the Environment Water Heritage and the Arts 2013). Under the EPBC Act, important populations are:

- likely to be key source populations either for breeding or dispersal
- likely to be necessary for maintaining genetic diversity
- at or near the limit of the species range.

According to the national recovery plan for the species (National Murray Cod Recovery Team 2010), the proposal study area falls within the range of important populations of the species, however, these populations are dependent on population size, scale quality and other measures to determine their importance. Though individuals within the study area may form part of a wider important population, it is unlikely that any such population would be dependent on or limited to habitat within the study area. The study area location is not at the limit of this species known range, which extends into Queensland and to Victoria. Nor would any population present be important for maintaining genetic diversity or breeding. Therefore, any occurrences of this species within the proposal study area are not likely to form part of an important population. Additionally, no significant impacts are anticipated for these species from the proposed action due to the avoidance of clearing and construction works within waterways, especially those containing potentially suitable habitat for these species.

D-1.2.40.5 Significant impact criteria

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- **LEAD TO A LONG-TERM DECREASE IN THE SIZE OF AN IMPORTANT POPULATION**

Not applicable as individuals, if present, are not considered to be part of an important population.

- **REDUCE THE AREA OF OCCUPANCY OF AN IMPORTANT POPULATION**

Not applicable as individuals, if present, are not considered to be part of an important population.

- **FRAGMENT AN EXISTING IMPORTANT POPULATION INTO TWO OR MORE POPULATIONS**

Not applicable as individuals, if present, are not considered to be part of an important population.

- **ADVERSELY AFFECT HABITAT CRITICAL TO THE SURVIVAL OF A SPECIES**

There is no habitat listed as critical to the survival of this species under the EPBC Act (Department of Agriculture Water and the Environment 2021). Habitat critical to the survival of a species also refers to areas that are necessary:

- for activities such as foraging, breeding, roosting, or dispersal
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
- to maintain genetic diversity and long-term evolutionary development, or
- for the reintroduction of populations or recovery of the species or ecological community.

Habitat within the proposal study area is not likely to be significantly impacted by minor clearing works from the proposal, which would be limited to the removal or trimming of tree canopy on riverbanks to facilitate the construction and operation of the powerlines spanning each riparian area, and potential erosion and sedimentation impacts would be managed through mitigation measures. Habitat within the proposal study area is not at the limit of the species range and individuals, if present, would not be considered part of an important population. Individuals within the locality would not be considered reliant on the habitat within the proposal study area. Consequently, the proposal is unlikely to affect habitat critical to the survival of the species.

- **DISRUPT THE BREEDING CYCLE OF AN IMPORTANT POPULATION**

Not applicable as individuals, if present, are not considered to be part of an important population. No significant impacts are anticipated for these species from the proposed action due to the avoidance of clearing and construction works within waterways, especially those containing potentially suitable habitat for these species. Therefore, the proposed action is unlikely to disrupt the breeding cycle of a population.

- **MODIFY, DESTROY, REMOVE OR ISOLATE OR DECREASE THE AVAILABILITY OR QUALITY OF HABITAT TO THE EXTENT THAT THE SPECIES IS LIKELY TO DECLINE**

The proposed action is likely to have minimal impact to wetlands, riverine, and waterways habitats suitable for these species. Therefore, the proposed action is unlikely to result in the modification, removal, isolation, or decreased availability or quality of habitat to the extent that the species is likely to decline.

- **RESULT IN INVASIVE SPECIES THAT ARE HARMFUL TO A VULNERABLE SPECIES BECOMING ESTABLISHED IN THE VULNERABLE SPECIES' HABITAT**

Mitigation measures would be employed as part of the proposal, including the implementation of weed and pest management plans, installation of vehicle wash stations to limit the spread of weeds, pathogens and disease. Sediment and control measures would be put in place around large-scale excavation works and stockpiles areas that occur within or in close proximity to these species' habitat to minimise sedimentation and hydrological impacts.

- **INTRODUCE DISEASE THAT MAY CAUSE THE SPECIES TO DECLINE**

There are no known diseases that are likely to increase in the area as a result of the proposal. Mitigation measures will be implemented as part of the CEMP for the proposal including weed and pathogen controls (i.e. vehicle and machinery cleaning protocols, sedimentation controls) which will minimise likelihood of introduction of disease.

- **INTERFERE SUBSTANTIALLY WITH THE RECOVERY OF THE SPECIES**

The national recovery plan for the species (National Murray Cod Recovery Team 2010) outlines a number of specific recovery objectives for Murray Cod. These include:

- determine the distribution, structure and dynamics of Murray Cod populations across the MDB.
- manage river flows to enhance recruitment to Murray Cod populations.
- evaluate the risks of threats and benefits of recovery options on Murray Cod populations for each management unit.
- determine the habitat requirements of Murray Cod life stages and populations.
- manage the recreational fishery for Murray Cod in a sustainable manner while recognising the social, economic and recreational value of the fishery.
- encourage community ownership for Murray Cod conservation.
- manage Recovery Plan implementation.

The proposal is unlikely to significantly impact any of the recovery actions outlined. Due to the minor impact to riparian vegetation associated with the proposed action, the proposal is unlikely to significantly interfere with the recovery of the species.

- **CONCLUSION**

This species has the potential to occur within the proposal study area, however only within waterways which would be avoided and protected by the proposed action. Where waterway crossings of the transmission line occur, the alignment would span these habitats only, and no towers or structures would be placed in waterways. Mitigation measures like weed and pest management plans, hygiene protocols and sediment control measures would minimise indirect impacts to this species and habitat. Therefore, no significant impacts are anticipated for this species, due to the avoidance of clearing and construction works within waterways containing potentially suitable habitat, and implementation of mitigation measures.

D-1.2.41 Macquarie Perch (*Macquaria australasica*)

The Macquarie Perch is listed as Endangered the EPBC Act.

D-1.2.41.1 Description

The Macquarie Perch occurs in around 20 locations in the Murray-Darling Basin. Once widespread in the southern tributaries of the Murray-Darling Basin, Macquarie Perch are now considered isolated to the upper reaches of the Lachlan and Murrumbidgee Rivers in southern NSW. Other populations of the species occur in Mongarlowe River (likely the result of a translocation from the Murray-Darling), Cataract Dam, Burrinjuck, Cotter (Murrumbidgee) Wyangala impoundments, and a breeding population (translocation) in the Queanbeyan River. Macquarie Perch are naturally a riverine fish, inhabiting clear water and deep, rocky holes with lots of cover. Shelter can include aquatic vegetation large boulders, debris and overhanging banks (Department of Agriculture Water and the Environment 2021).

D-1.2.41.2 Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- The *Approved Conservation Advice for Macquaria australasica (Macquarie perch)* (Department of the Environment 2013) was reviewed as part of this assessment.
- The *National Recovery Plan for the Macquarie Perch (Macquaria australasica)* (Department of the Environment and Energy 2018)

No threat abatement plan has been identified as being relevant for this species.

Relevant survey guidelines for this species include:

- *Survey guidelines for Australia's threatened fish. EPBC Act survey guidelines 6.4* (Department of Sustainability Environment Water Population and Communities 2011).

D-1.2.41.3 Specific impacts

The maximum aquatic impact likely to occur to any of the potential aquatic habitat would be the removal or trimming of tree canopy on the riverbanks to facilitate the construction and operation of the powerlines spanning each riparian area. All trunk bases and understorey will would be retained in-situ adjoining the riverbanks. All potential erosion and sedimentation impacts would be managed and monitored to ensure that these do not impact the riparian areas. At most, any impact to water quality would be temporary and negligible. Each riparian area would continue to function as it currently functions.

D-1.2.41.4 Significant impact criteria

According to the *Matters of National Environmental Significance - Significant Impact Guidelines 1.1* (Department of the Environment Water Heritage and the Arts 2013), an action is likely to have a significant impact on an Endangered or Critically Endangered species if there is a real chance or possibility that it will:

- **LEAD TO A LONG-TERM DECREASE IN THE SIZE OF A POPULATION**

No significant impacts are anticipated for the species from the proposed action due to the avoidance of clearing and construction works within waterways, especially those containing potentially suitable habitat for the species. Therefore, the proposed action is considered unlikely to lead to a long-term decrease in the size of a population.

- **REDUCE THE AREA OF OCCUPANCY OF THE SPECIES**

No significant impacts are anticipated for the species from the proposed action due to the avoidance of clearing and construction works within waterways, especially those containing potentially suitable habitat for the species. Therefore, the proposed action is considered unlikely to reduce the area of occupancy of a species.

- **FRAGMENT AN EXISTING POPULATION INTO TWO OR MORE POPULATIONS**

No significant impacts are anticipated for the species from the proposed action due to the avoidance of clearing and construction works within waterways, especially those containing potentially suitable habitat for the species. Therefore, the proposed action is considered unlikely to fragment an existing population into two or more populations.

- **ADVERSELY AFFECT HABITAT CRITICAL TO THE SURVIVAL OF A SPECIES**

There is no habitat listed as critical to the survival of the species under the EPBC Act (Department of Agriculture Water and the Environment 2021) within the proposal study area. Habitat critical to the survival of a species also refers to areas that are necessary:

- for activities such as foraging, breeding, roosting, or dispersal
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
- to maintain genetic diversity and long-term evolutionary development, or
- for the reintroduction of populations or recovery of the species or ecological community.

Regarding the Macquarie Perch, it is unlikely that any direct impact on potential habitat (i.e. permanent freshwater rivers) would occur because of the proposed action. Minor works around riparian vegetation trimming on riverbanks would be negligible and managed through mitigation measures. The proposed action would only be spanning of freshwater creeks/rivers and not result in the fragmenting of any potential habitat that either species may utilise. It is unlikely that the potential habitat within the proposal study area constitutes important habitat for Macquarie Perch in the locality. The area of potential habitat to be disturbed is unlikely to be of critical importance to the long-term survival of this species.

- **DISRUPT THE BREEDING CYCLE OF A POPULATION**

No significant impacts are anticipated for the species from the proposed action due to the avoidance of clearing and construction works within waterways, especially those containing potentially suitable habitat for the species. Therefore, the proposed action is unlikely to disrupt the breeding cycle of a population.

- **MODIFY, DESTROY, REMOVE OR ISOLATE OR DECREASE THE AVAILABILITY OR QUALITY OF HABITAT TO THE EXTENT THAT THE SPECIES IS LIKELY TO DECLINE**

The proposed action is likely to have minimal impact to wetlands, riverine, and waterways habitats suitable for the species. Therefore, the proposed action is unlikely to result in the modification, removal, isolation, or decreased availability or quality of habitat to the extent that the species is likely to decline.

- **RESULT IN INVASIVE SPECIES THAT ARE HARMFUL TO A CRITICALLY ENDANGERED OR ENDANGERED SPECIES BECOMING ESTABLISHED IN THE ENDANGERED OR CRITICALLY ENDANGERED SPECIES' HABITAT**

Mitigation measures would be employed as part of the proposal, including the implementation of weed and pest management plans, installation of vehicle wash stations to limit the spread of weeds, pathogens and disease. Sediment and control measures would be put in place around large-scale excavation works and stockpiles areas that occur within or in close proximity to these species' habitat to minimise sedimentation and hydrological impacts.

- **INTRODUCE DISEASE THAT MAY CAUSE THE SPECIES TO DECLINE**

There are no known diseases that are likely to increase in the area as a result of the proposal. Mitigation measures will be implemented as part of the CEMP for the proposal, including weed and pathogen controls (i.e. vehicle and machinery cleaning protocols, sedimentation controls), which will minimise the likelihood of the introduction of disease.

- **INTERFERE SUBSTANTIALLY WITH THE RECOVERY OF THE SPECIES**

A national recovery plan for the Macquarie Perch has been prepared (Department of the Environment and Energy 2018). This recovery plan has the overall objective to 'Ensure the recovery and ongoing viability of Macquarie perch populations throughout the species' range (including historically translocated populations in Cataract Reservoir and the Mongarlowe and Yarra rivers).' The recovery plan has six key recovery strategies that build toward this overarching objective:

- conserve existing Macquarie perch populations (including historically translocated populations in Cataract Reservoir and the Mongarlowe and Yarra rivers)
- protect and restore Macquarie perch habitat
- understand and address threats to Macquarie perch populations and habitats
- establish additional Macquarie perch populations within the species' natural range
- improve understanding of the biology and ecology of the Macquarie perch and its distribution and abundance
- increase participation by community groups in Macquarie perch conservation.

As the proposed action is likely to be limited to minor works around riparian vegetation trimming on riverbanks and any additional indirect impacts limited through detailed design and mitigation measures, the proposal would not be considered to interfere significantly with any of the recovery strategies outlined.

- **CONCLUSION**

This species has the potential to occur within the proposal study area, however only within waterways which would be avoided. Where waterway crossings of the transmission line occur, the alignment would span these habitats only, and no towers or structures would be placed in waterways. Mitigation measures including weed and pest management plans, hygiene protocols and sediment control measures in close proximity to potential habitat would minimise indirect impacts to this species. Therefore, no significant impacts are anticipated, due to the avoidance of clearing and construction works within waterways containing potentially suitable habitat and implementation of mitigation measures.

D-1.2.42 Listed Migratory species

The following EPBC Act listed Migratory species are considered moderately likely to occur in the proposal study area based on the presence of suitable habitats:

- Migratory marine birds – Fork-tailed Swift
- Migratory wetland species – Common Sandpiper, Sharp-tailed Sandpiper, Latham's Snipe, Bar-tailed Godwit, Black-tailed Godwit, Common Greenshank.

None of the EPBC Act listed Migratory species assessed as having a moderate likelihood of occurrence were recorded during field surveys, however a precautionary approach has been taken and a significant impact assessment has been completed.

D-1.2.42.1 Specific impacts

The proposed action would potentially clear vegetation within wetland habitat suitable for foraging and roosting and may potentially introduce weeds into wetlands degrading the quality of the habitat. In addition, it is possible that injury or mortality may occur from collisions with transmission lines during migration or dispersal.

D-1.2.42.2 Is the habitat to be impacted important?

Important habitat for EPBC Act listed Migratory species is defined as (Department of Environment, 2013):

- habitat utilised by a migratory species occasionally or periodically within a region that supports an ecologically significant proportion of the population of the species
- habitat that is of critical importance to the species at particular life-cycle stages
- habitat utilised by a migratory species which is at the limit of the species range
- habitat within an area where the species is declining.

While some migratory species of bird are likely to use the proposal study area and locality, it would not be classed as an 'important habitat' for the following reasons:

- No nationally or internationally important habitats for migratory wetlands species are present in the proposal study area according to the definition provided in the *EPBC Act Policy Statement 3.21—Industry guidelines for avoiding, assessing and mitigating impacts on EPBC Act listed migratory shorebird species* (Department of the Environment, 2015b).
- There are no important habitats for the Fork-tailed Swift in the development site as outlined in the *Draft Referral guideline for 14 birds listed as migratory species under the EPBC Act* (Department of the Environment, 2015d).
- A nationally significant proportion of a listed Migratory bird population would not be supported by the habitats in the proposal study area.
- The proposal area does not contain any known important foraging grounds for listed Migratory species and the proposal would not impact on any significant foraging habitats.
- The proposal area does not contain any known important staging grounds for migration.
- The proposal area does not contain habitat that is at the limit of a listed Migratory species' range.
- The proposal area is not located within an area where a listed Migratory species is known to be declining.

D-1.2.42.3 Significant impact criteria

An action is likely to have a significant impact on a migratory species if there is a real chance or possibility that it will:

- **SUBSTANTIALLY MODIFY (INCLUDING BY FRAGMENTING, ALTERING FIRE REGIMES, ALTERING NUTRIENT CYCLES OR ALTERING HYDROLOGICAL CYCLES), DESTROY OR ISOLATE AN AREA OF IMPORTANT HABITAT FOR A MIGRATORY SPECIES**

Important habitat in accordance with EPBC Act criteria does not occur within the proposal study area for these migratory bird species. The proposal study area does not contain wetland habitat preferred by these species, as they primarily prefer coastal intertidal areas. Additionally, vegetation clearing in wetland habitat for the proposal in general is likely to be minimal or avoided due to mitigation measures, therefore, the proposed action is unlikely to substantially modify, destroy, or isolate an area of habitat or important habitat for these migratory species.

- **RESULT IN AN INVASIVE SPECIES THAT IS HARMFUL TO THE MIGRATORY SPECIES BECOMING ESTABLISHED IN AN AREA OF IMPORTANT HABITAT FOR THE MIGRATORY SPECIES, OR**

Mitigation measures would be recommended in the EIS to prevent invasive weeds and vertebrate pests such as cats and foxes establishing in wetland habitat areas.

- **SERIOUSLY DISRUPT THE LIFECYCLE (BREEDING, FEEDING, MIGRATION OR RESTING BEHAVIOUR) OF AN ECOLOGICALLY SIGNIFICANT PROPORTION OF THE POPULATION OF A MIGRATORY SPECIES.**

As these species are widely distributed across Australia and do not breed in Australia, there are not considered to be any ecologically significant proportions of the populations for these species within the proposal study area. Additionally, they do not rely on habitat within the proposal study area for feeding or resting, as these inland wetland habitats are not considered important habitat or preferred habitat, which primarily occurs in coastal areas such as intertidal mudflats and estuaries.

The *Draft Referral guideline for 14 birds listed as migratory species under the EPBC Act* (Department of the Environment, 2015d) defines an ecologically significant proportion of the population of the Fork-Tailed Swift as described in Table D-1.25. For species such as the Fork-Tailed Swift that aggregate in flocks, 1% of the population is considered internationally important, 0.1% as nationally important and therefor ecologically significant. The proposal would not impact on an internationally or nationally important proportion of the Fork-tailed Swift population as the habitat to be impacted does not have the capacity to support this number of birds.

Table D-1.25 Definitions for an ecologically significant proportion of the population of Fork-tailed Swift

SPECIES	ECOLOGICALLY SIGNIFICANT PROPORTION OF A POPULATION (NO. INDIVIDUALS)	
	1%	0.1%
Fork-tailed Swift	1,000	100

The *Wildlife Conservation Plan for Migratory Shorebirds* (Commonwealth of Australia, 2015) and *EPBC Act Policy Statement 3.21 – Industry Guidelines for avoiding, assessing and mitigating impacts on EPBC Act listed migratory shorebird species* (Department of the Environment, 2015b) state that important habitats in Australia for migratory shorebirds under the EPBC Act include those recognised as nationally or internationally important. According to this approach, wetland habitat should be considered internationally important if it regularly supports:

- 1% of the individuals in a population of one species or subspecies of waterbird or
- a total abundance of at least 20,000 waterbirds.

Nationally important habitat for migratory shorebirds can be defined using a similar approach to these international criteria, i.e. if it regularly supports:

- 0.1% of the flyway population of a single species of migratory shorebird or
- 2,000 migratory shorebirds or
- 15 migratory shorebird species.

The habitats within the proposal study area would not meet any of the criteria for nationally or internationally important habitat as listed in the *Wildlife Conservation Plan for Migratory Shorebirds* (Commonwealth of Australia, 2015) as the habitats do not support a high diversity of different wetland species or a high number of wetland bird individuals.

- **CONCLUSION**

An assessment of the above criteria has determined that the migratory populations of the above listed species that are likely to occur within the proposal study area are not ecologically significant proportions of each species' population in the region or nationally. The proposed action is **considered unlikely to significantly impact** these species as it is unlikely to substantially modify by means of fragmentation or destroy or isolate important habitat that may support local populations of these highly mobile migratory bird species.

D-1.3 References

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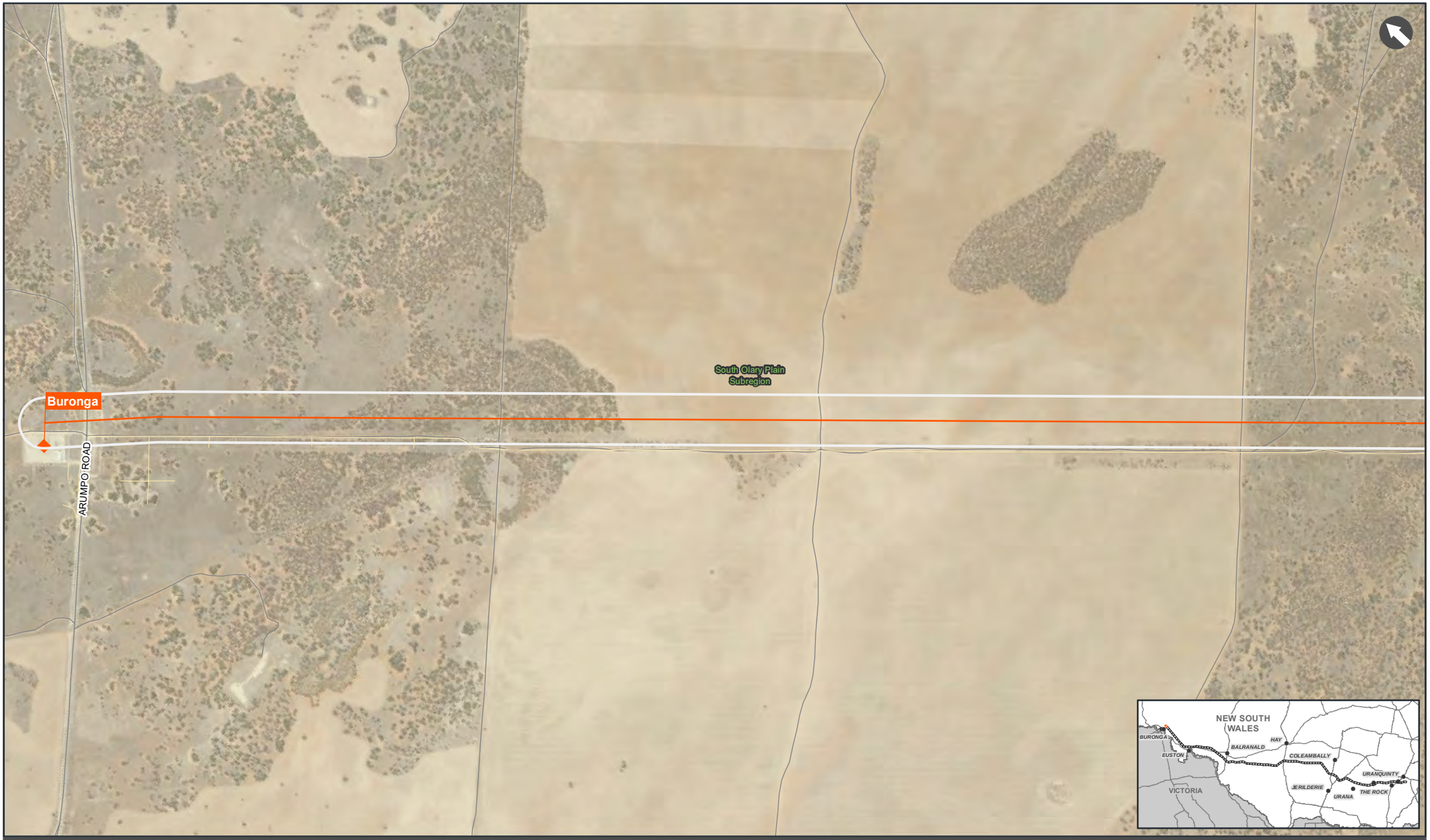
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APPENDIX D-2
Matters of National Environmental Significance maps



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BDAR - Figure D-2a

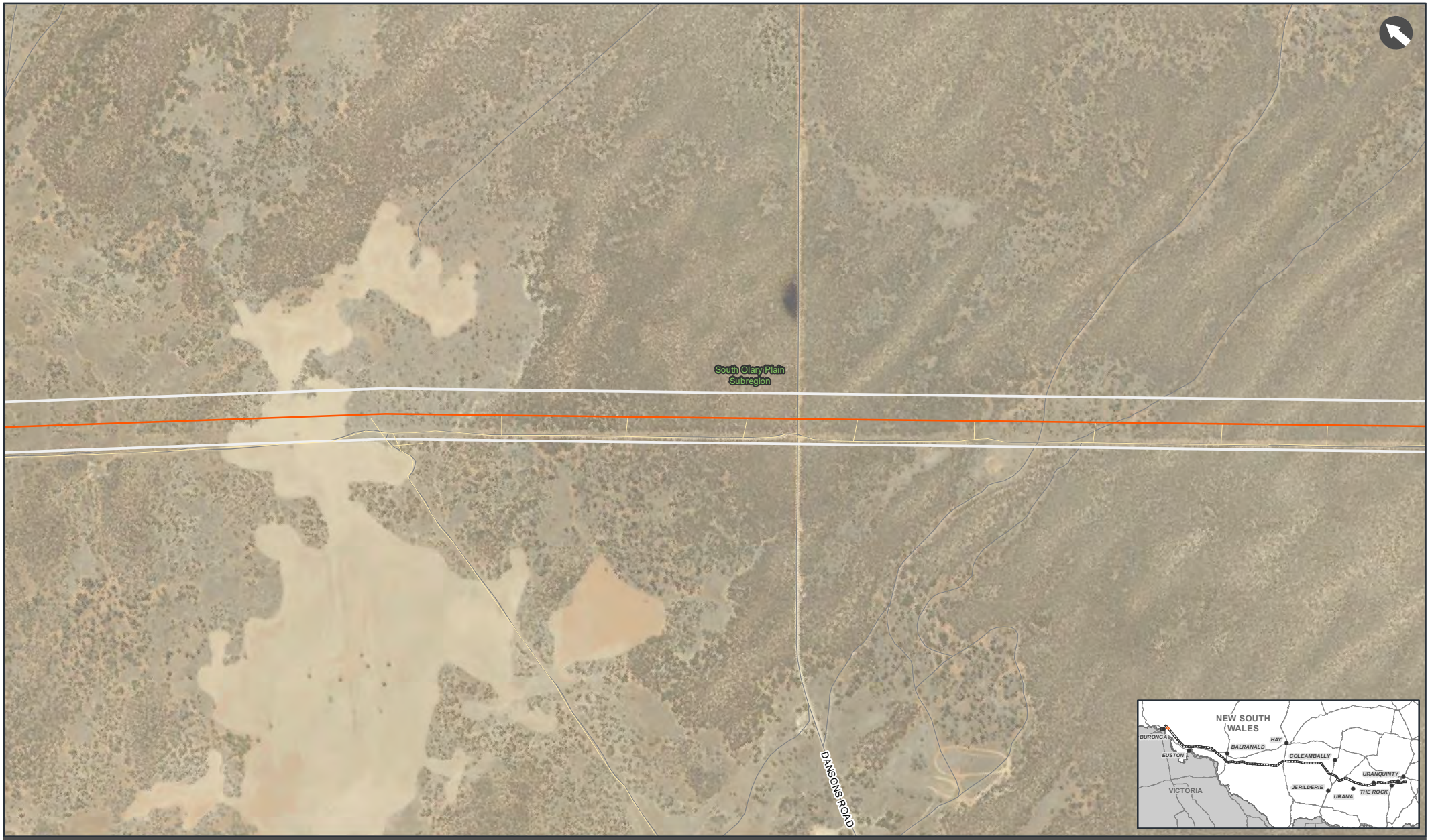
Matters of National Significance

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure D-2b

Matters of National Significance

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure D-2c

Matters of National Significance

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure D-2d

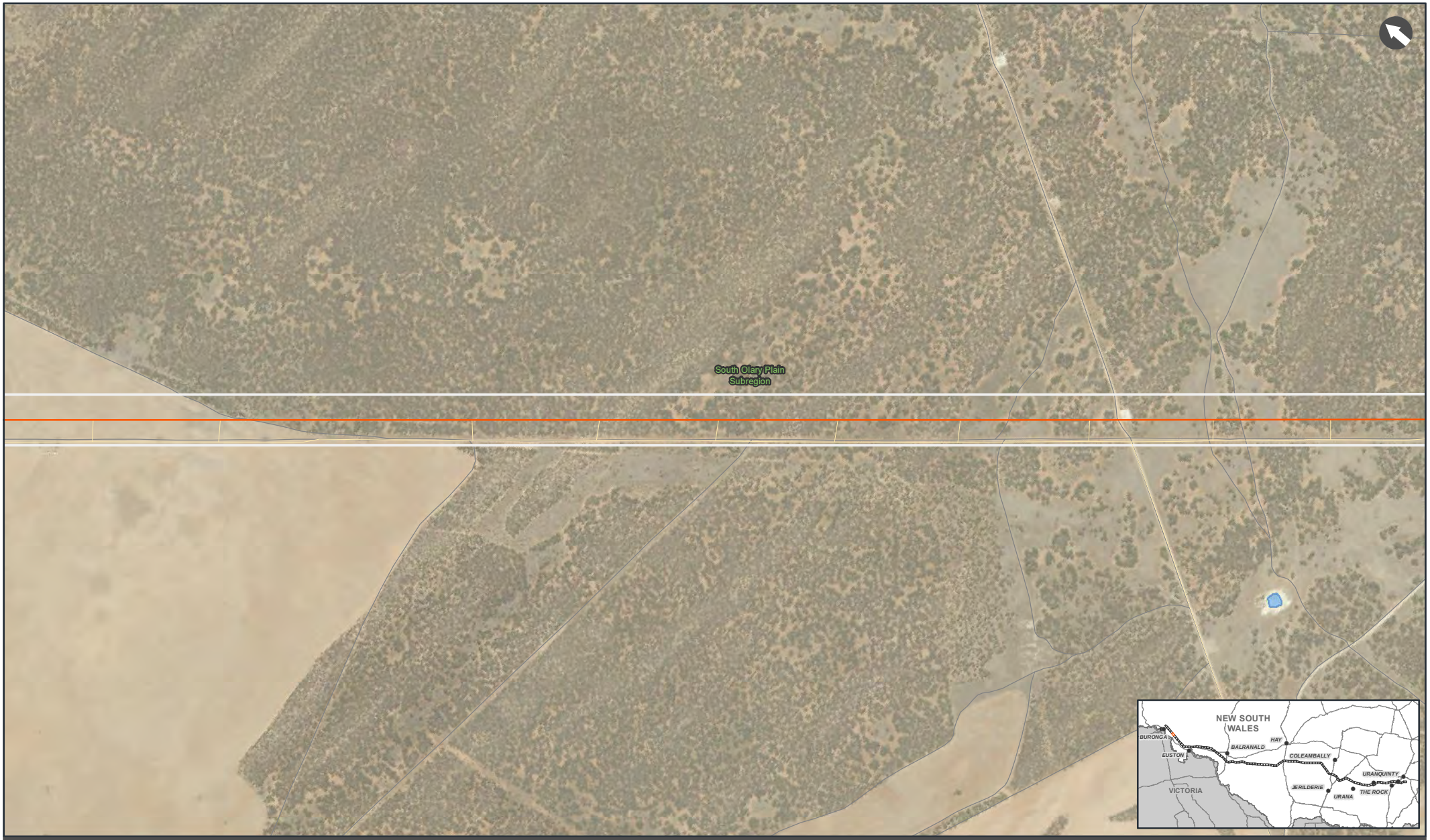
Matters of National Significance

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure D-2e

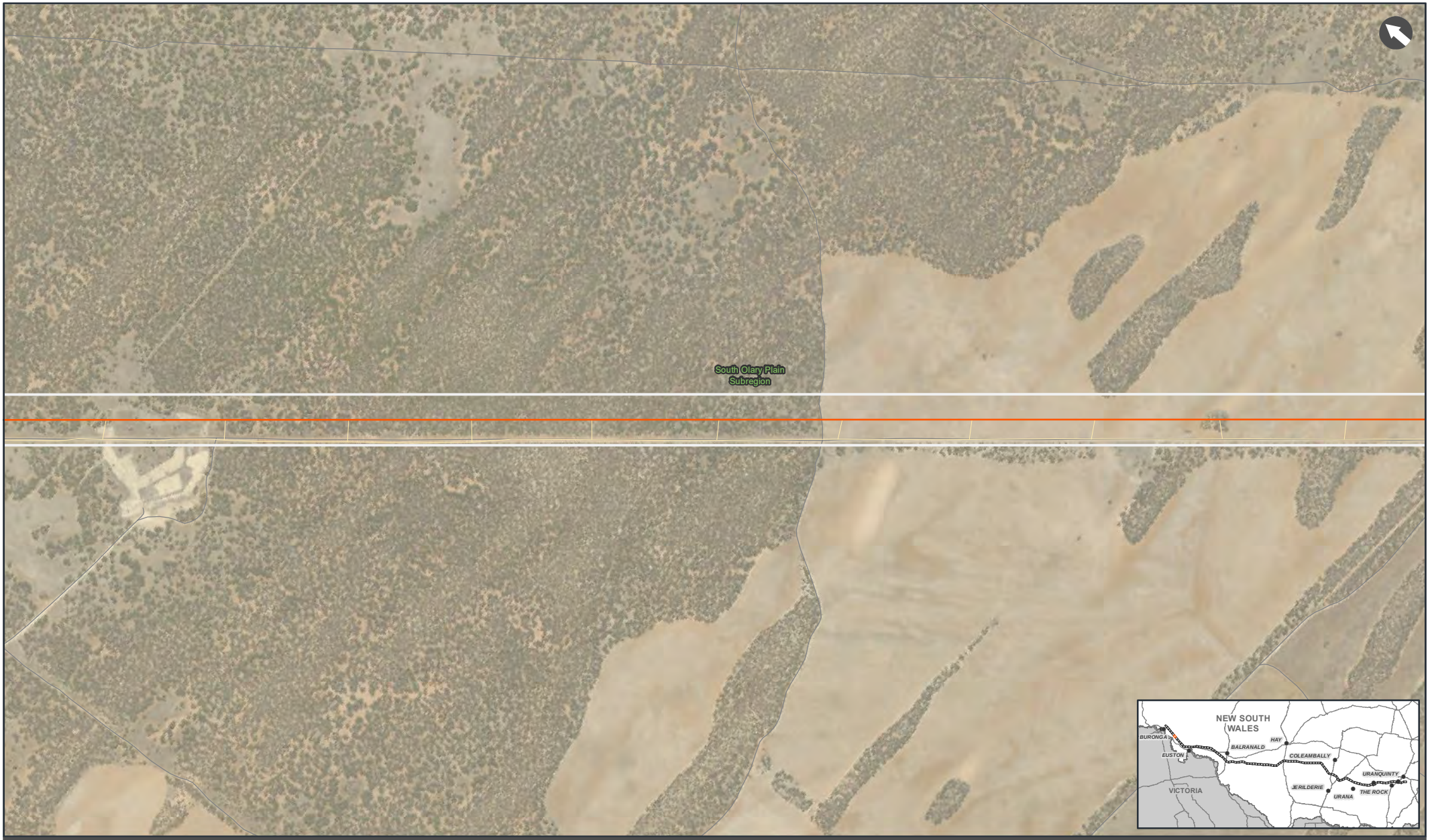
Matters of National Significance

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure D-2f

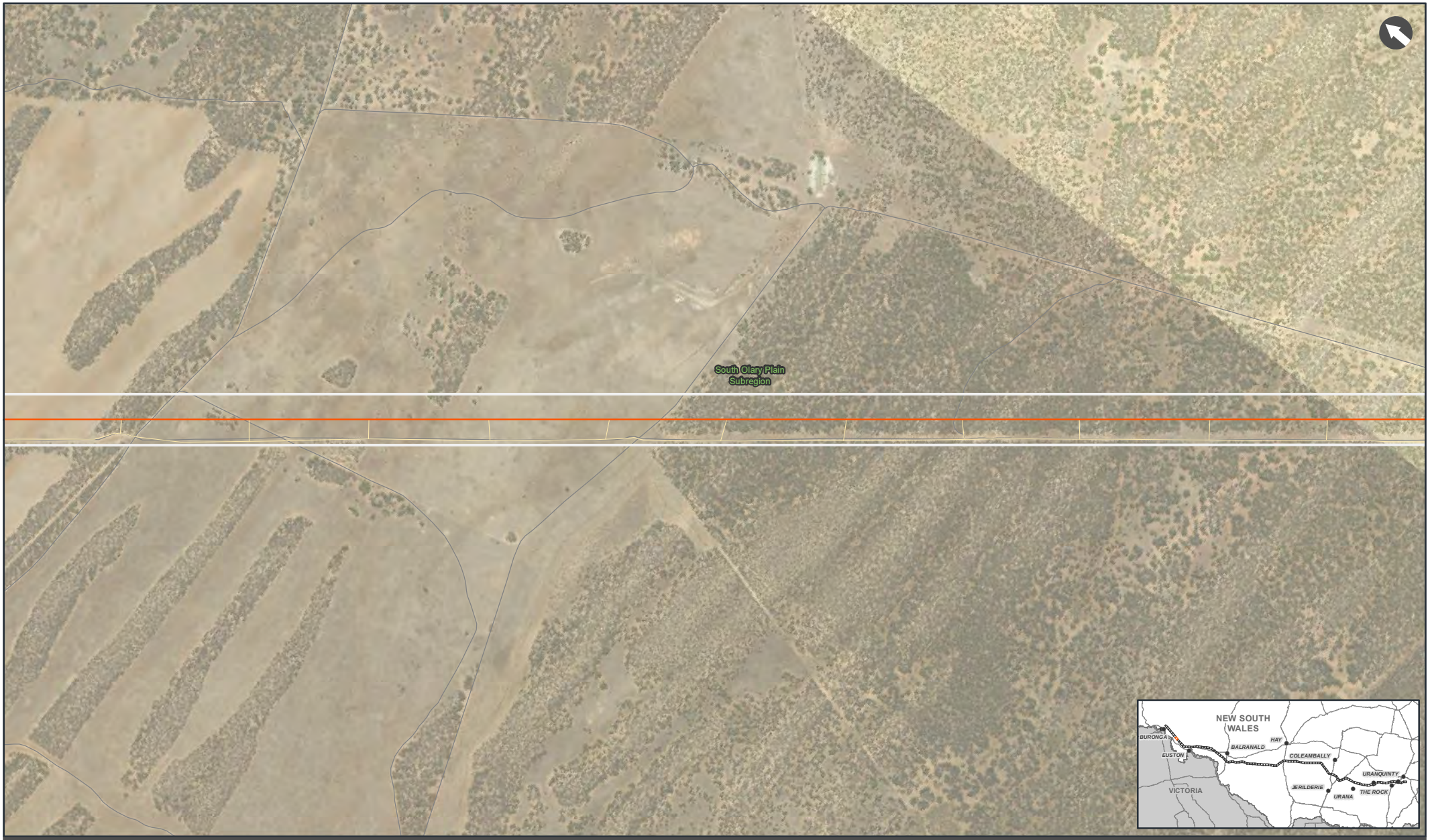
Matters of National Significance

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure D-2g

Matters of National Significance

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure D-2h

Matters of National Significance

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure D-2i

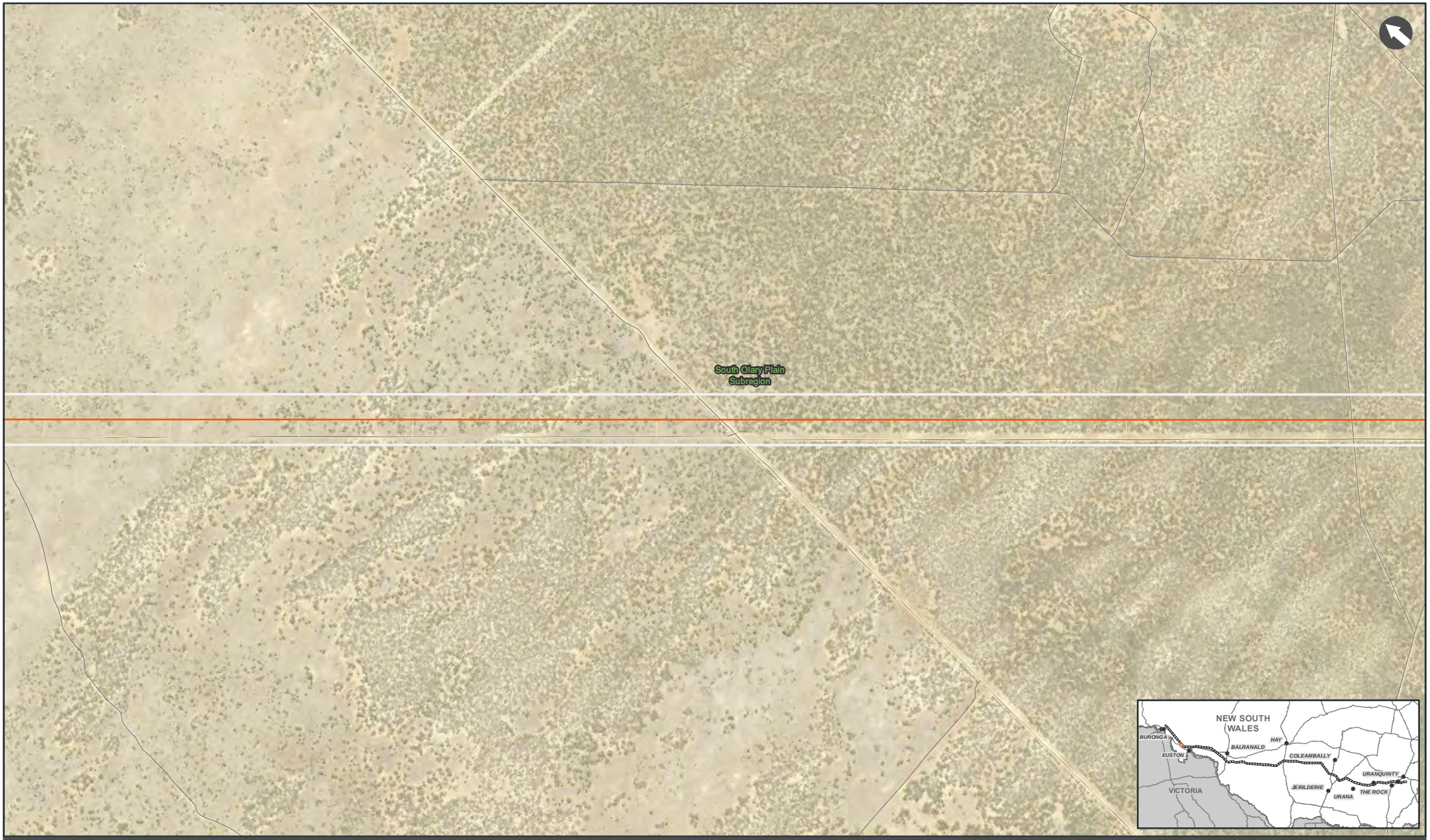
Matters of National Significance

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure D-2j

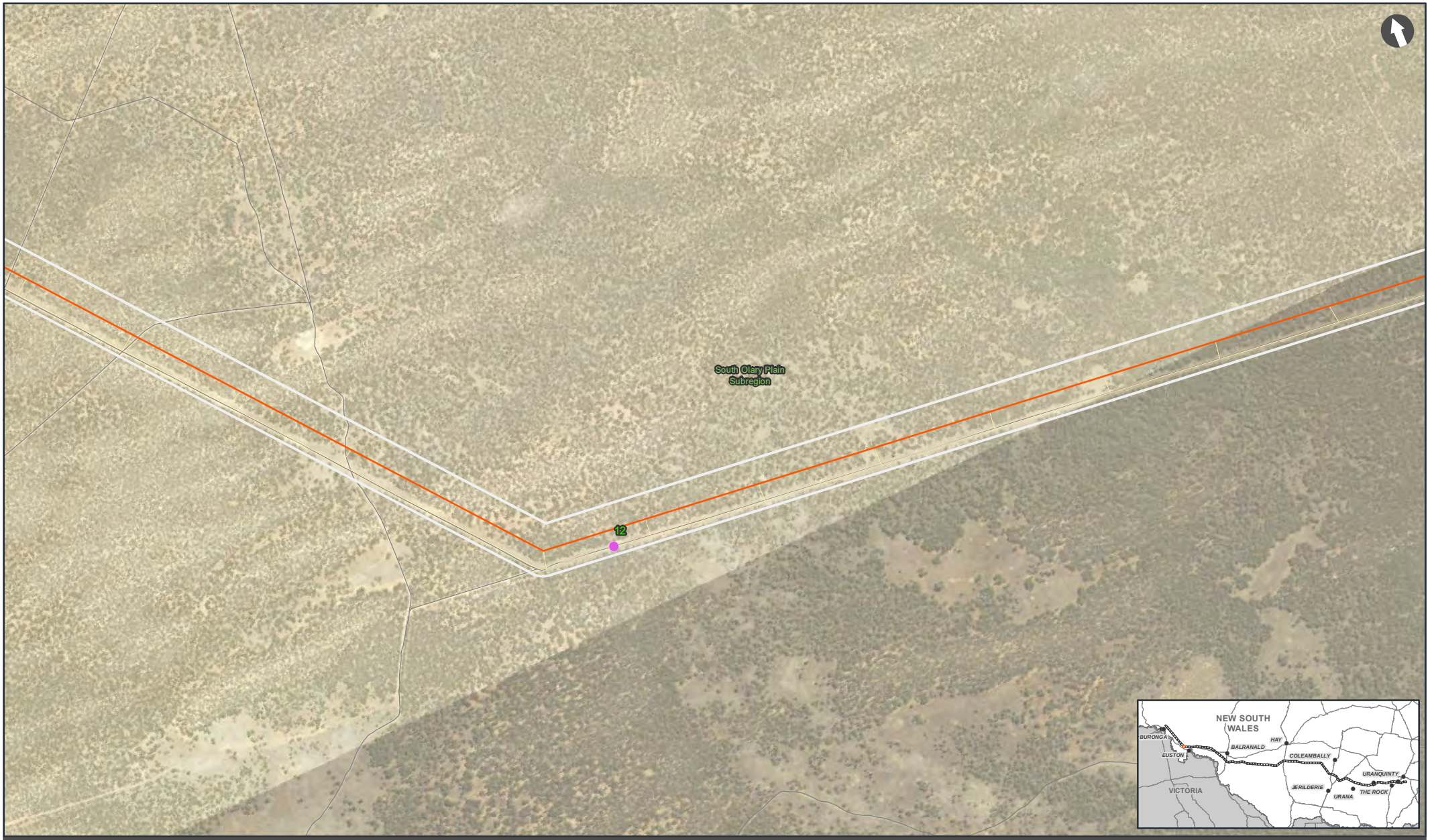
Matters of National Significance

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure D-2k

Matters of National Significance

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

Threatened Fauna Species
- Regent Parrot - *Polytelis anthopeplus*

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure D-2l

Matters of National Significance

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure D-2m

Matters of National Significance

Project Components

- Proposed
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

Matters of National Significance

- Plains mallee box woodlands of the Murray Darling Depression, Riverina and Naracoorte Coastal Plains Bioregions - Critically Endangered

Threatened Fauna Species

- Regent Parrot - *Polytelis anthopeplus*

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure D-2n

Matters of National Significance

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

Matters of National Significance

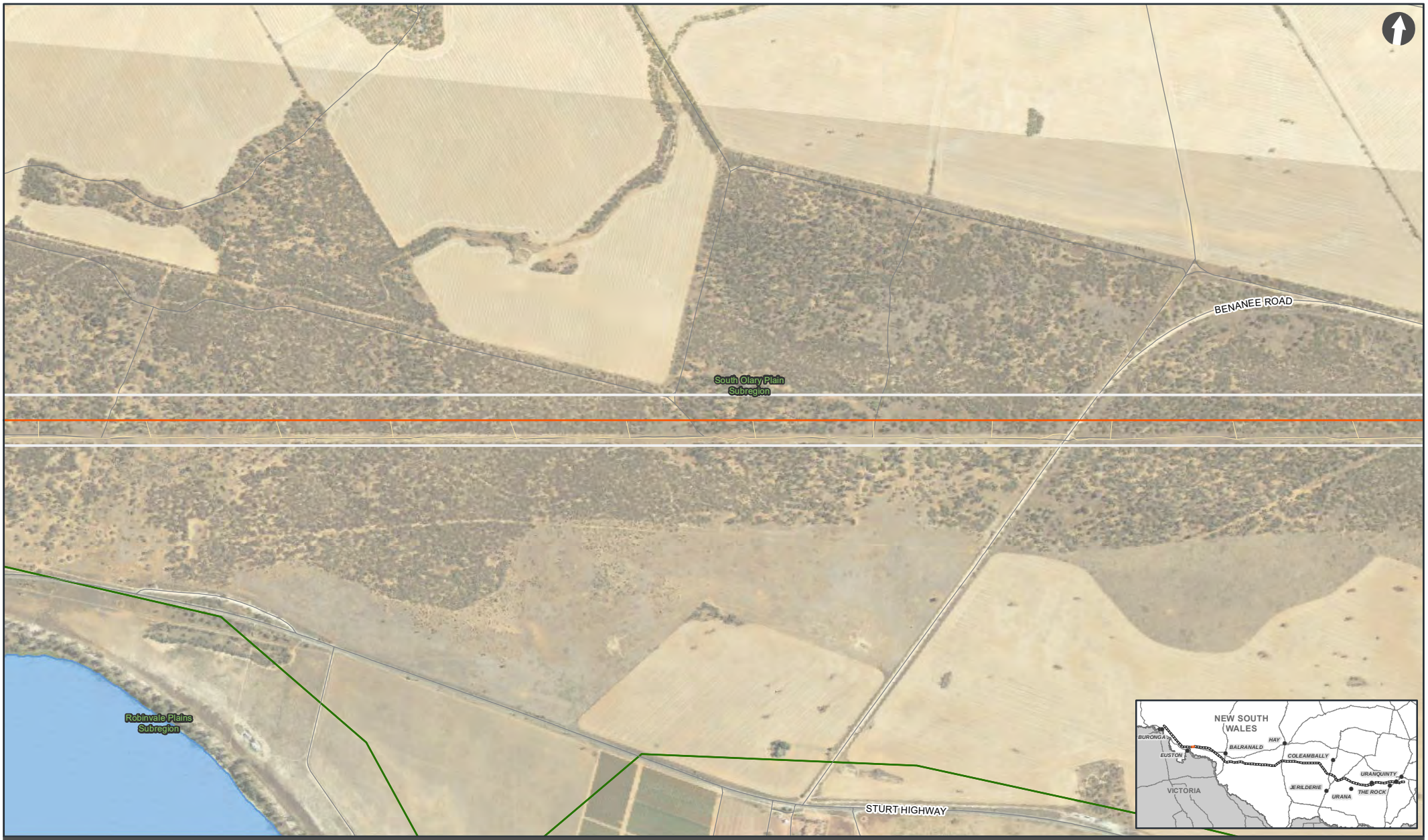
- Plains mallee box woodlands of the Murray Darling Depression, Riverina and Naracoorte Coastal Plains Bioregions - Critically Endangered

Threatened Fauna Species

- Regent Parrot - *Polytelis anthopeplus*

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure D-2o

Matters of National Significance

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure D-2p

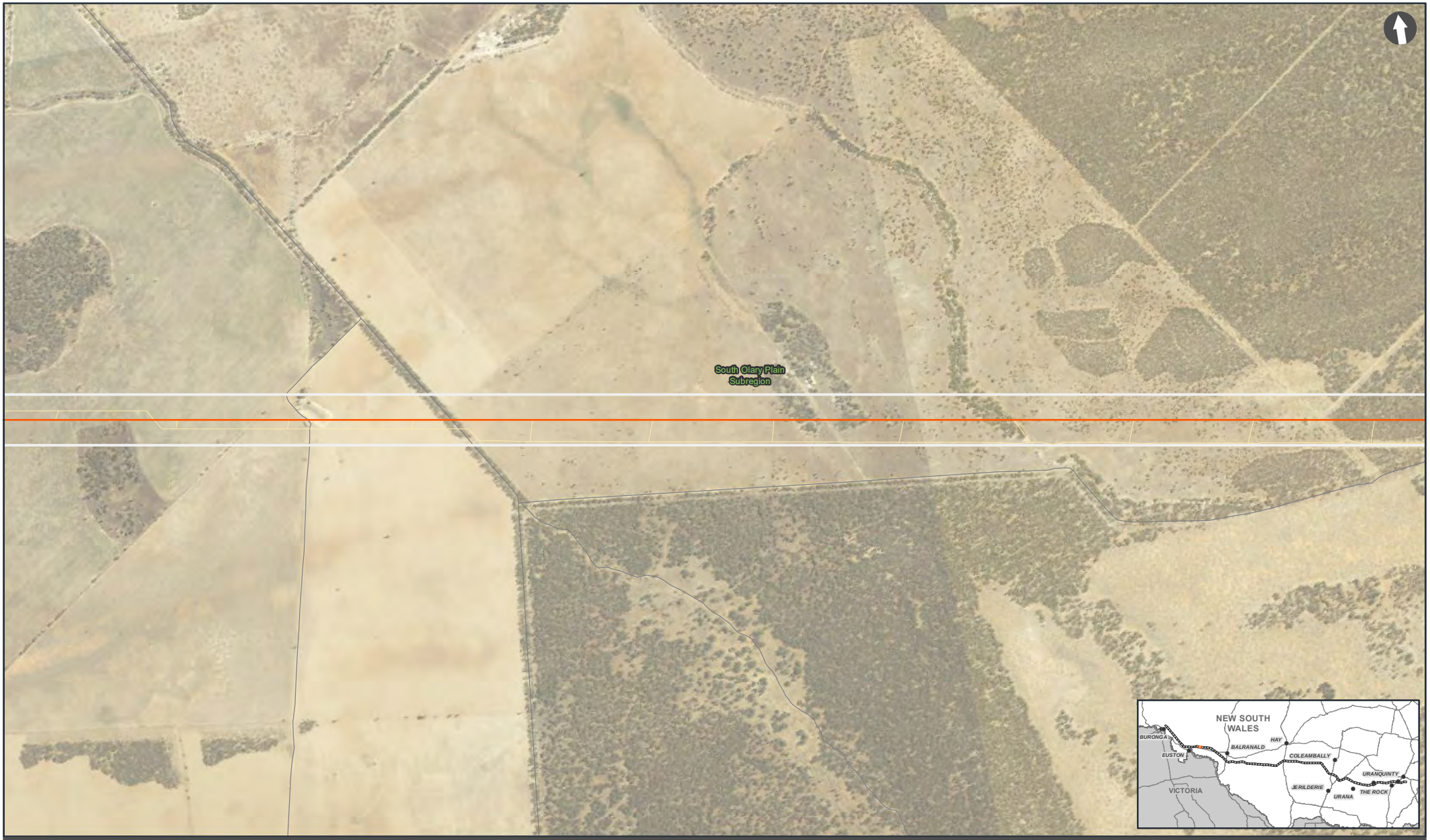
Matters of National Significance

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

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Source: NSWSS, ESRI, Transgrid, WSP



0 0.25 0.5 KM

BDAR - Figure D-2q

Matters of National Significance

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure D-2r

Matters of National Significance

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

Threatened Fauna Species
- Regent Parrot - *Polytelis anthopeplus*

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure D-2s

Matters of National Significance

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

Threatened Fauna Species
- Regent Parrot - *Polytelis anthopeplus*

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure D-2t

Matters of National Significance

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure D-2u

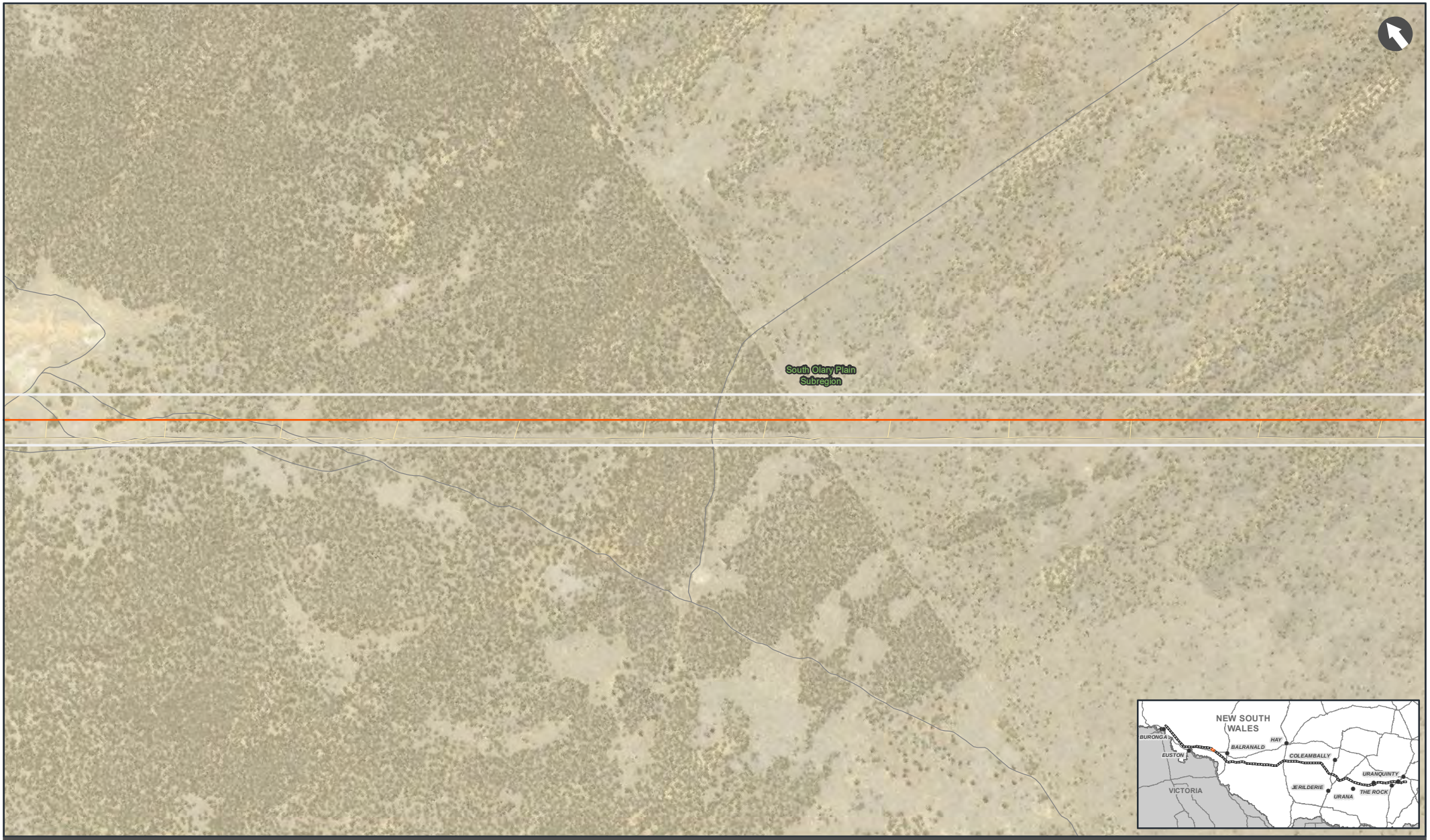
Matters of National Significance

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure D-2v

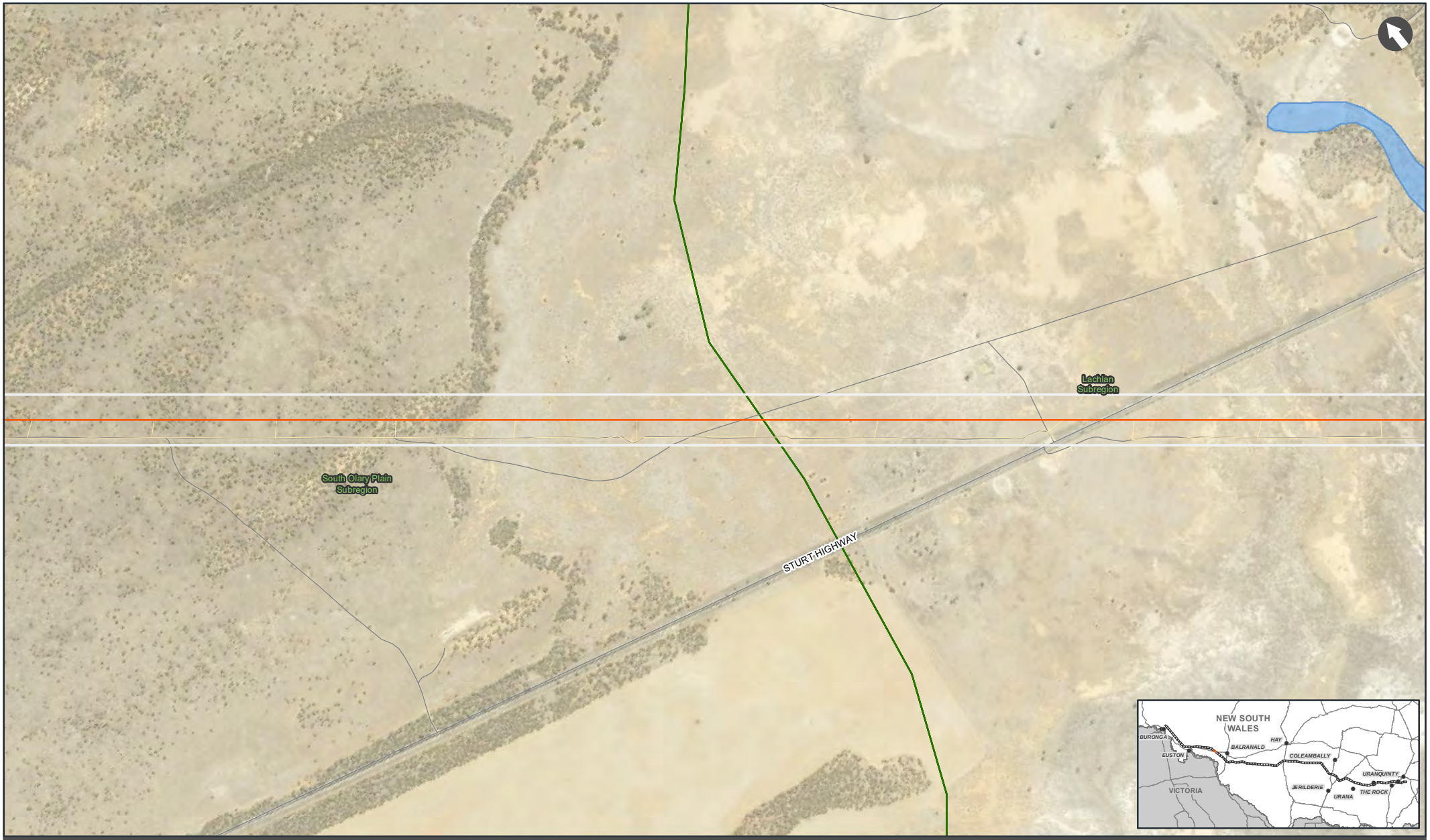
Matters of National Significance

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure D-2w

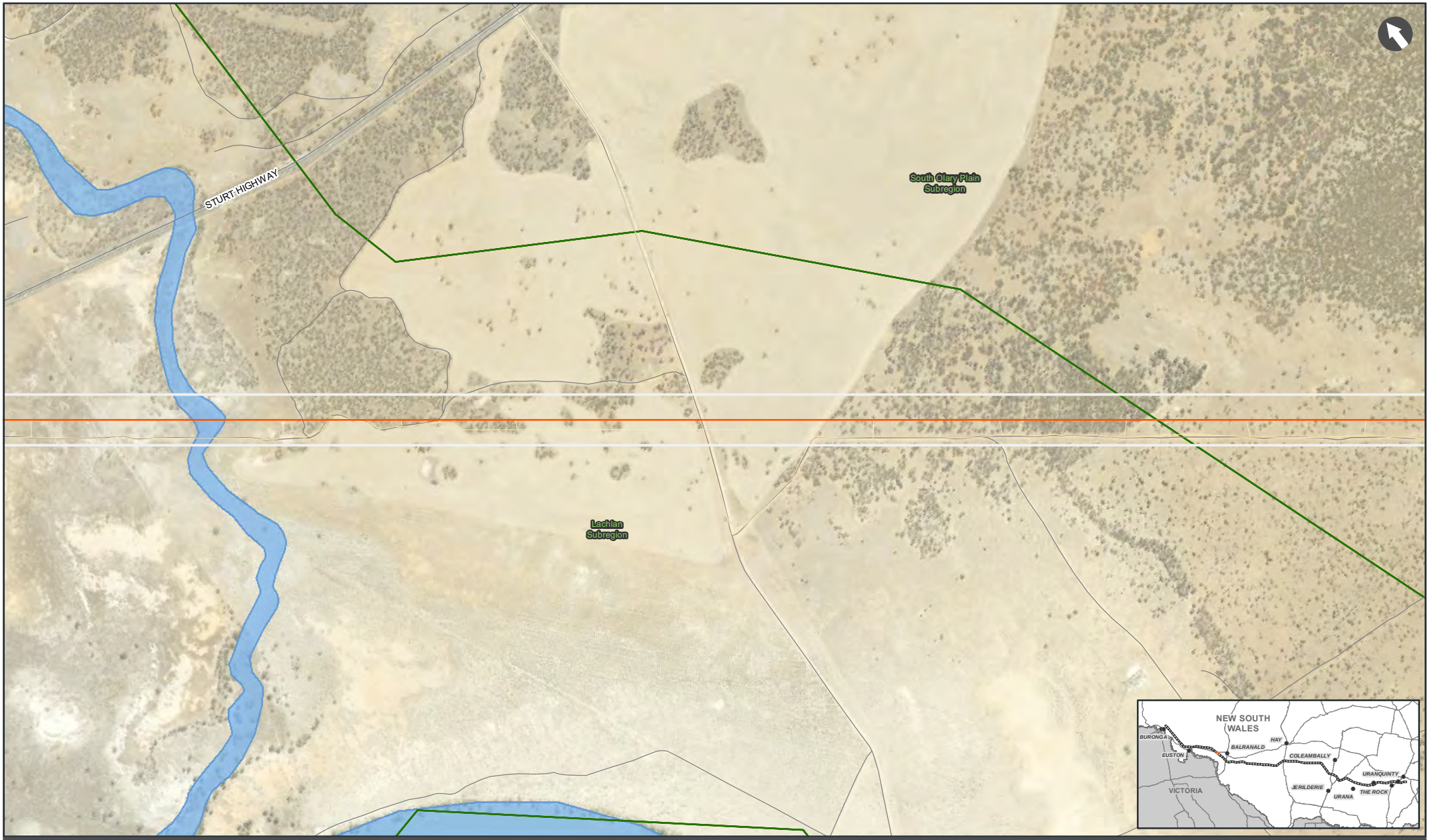
Matters of National Significance

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure D-2x

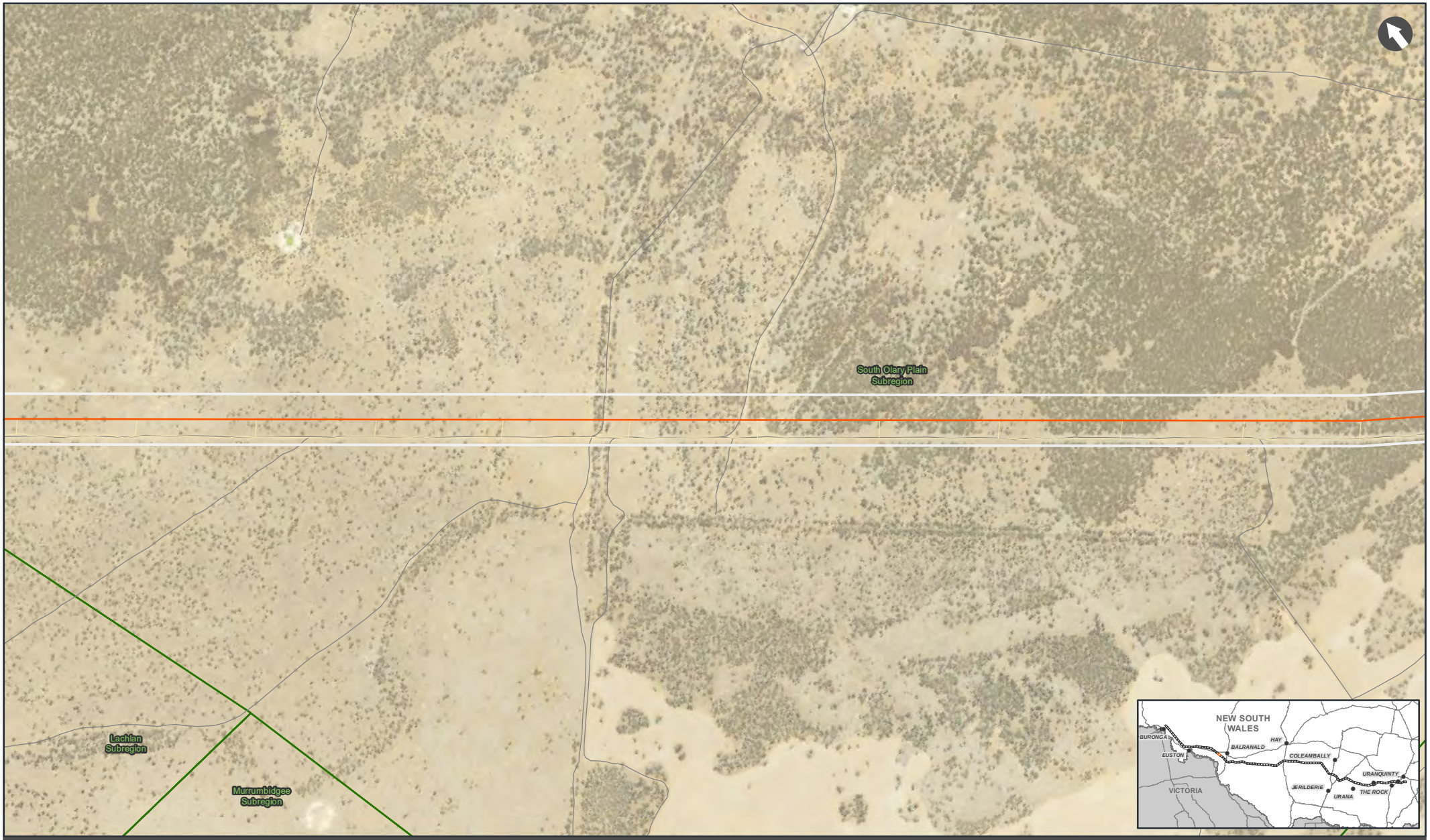
Matters of National Significance

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure D-2y

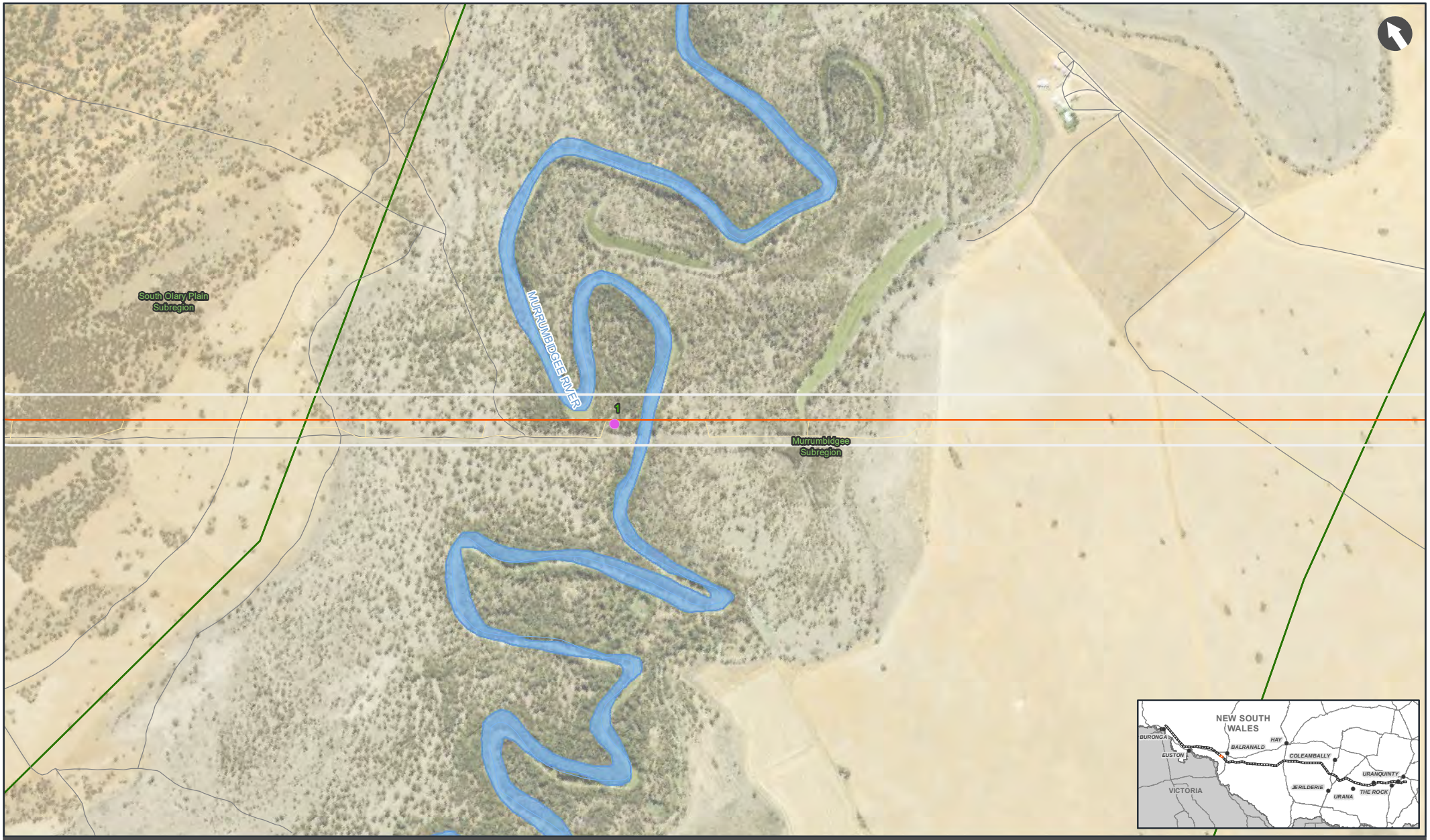
Matters of National Significance

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure D-2z

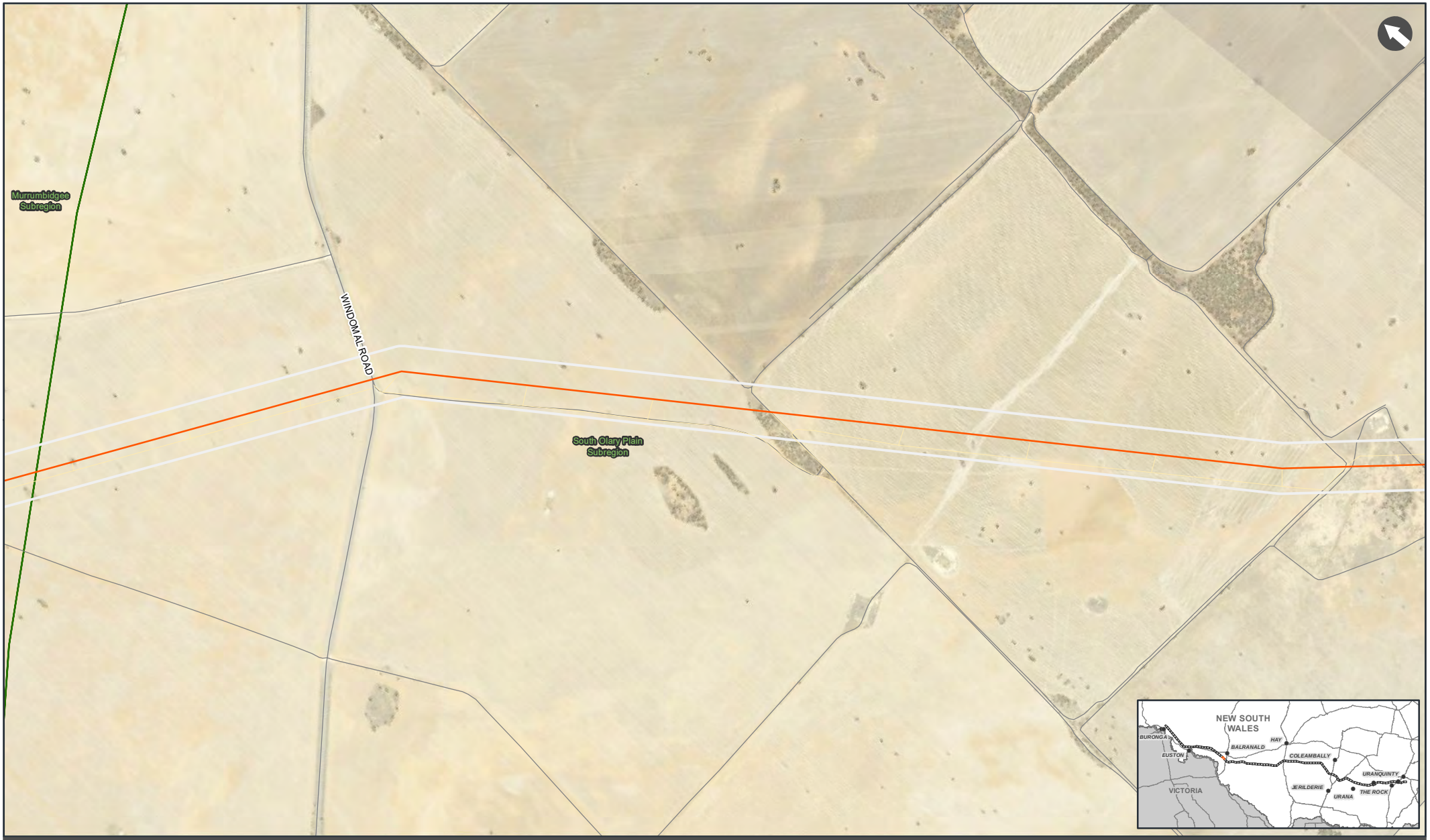
Matters of National Significance

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

Threatened Fauna Species
- Regent Parrot - *Polytelis anthopeplus*

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

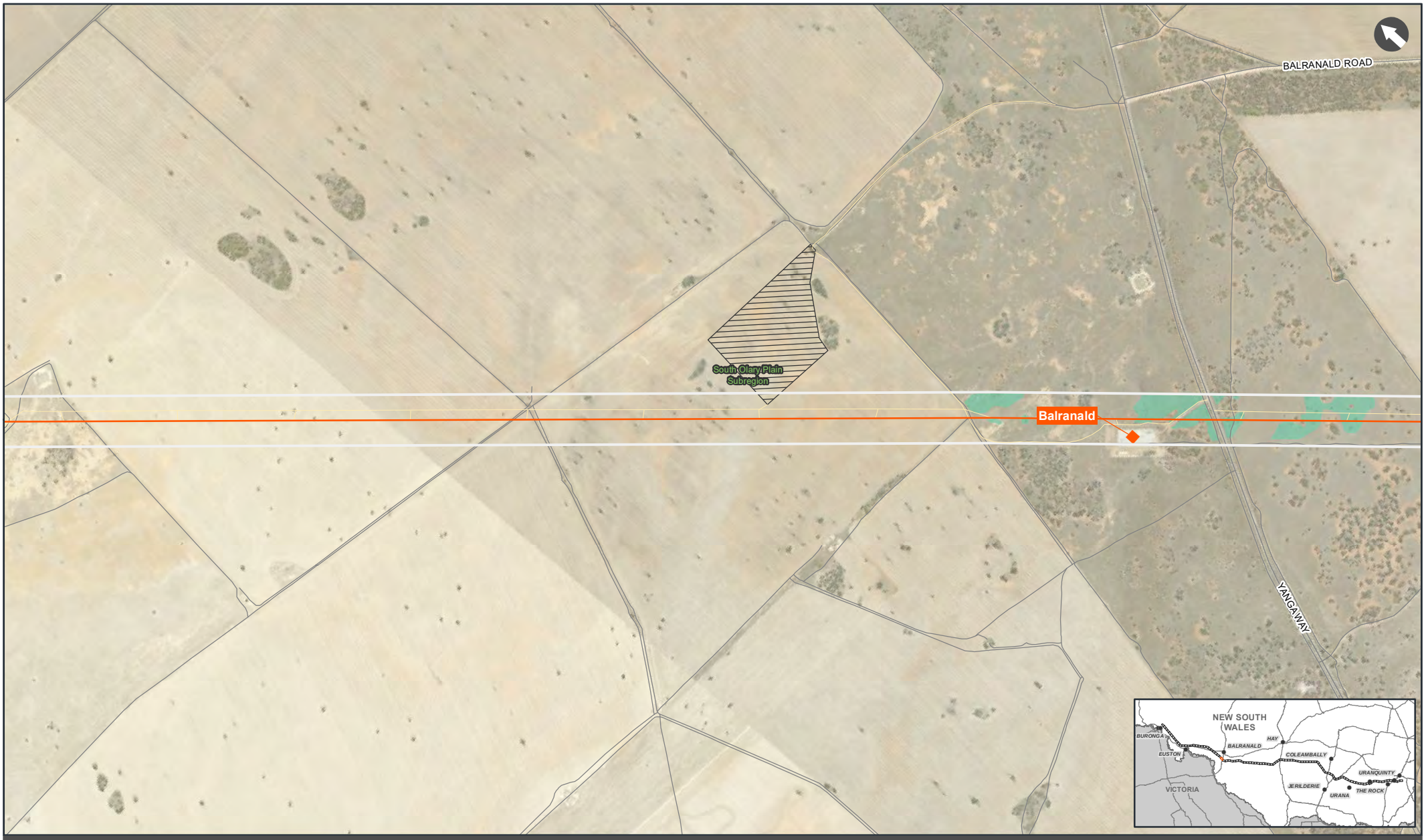
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

BDAR - Figure D-2aa

Matters of National Significance

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure D-2ab

Matters of National Significance

Project Components

- Proposed
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

Matters of National Significance

- Buloke Woodlands of the Riverina and Murray Darling Depression bioregions - Endangered

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure D-2ac

Matters of National Significance

Project Components

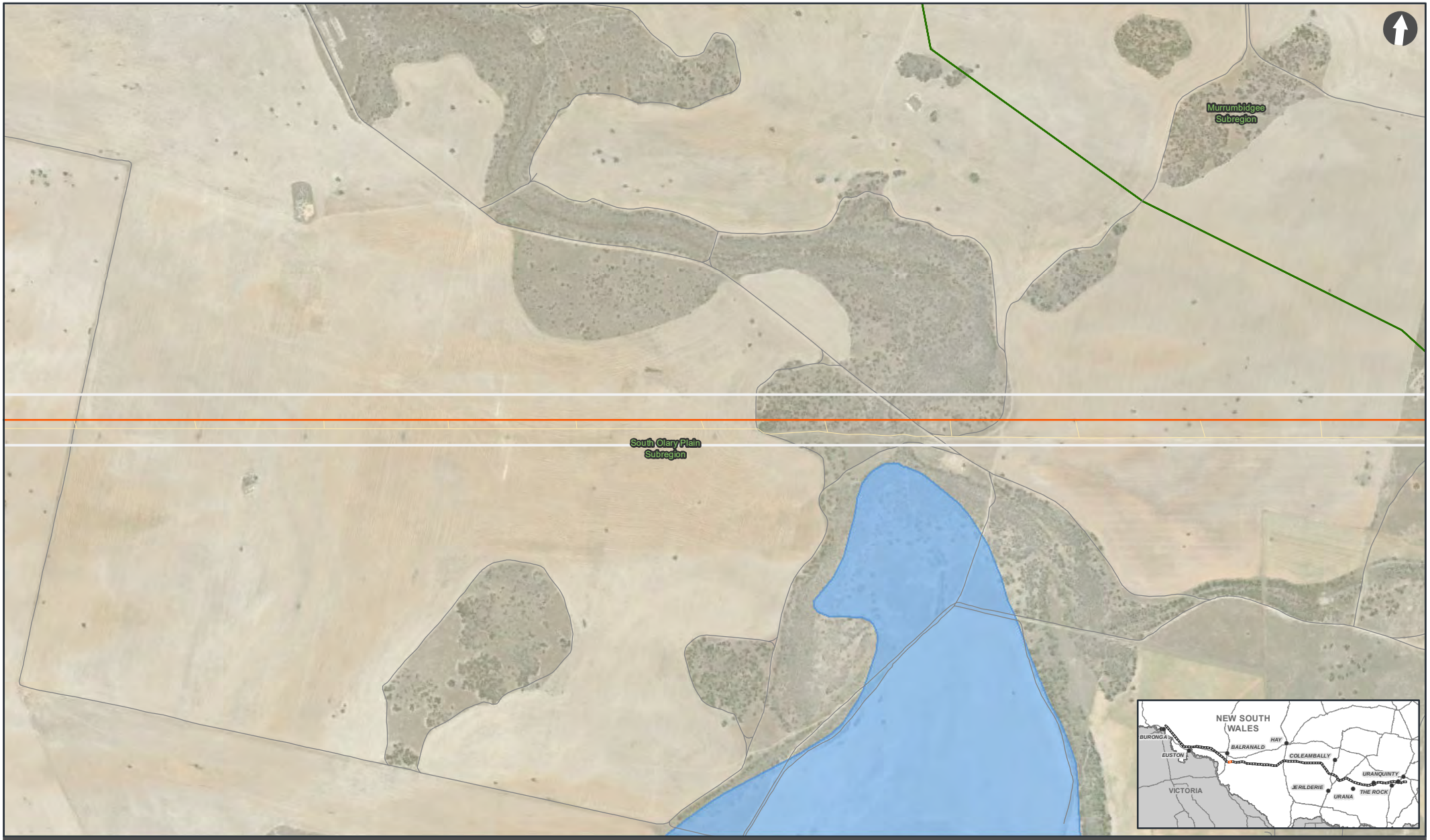
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

Matters of National Significance

- Buloke Woodlands of the Riverina and Murray Darling Depression bioregions - Endangered

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure D-2ad

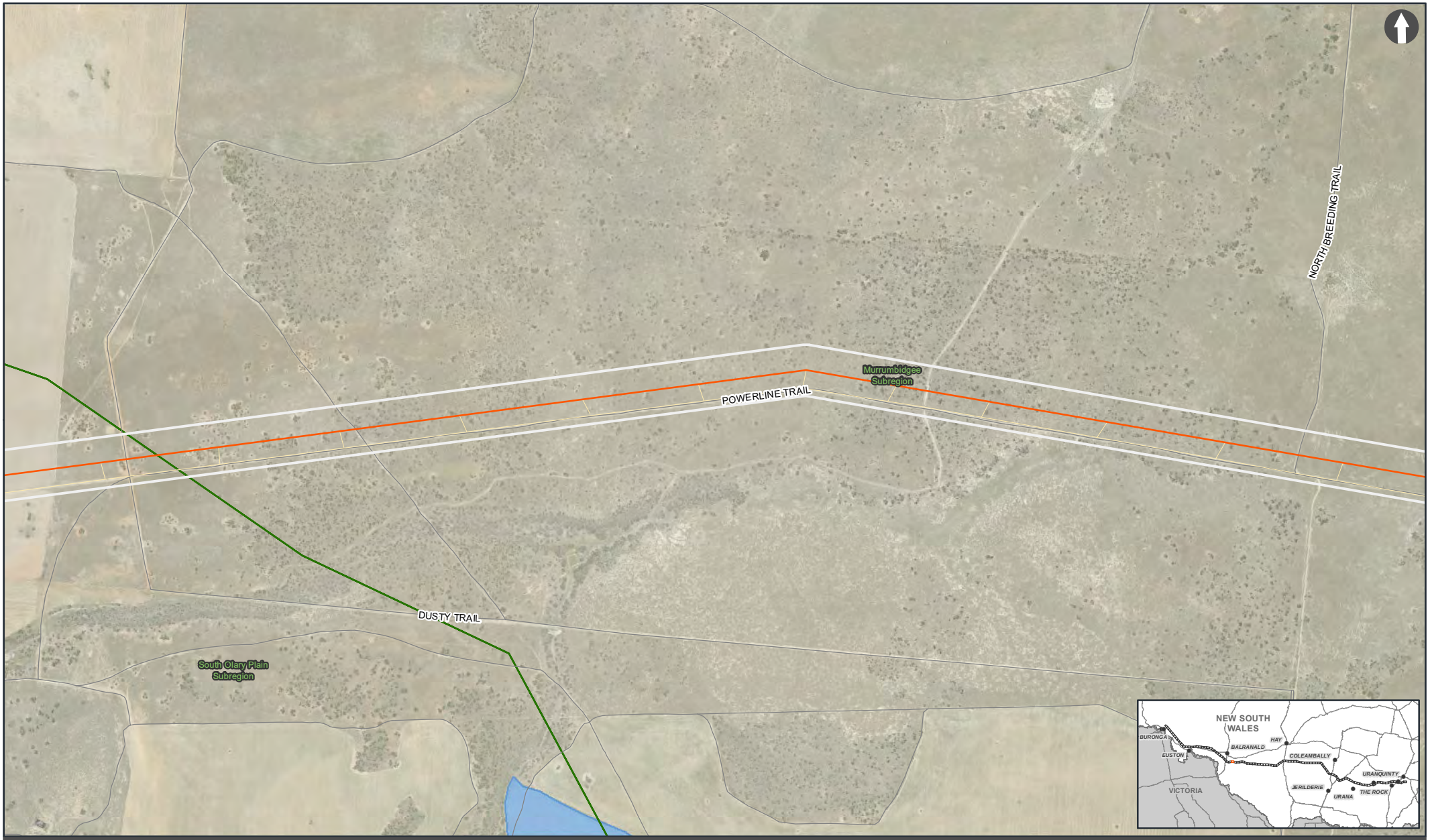
Matters of National Significance

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure D-2ae

Matters of National Significance

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure D-2af

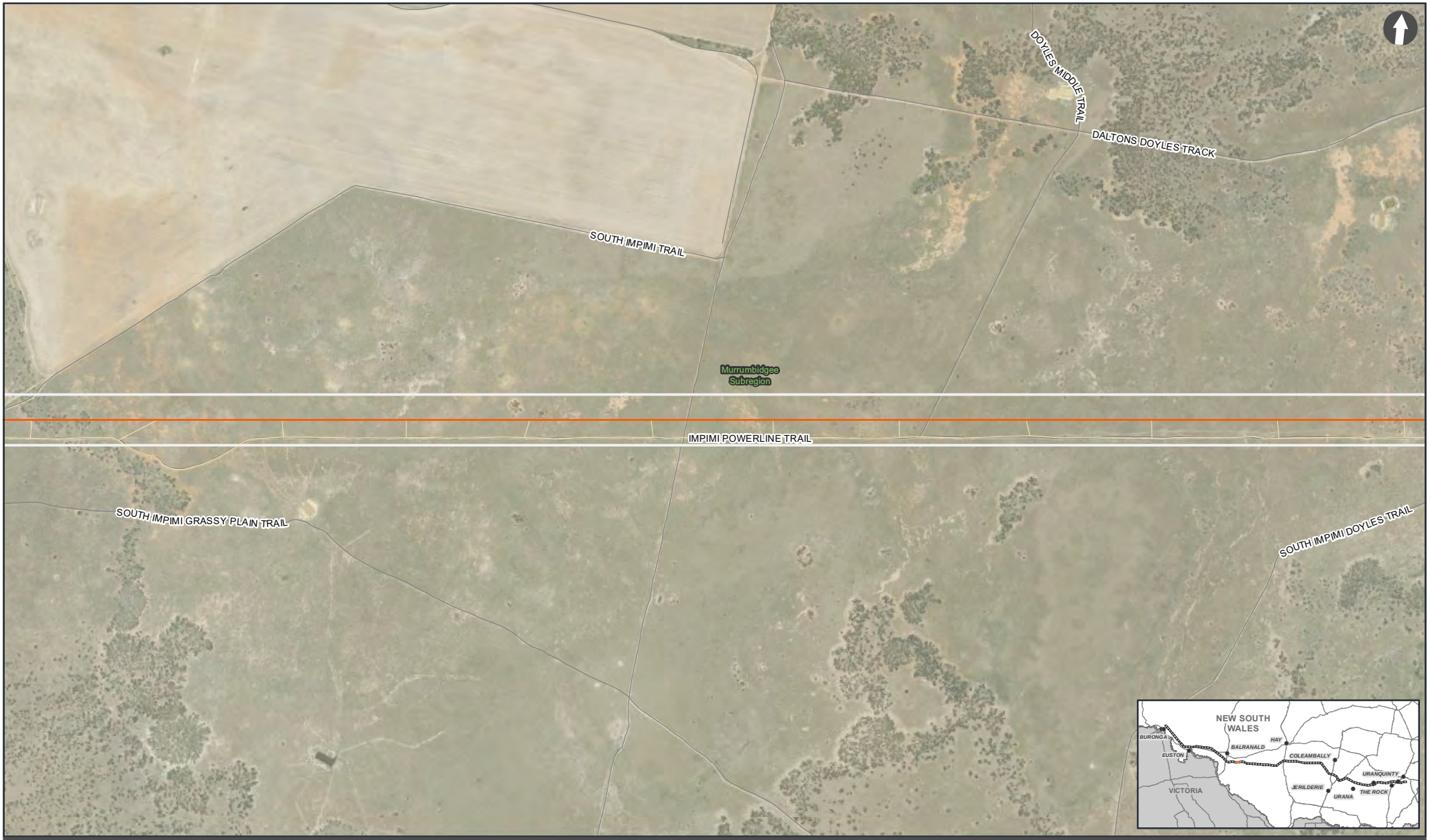
Matters of National Significance

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure D-2ag

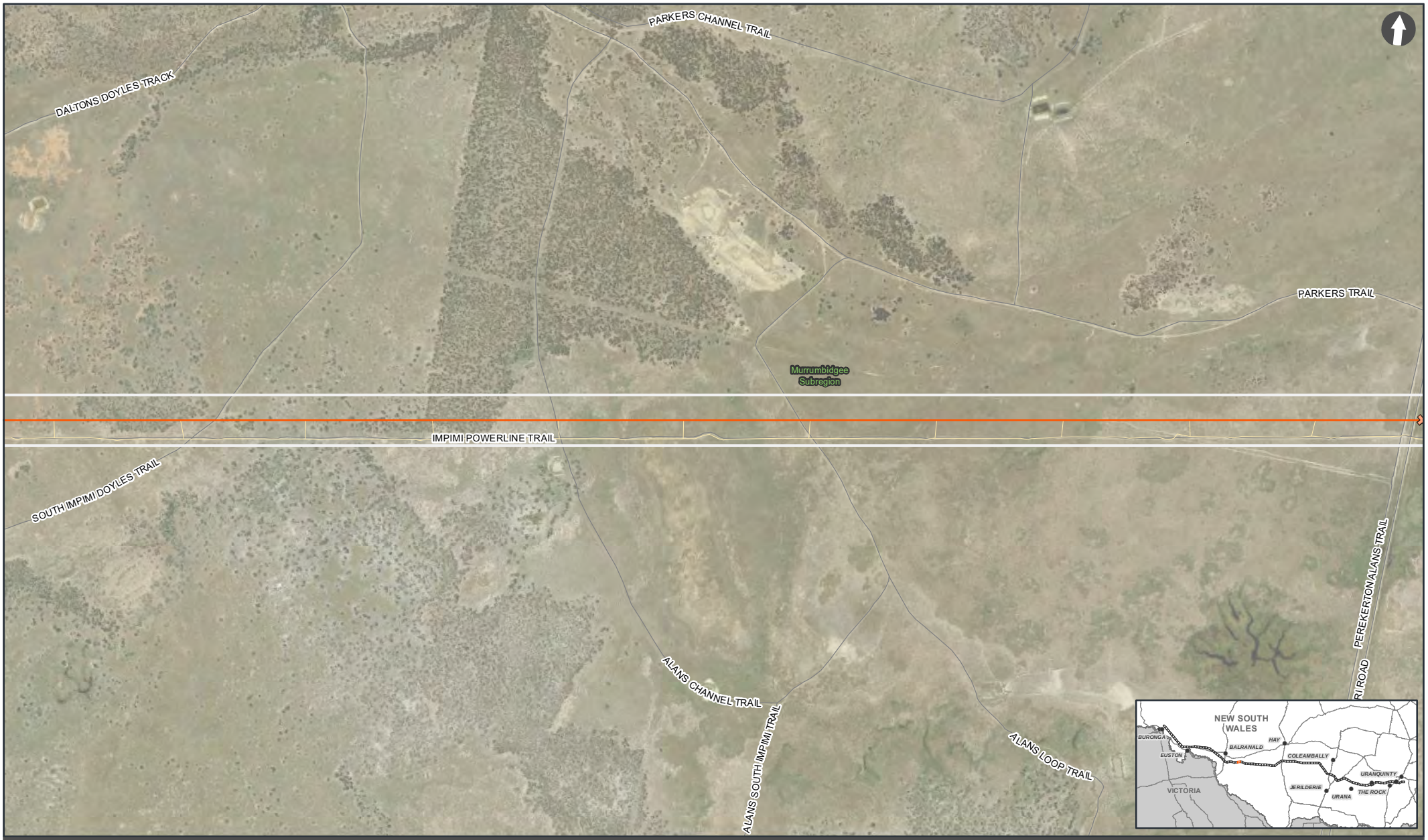
Matters of National Significance

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure D-2ah

Matters of National Significance

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

Threatened Flora Species
- *Brachyscome papillosa*

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure D-2ai

Matters of National Significance

Project Components
- Proposed
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

Threatened Flora Species
- *Brachyscome papillosa*
- *Maeriana cheelii*

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components
- Proposed
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

Threatened Flora Species
- *Brachyscome papillosa*
- *Maeriana cheelii*

BDAR - Figure D-2aj

Matters of National Significance

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure D-2ak

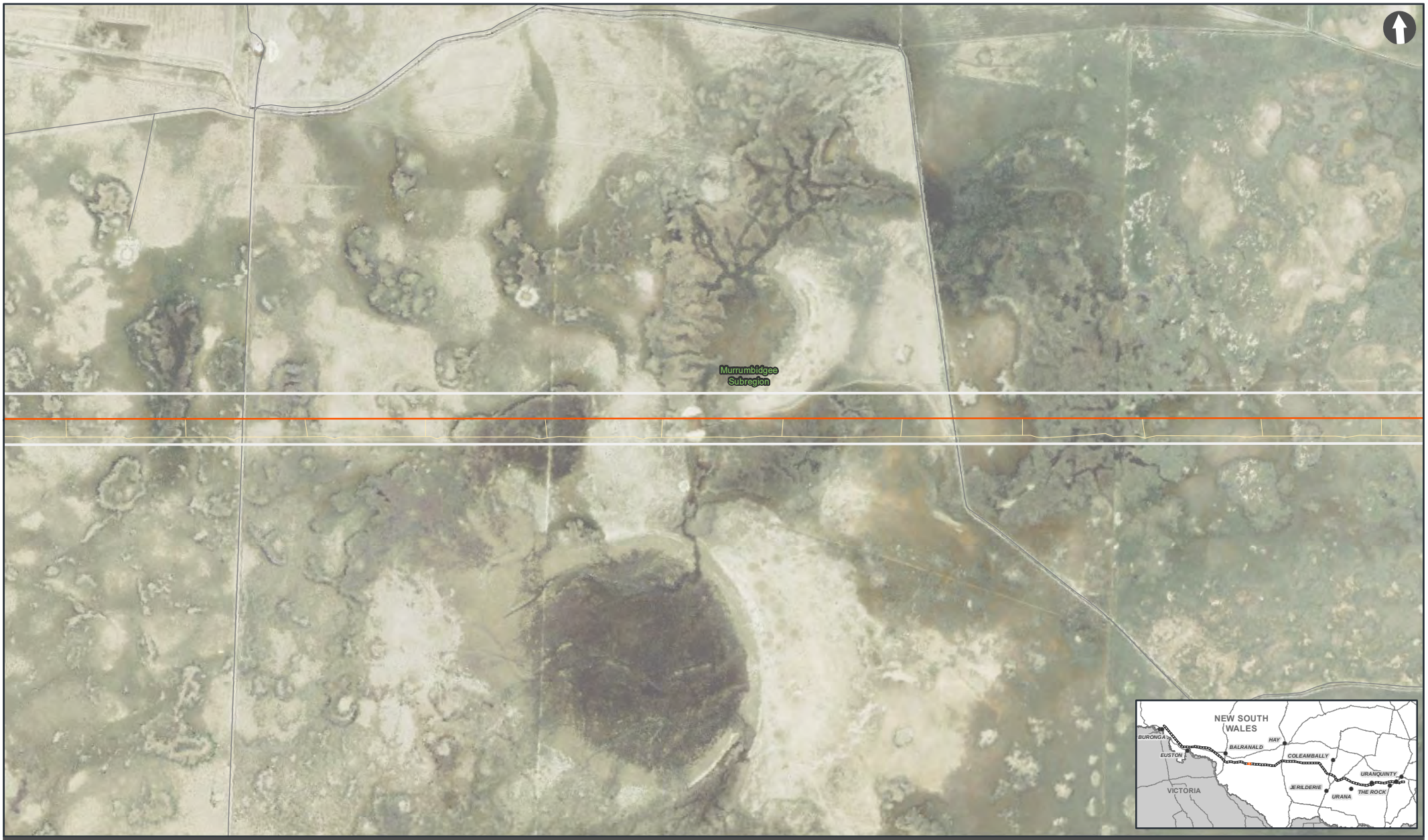
Matters of National Significance

Project Components
- Proposed
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

Threatened Flora Species
- *Brachyscome papillosa*

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure D-2al

Matters of National Significance

Project Components

- Proposed
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure D-2am

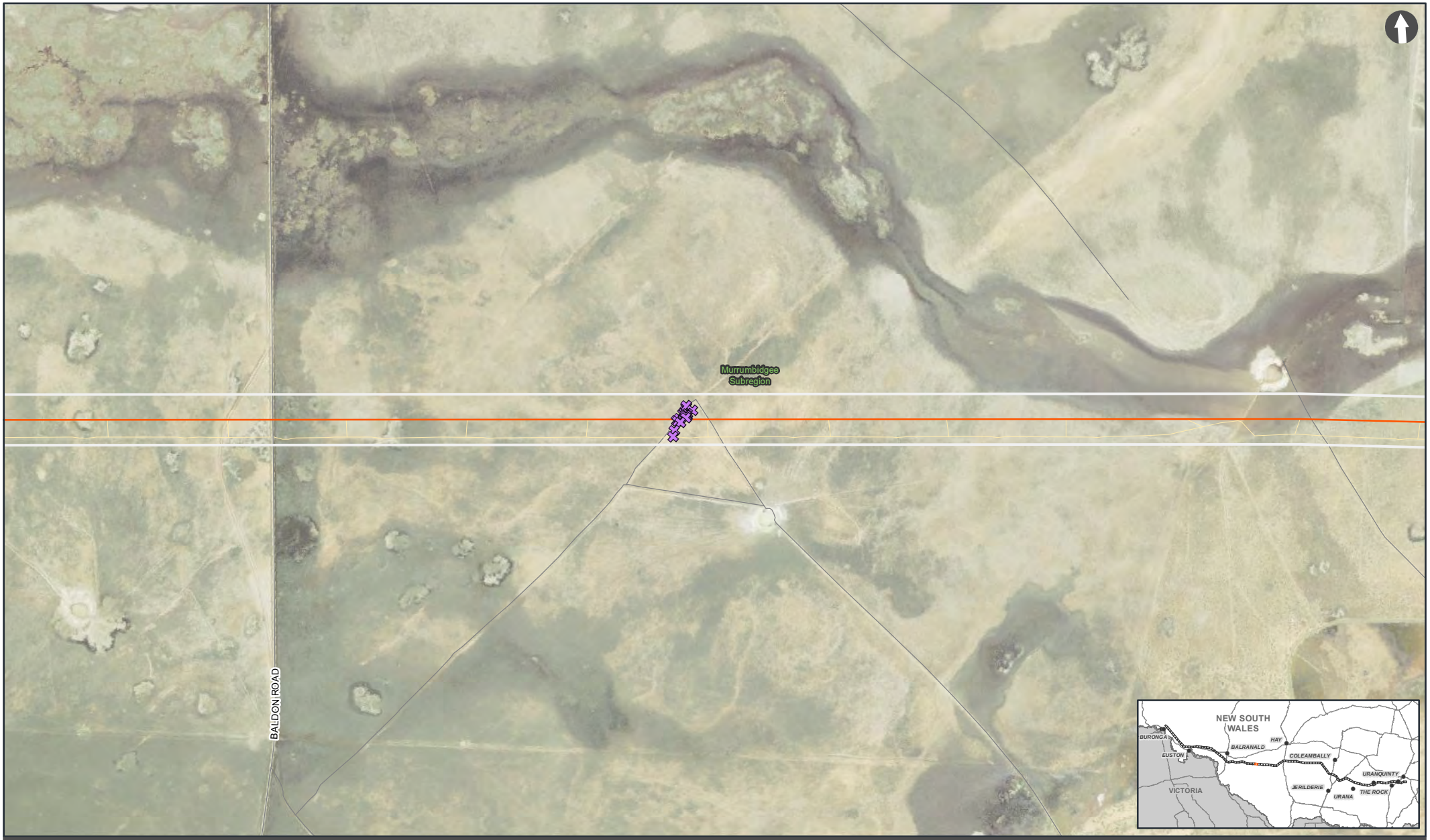
Matters of National Significance

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure D-2an

Matters of National Significance

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

Threatened Flora Species

- *Maeriana cheelii*

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure D-2ao

Matters of National Significance

Project Components

- Proposed
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure D-2ap

Matters of National Significance

Project Components

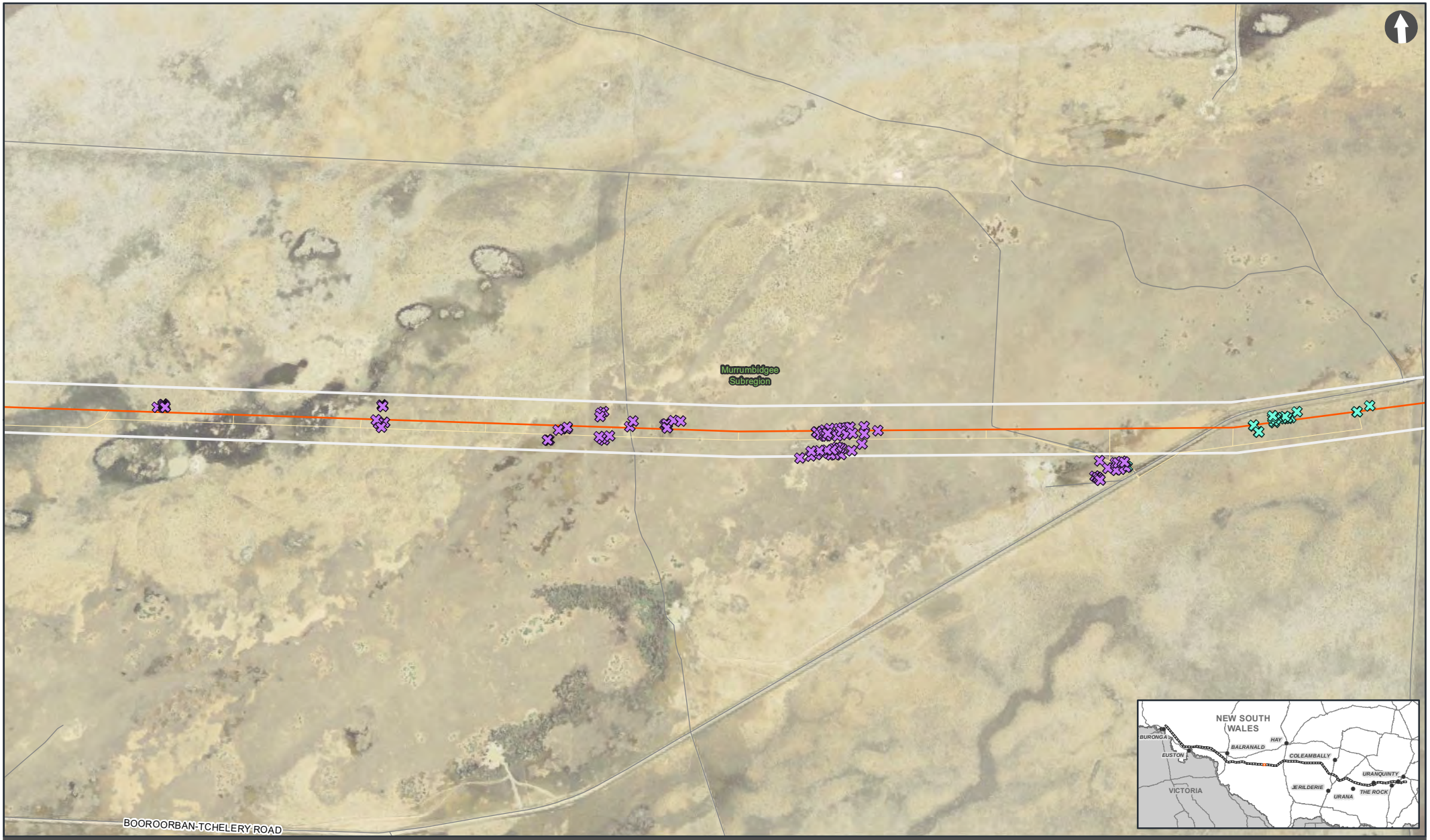
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

Threatened Flora Species

- *Maeriana cheelii*

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure D-2aq

Matters of National Significance

Project Components
- Proposed
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

Threatened Flora Species
- *Maeriana cheelii*
- *Swainsona murrayana*

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure D-2ar

Matters of National Significance

Project Components

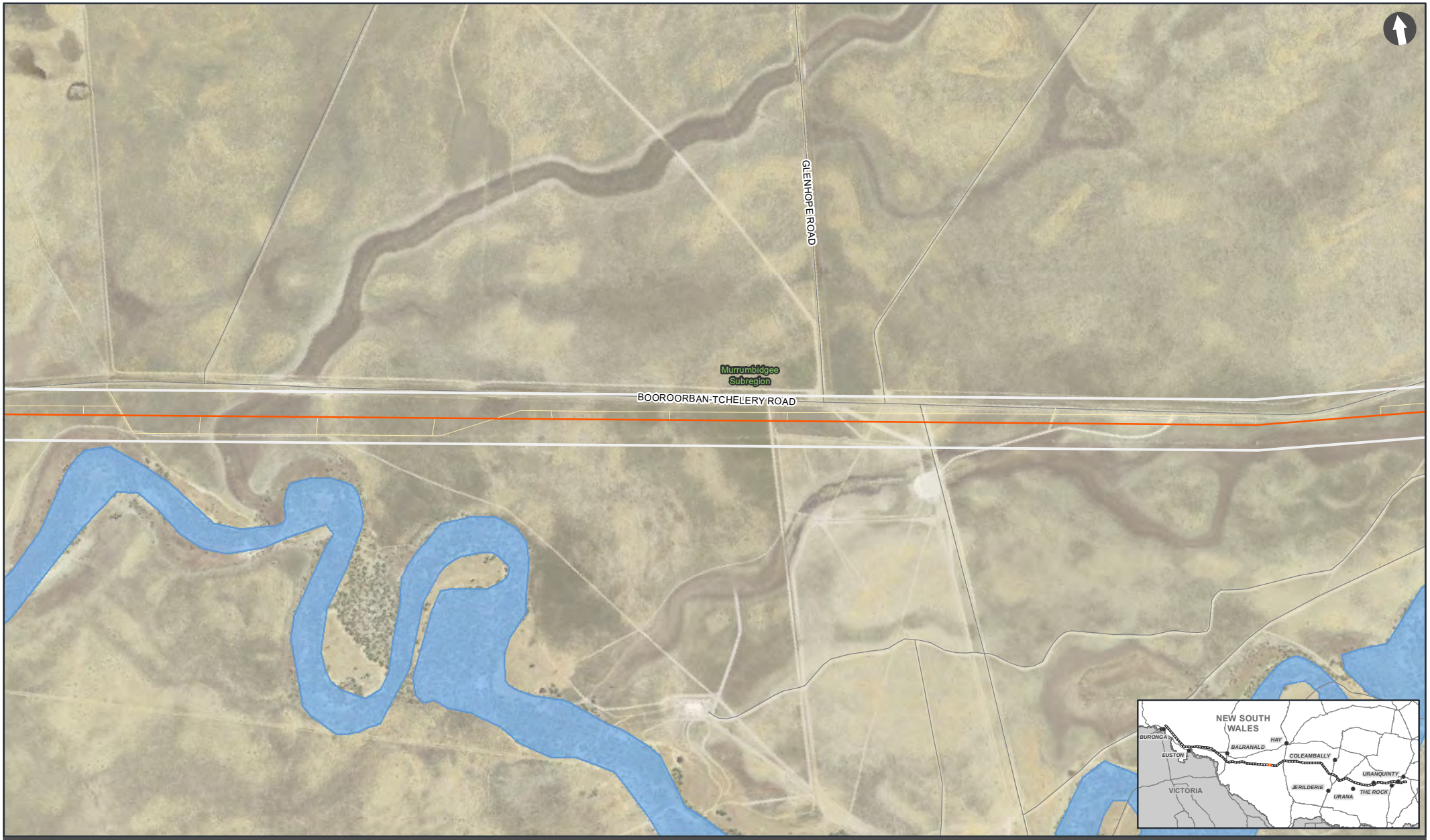
- Proposed
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

Threatened Flora Species

- *Swainsona murrayana*

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure D-2as

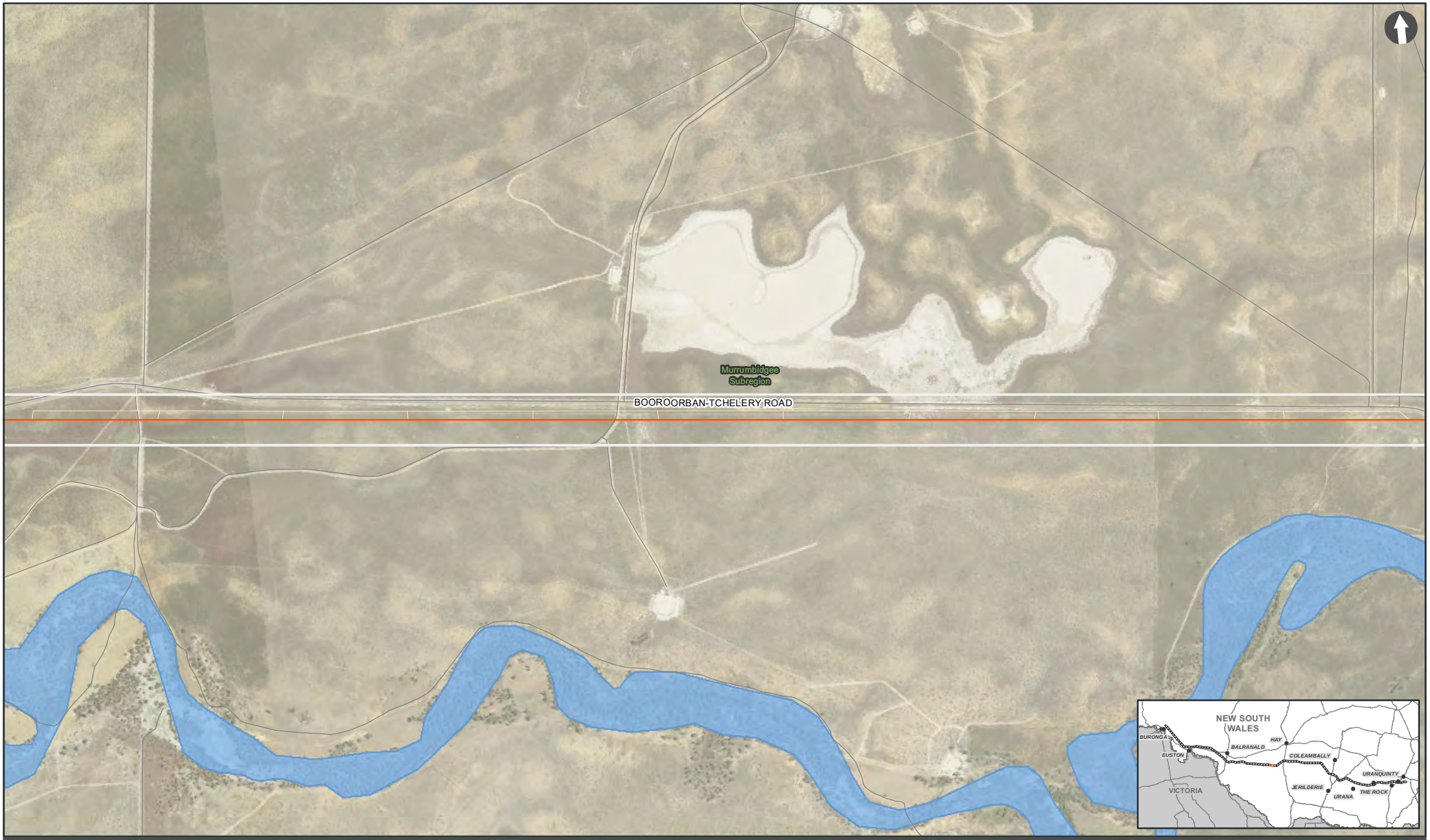
Matters of National Significance

Project Components

- Proposed
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure D-2at

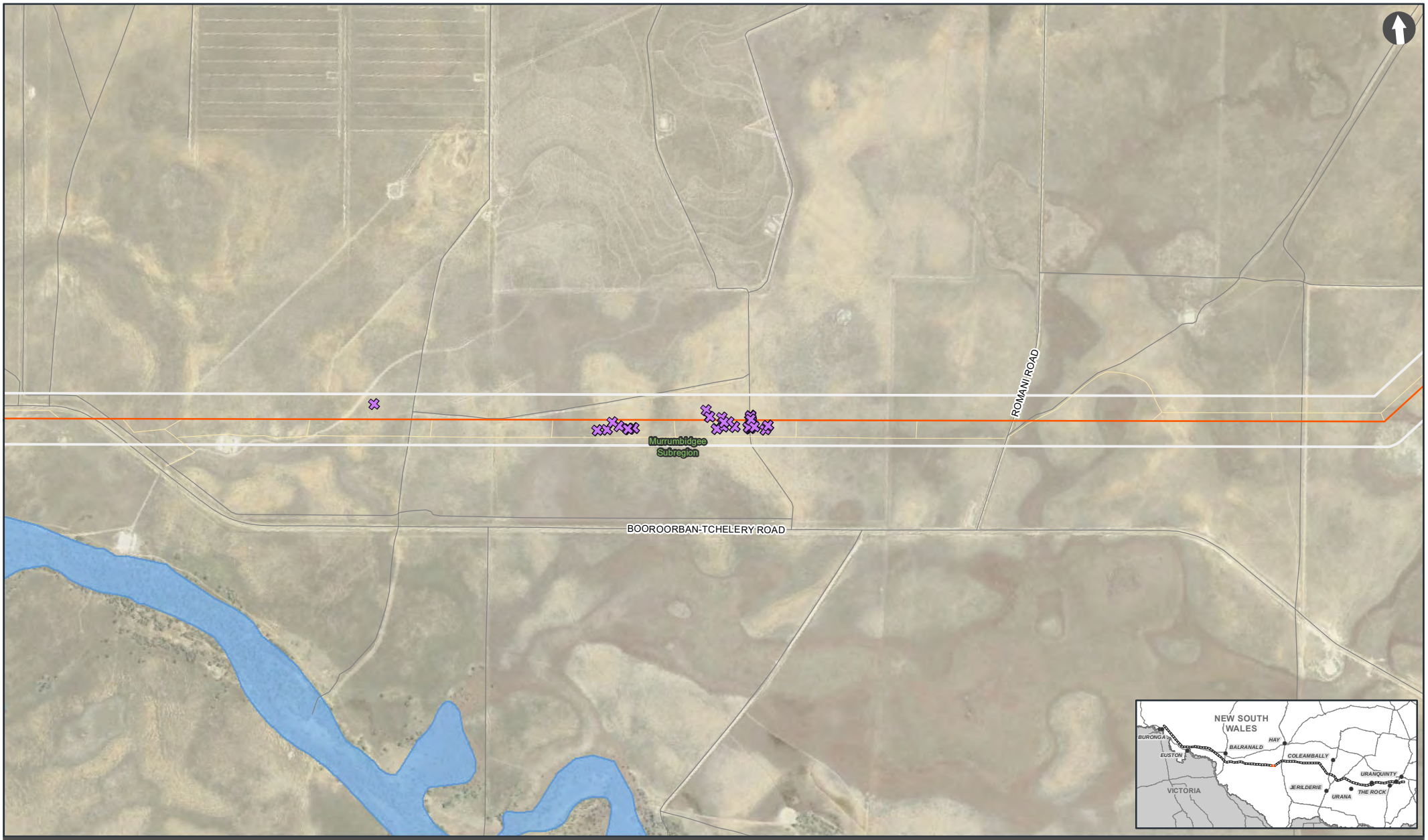
Matters of National Significance

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure D-2au

Matters of National Significance

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

Threatened Flora Species
- *Maeriana cheelii*
- *Swainsona murrayana*

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure D-2av

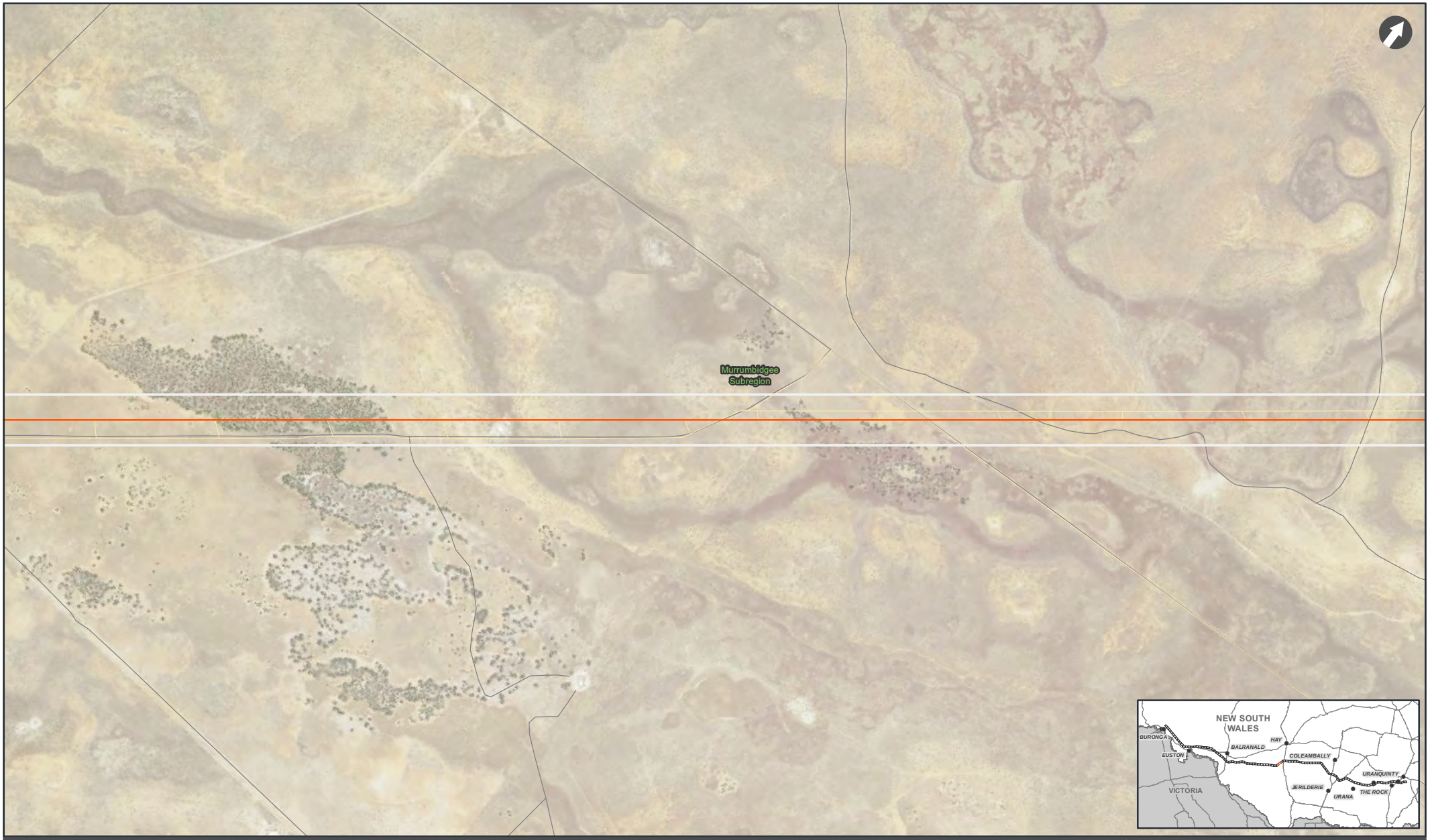
Matters of National Significance

Project Components

- Proposed
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure D-2aw

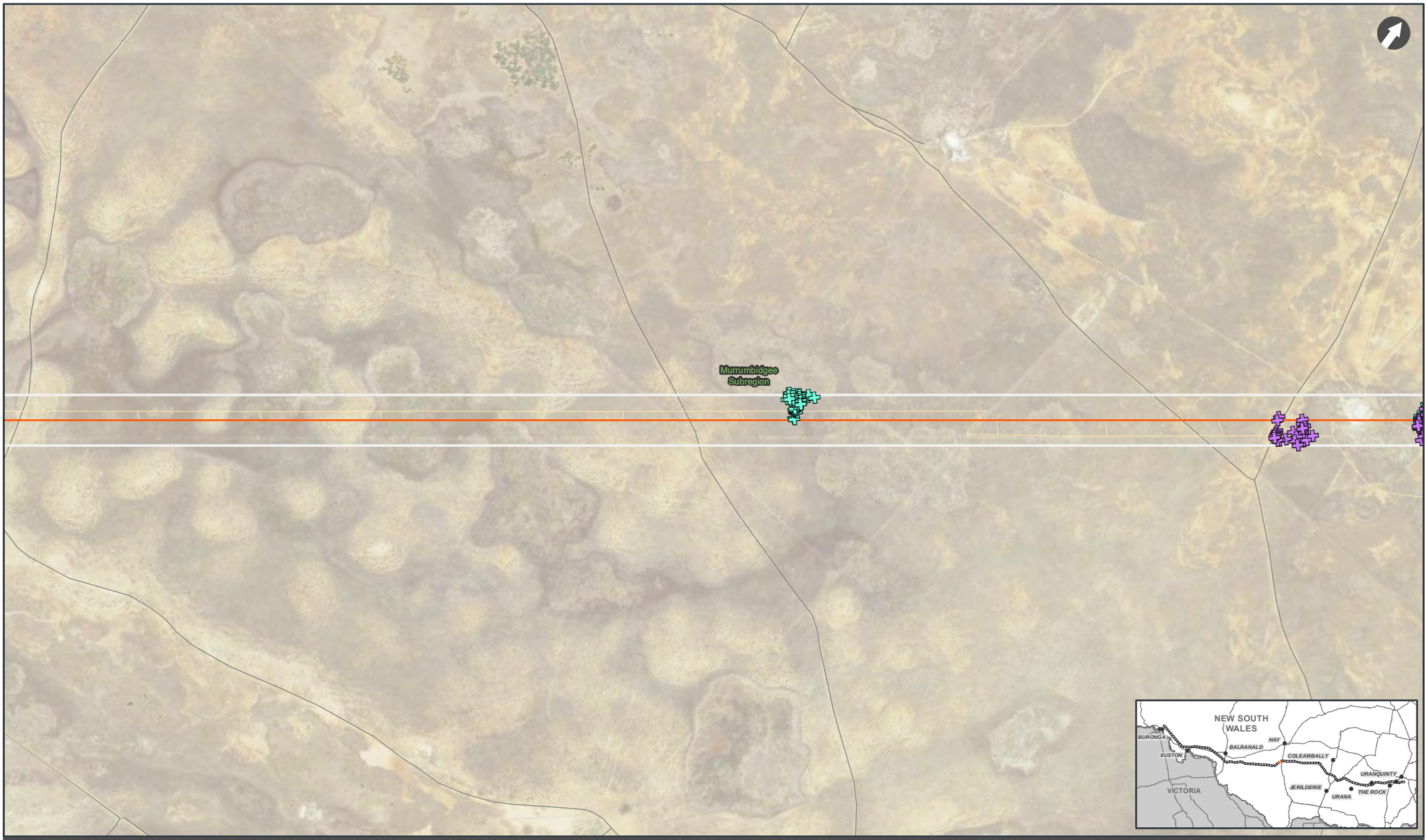
Matters of National Significance

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure D-2ax

Matters of National Significance

Project Components

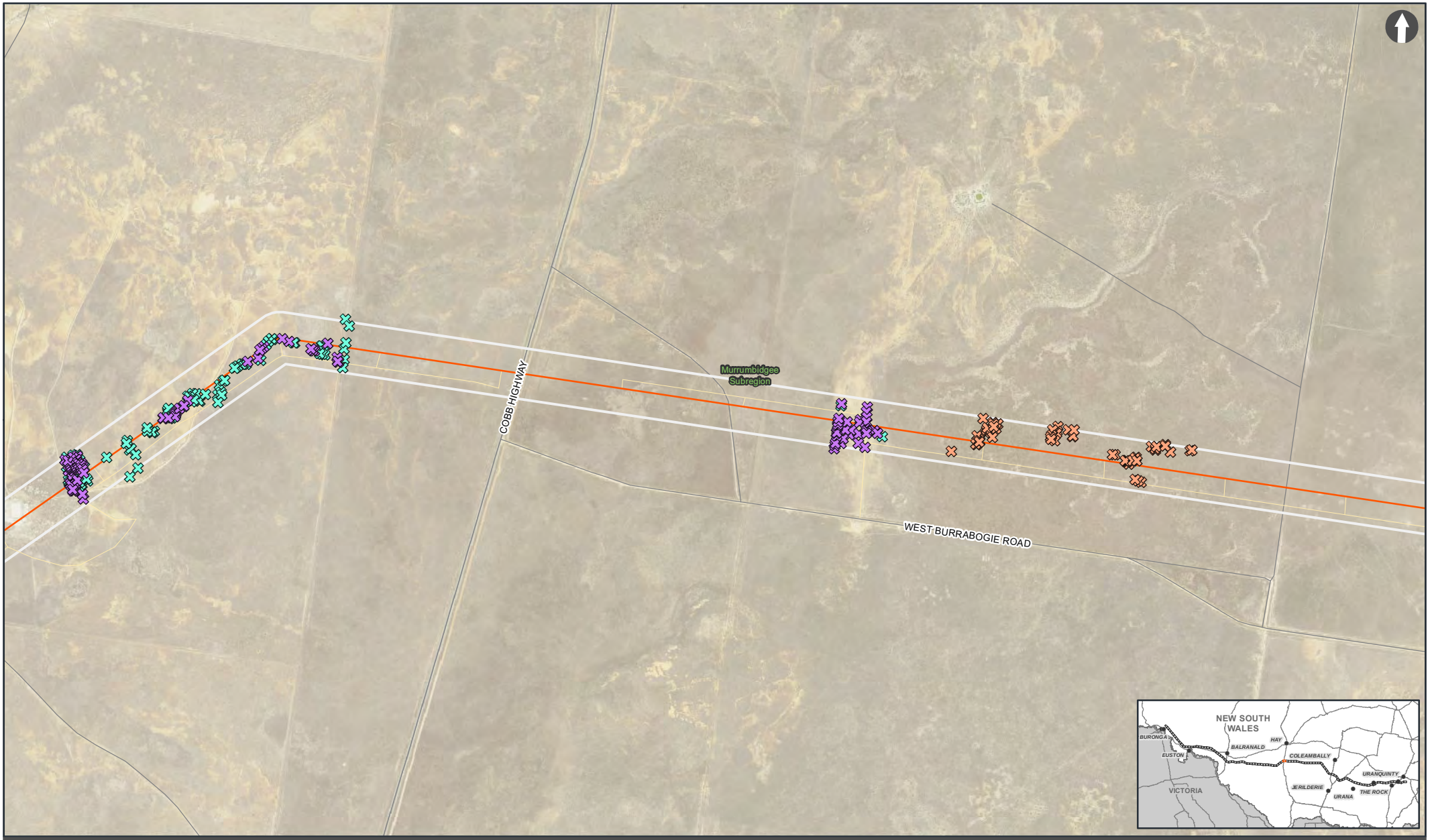
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

Threatened Flora Species

- *Maeriana cheelii*
- *Swainsona murrayana*

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure D-2ay

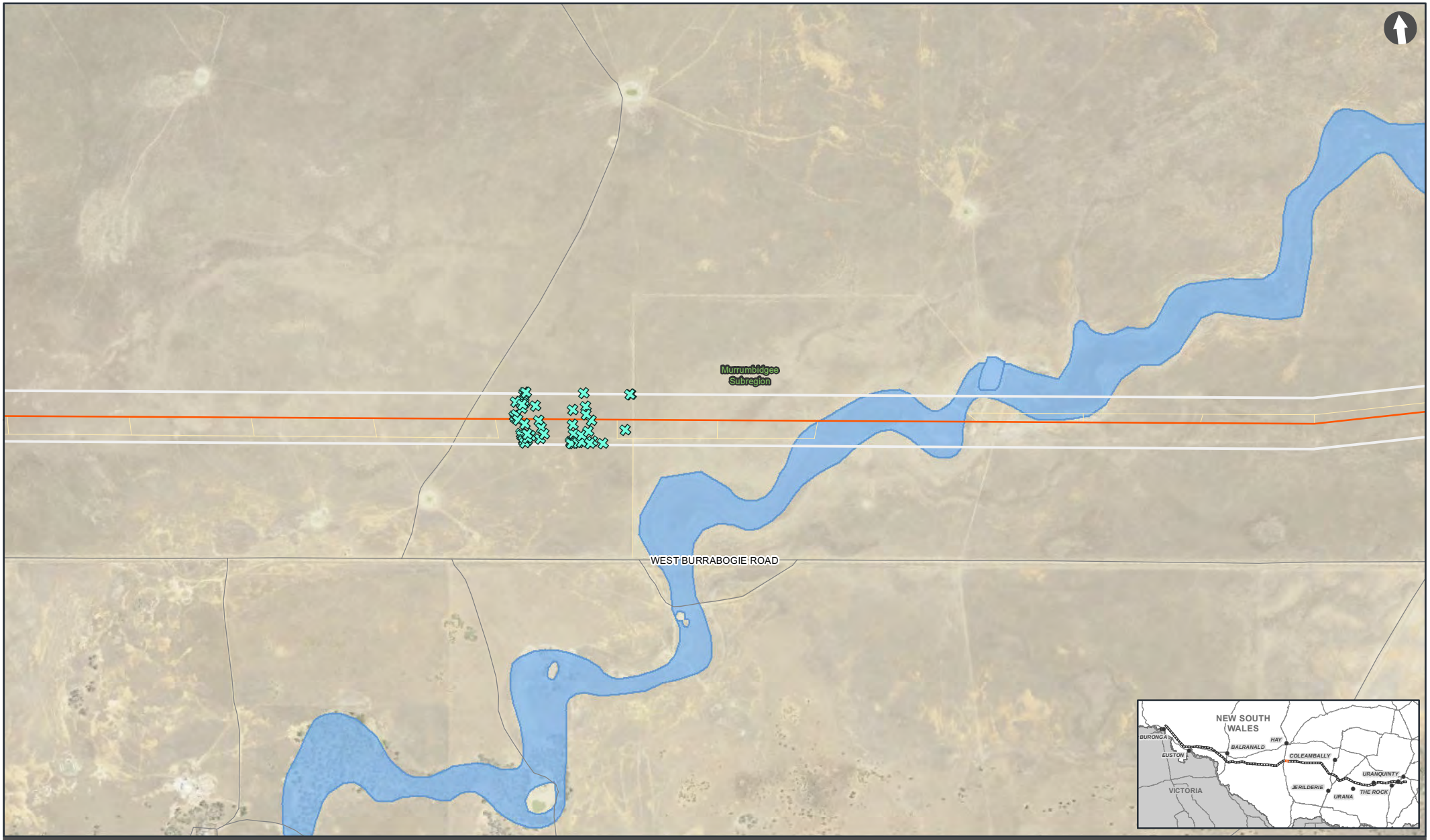
Matters of National Significance

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

Threatened Flora Species
- *Brachyscome papillosa*
- *Maeriana cheelii*
- *Swainsona murrayana*

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure D-2az

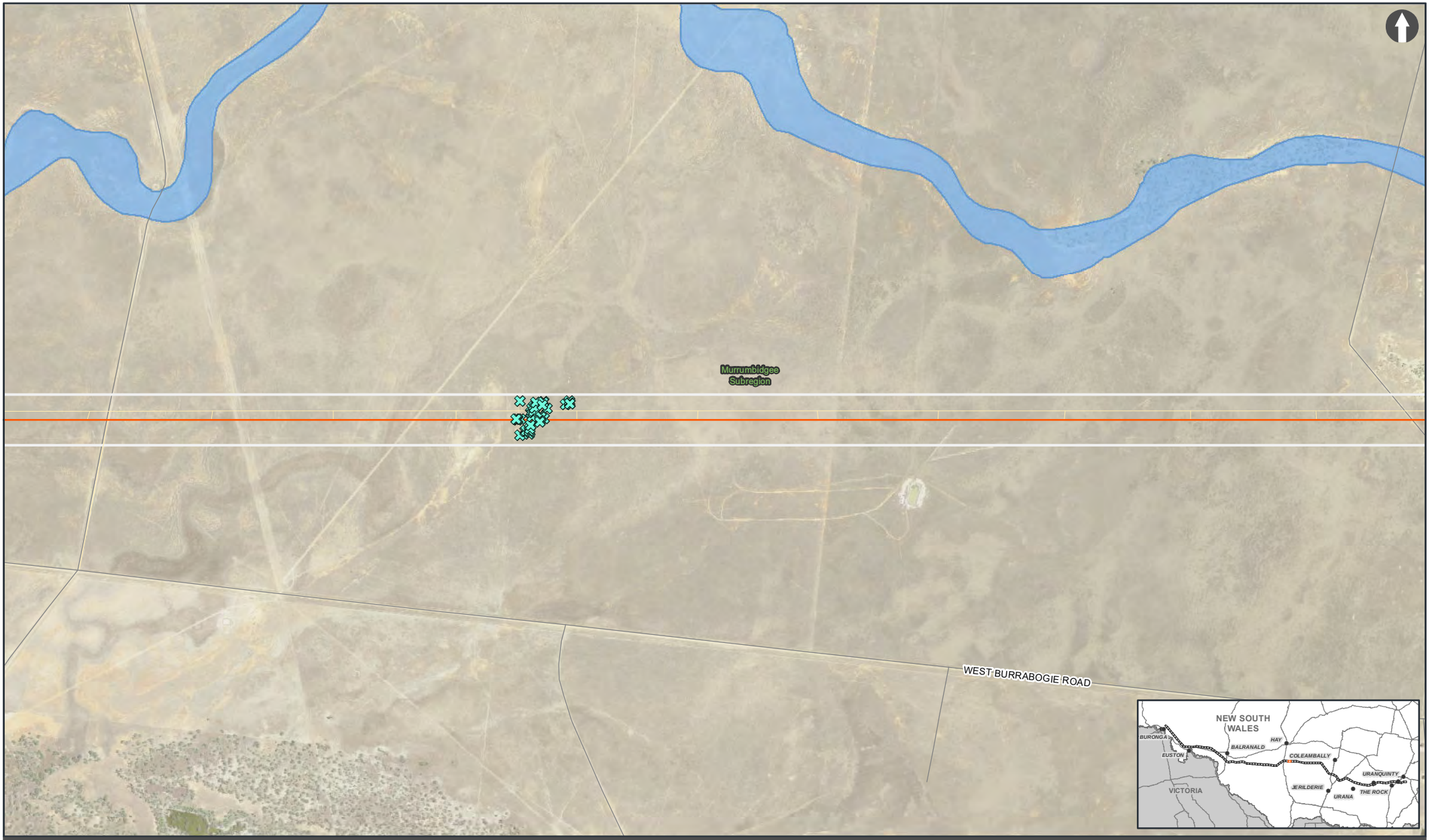
Matters of National Significance

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

Threatened Flora Species
- *Swainsona murrayana*

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure D-2ba

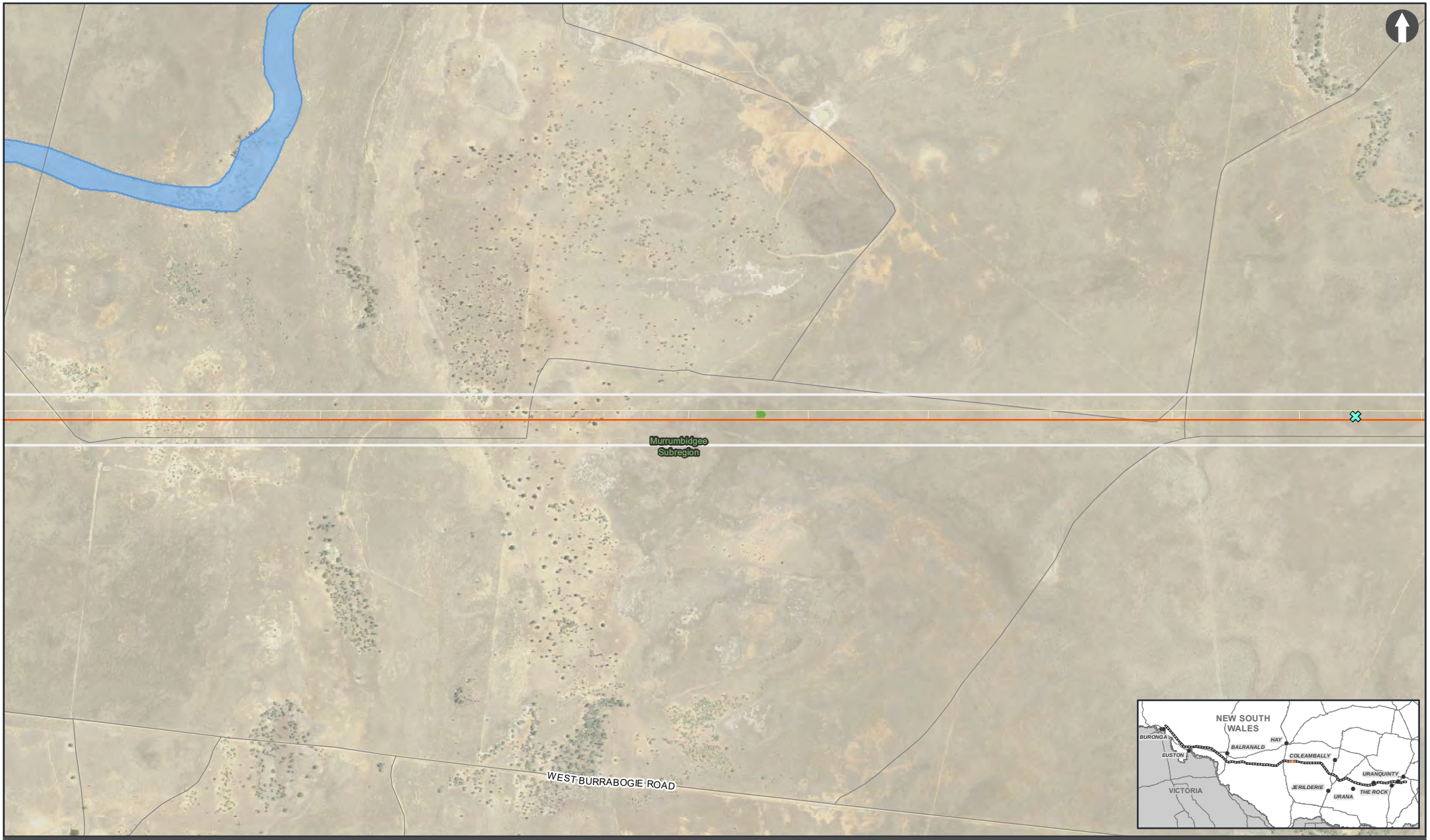
Matters of National Significance

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

Threatened Flora Species
- *Swainsona murrayana*

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

Matters of National Significance
- Weeping Myall Woodlands - Endangered

Threatened Flora Species
- *Swainsona murrayana*

BDAR - Figure D-2bb

Matters of National Significance

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure D-2bc

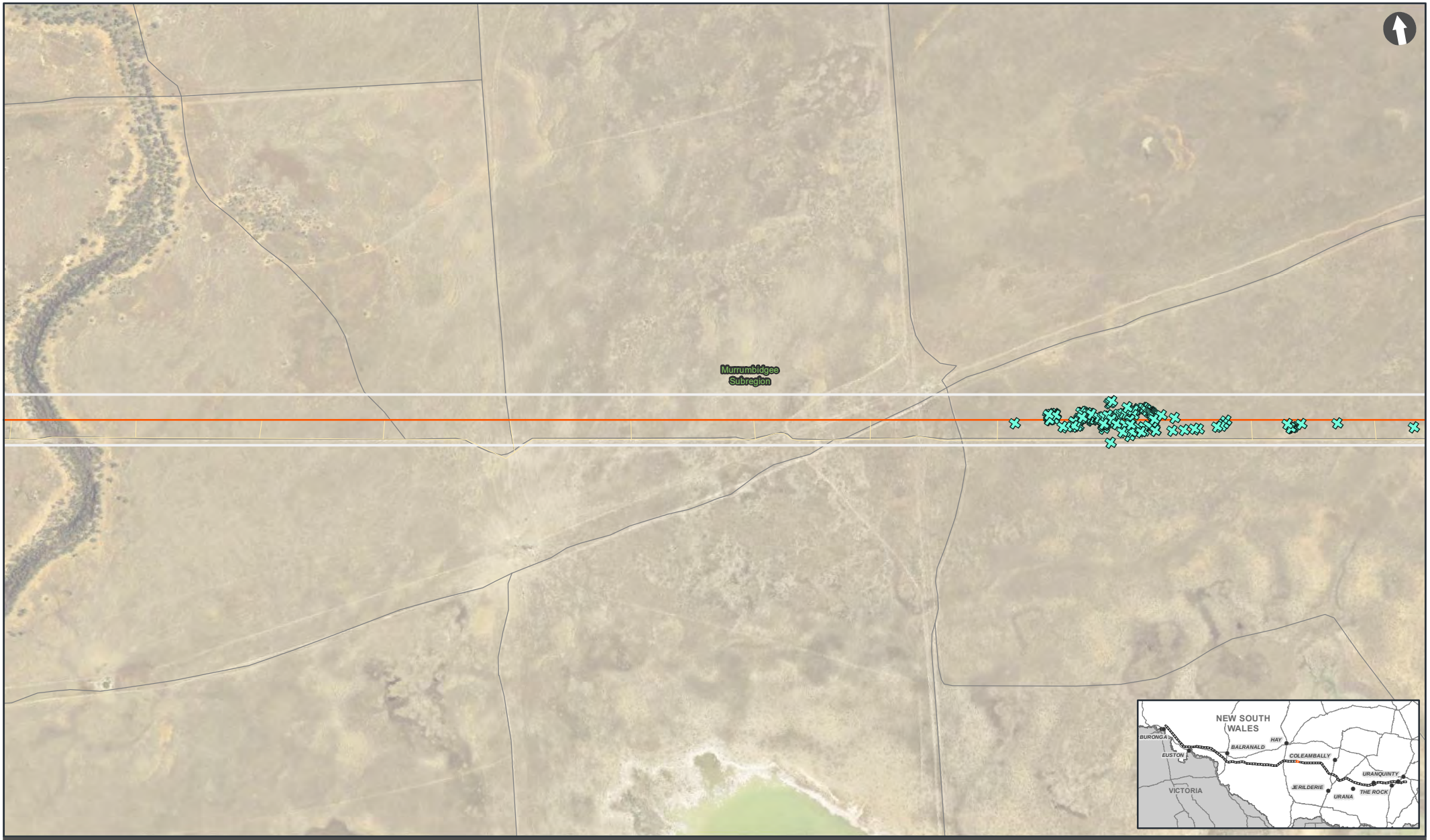
Matters of National Significance

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

Threatened Flora Species
- *Swainsona murrayana*

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure D-2bd

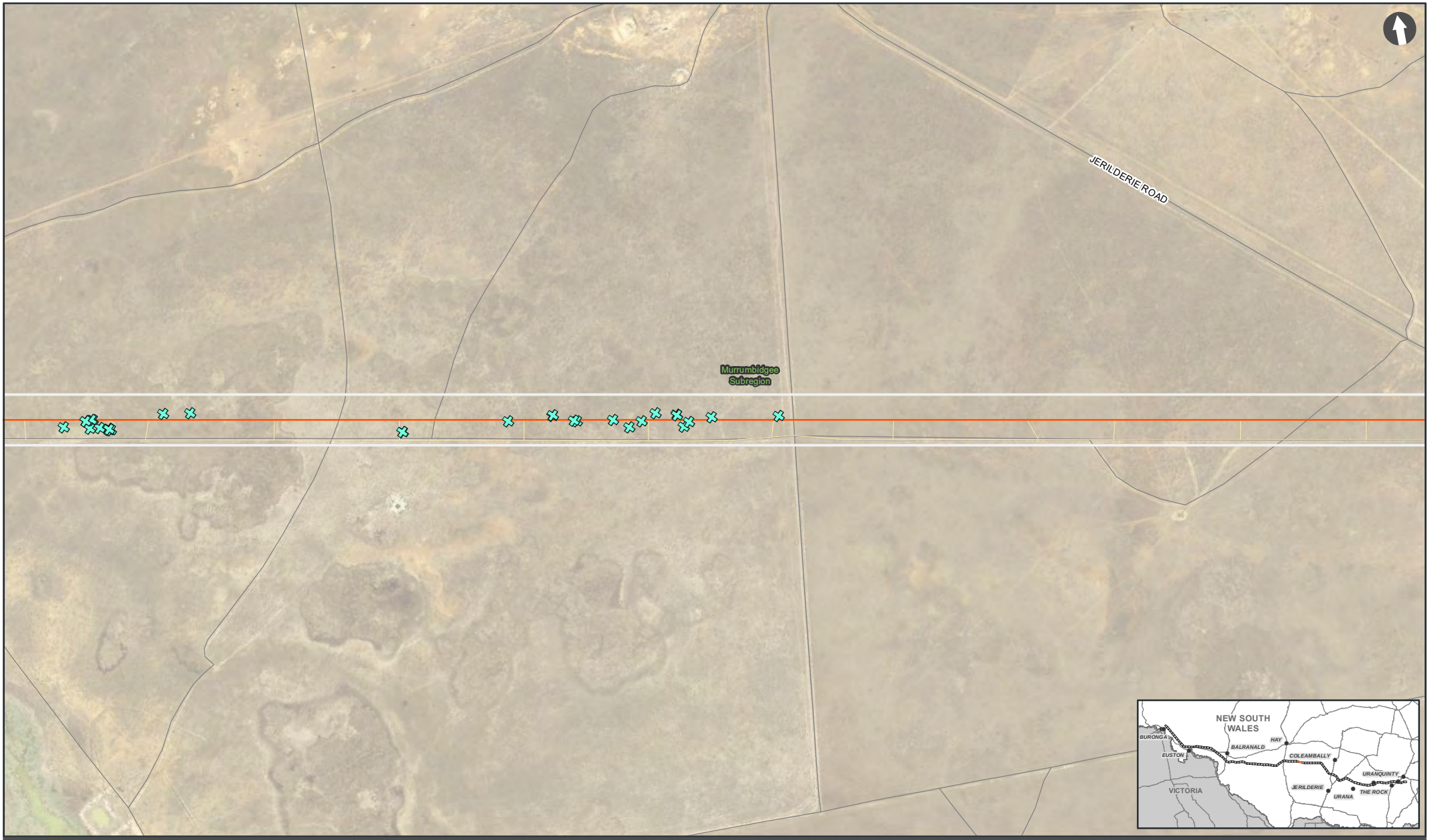
Matters of National Significance

Project Components
- Proposed
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

Threatened Flora Species
- *Swainsona murrayana*

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure D-2be

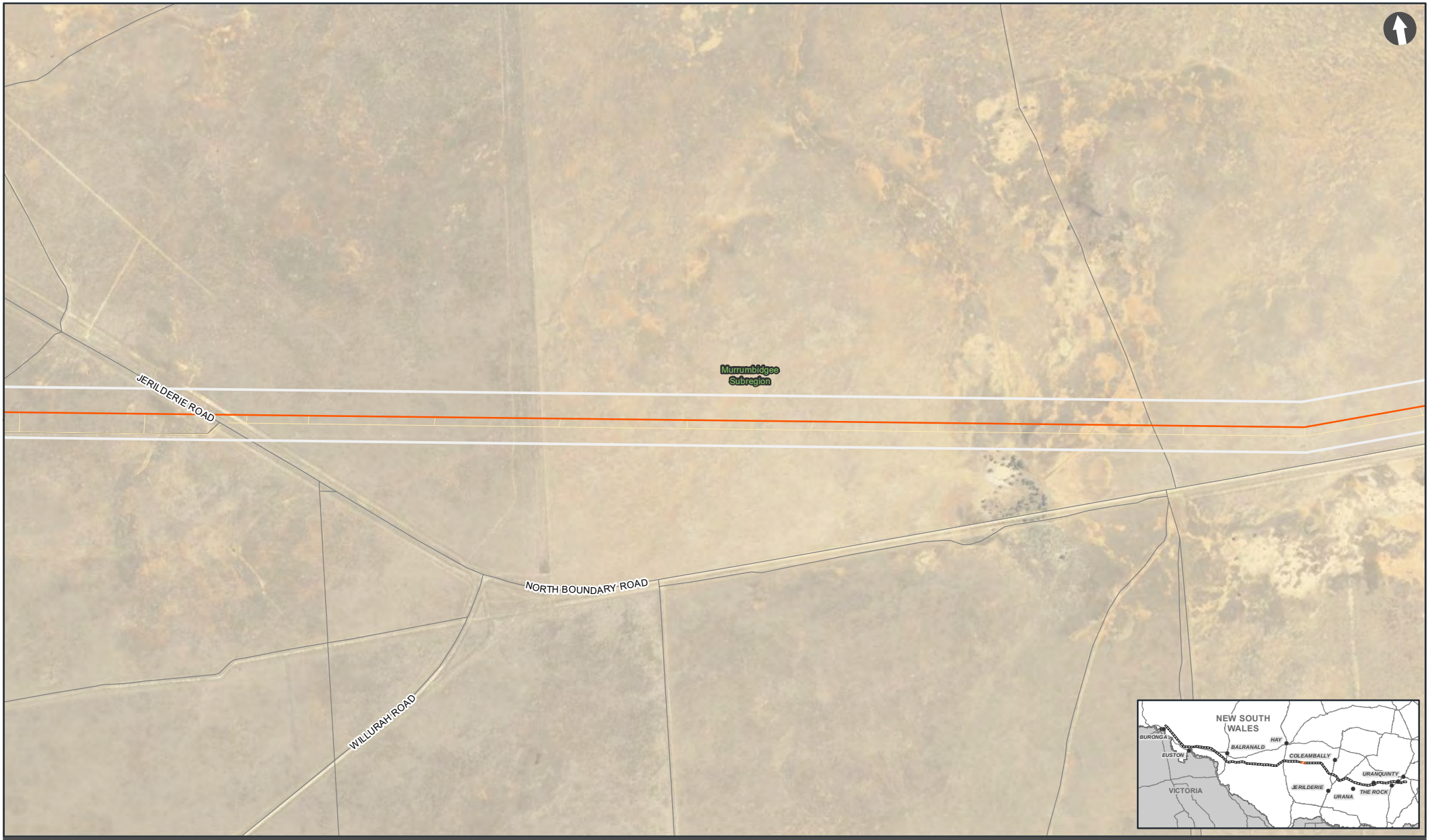
Matters of National Significance

Project Components
- Proposed
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

Threatened Flora Species
- *Swainsona murrayana*

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure D-2bf

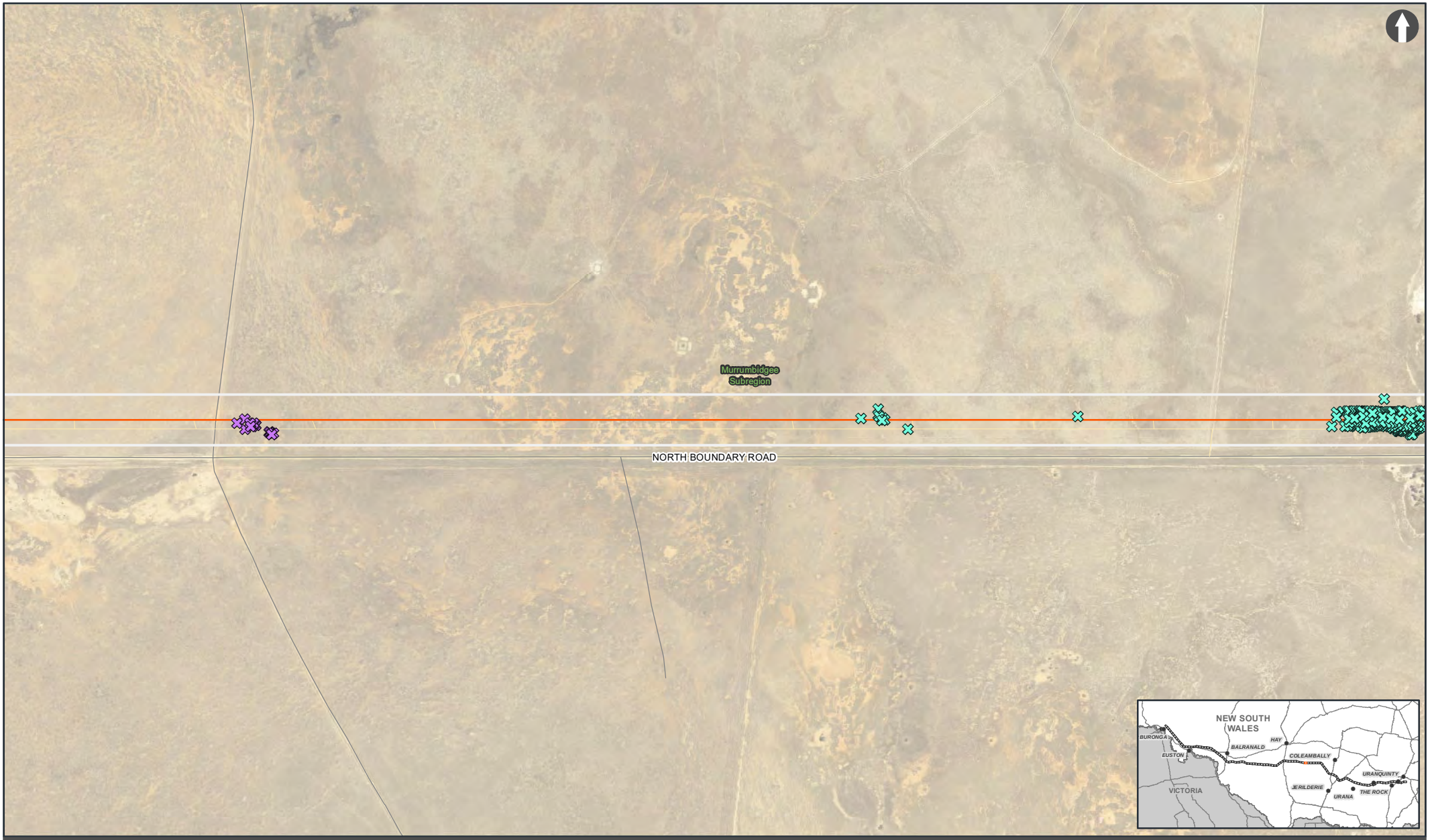
Matters of National Significance

Project Components

- Proposed
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure D-2bg

Matters of National Significance

Project Components

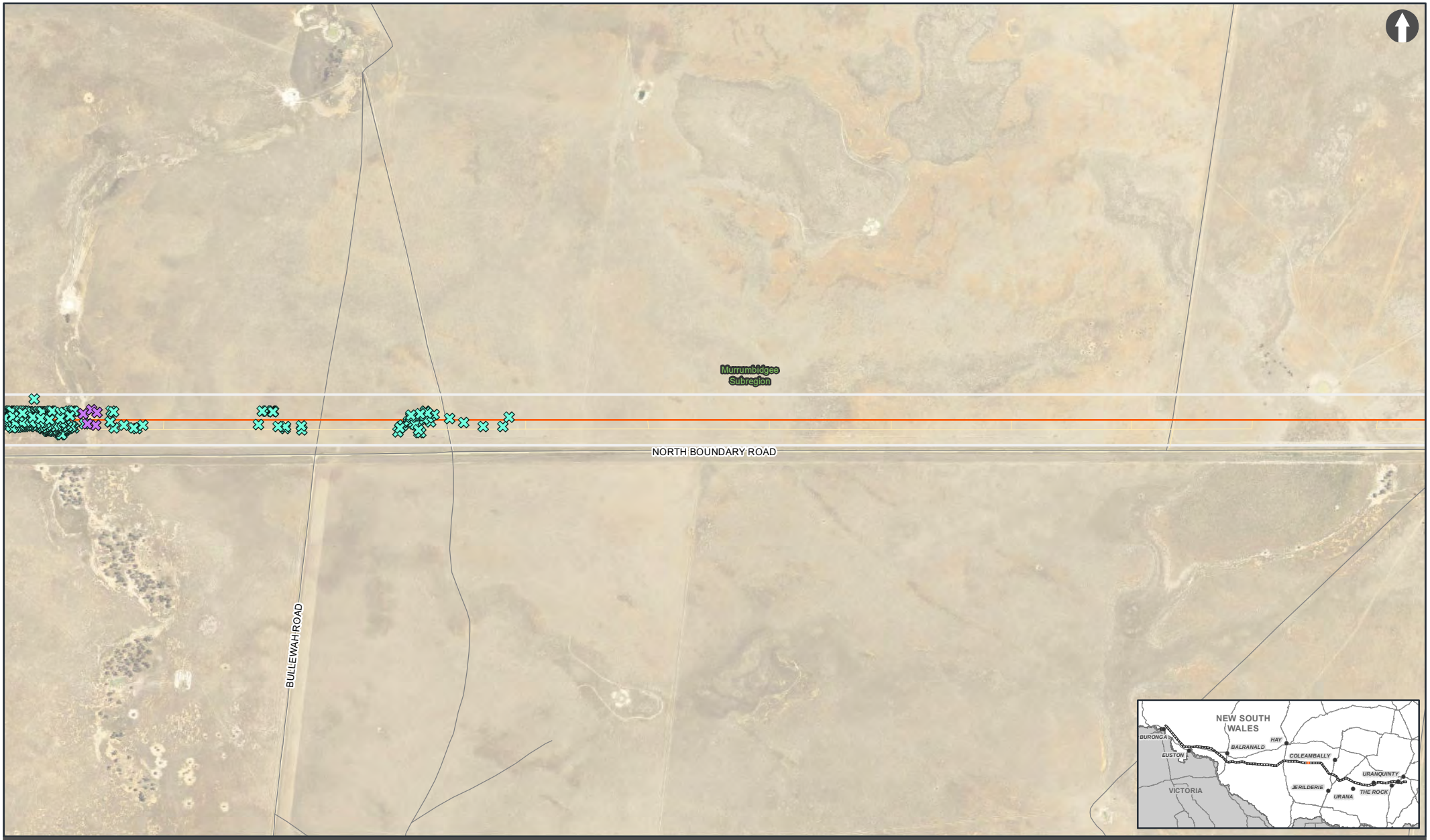
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

Threatened Flora Species

- *Maeriana cheelii*
- *Swainsona murrayana*

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure D-2bh

Matters of National Significance

Project Components

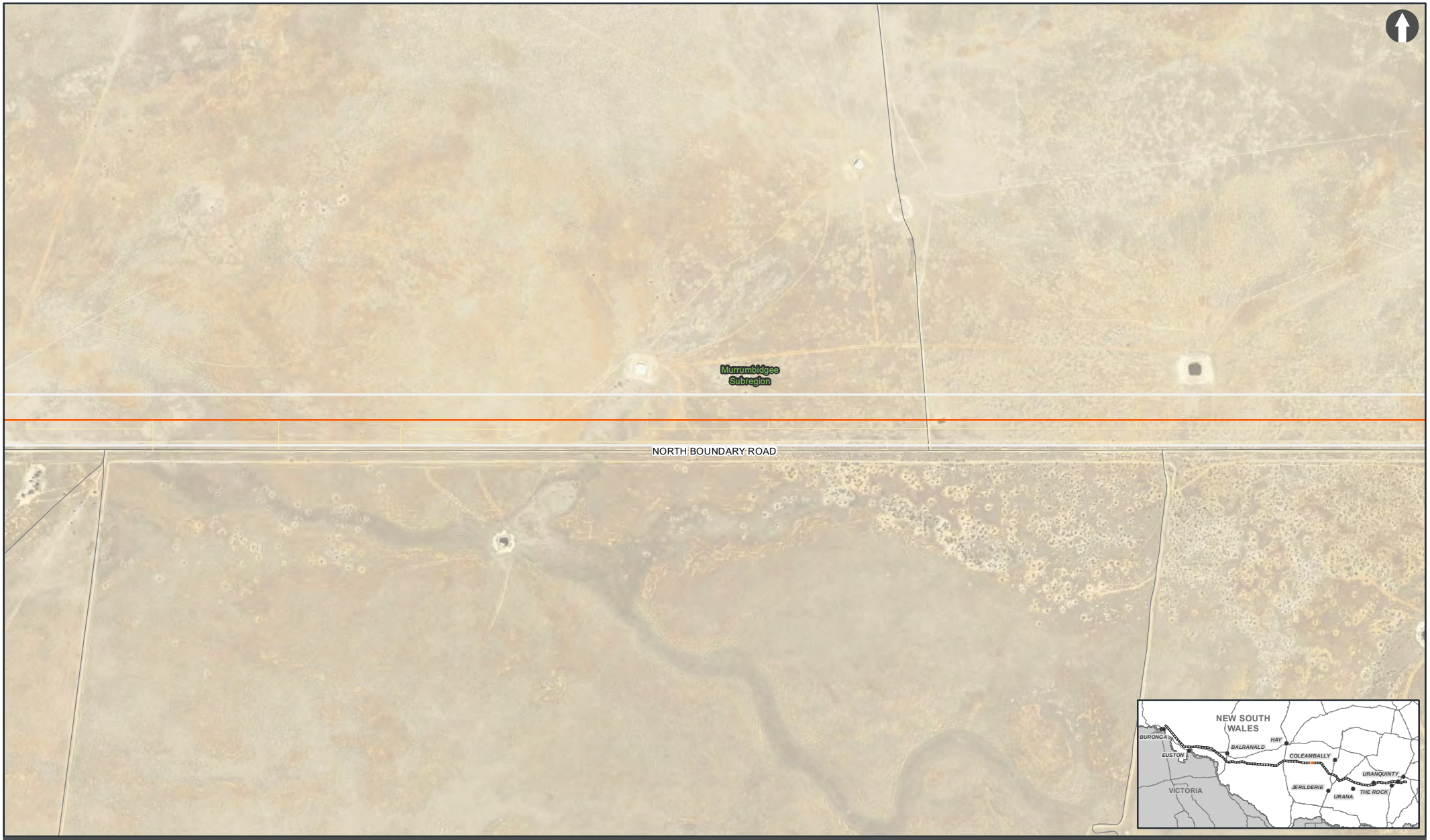
- Proposed
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

Threatened Flora Species

- *Maeriana cheelii*
- *Swainsona murrayana*

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure D-2bi

Matters of National Significance

Project Components

- Proposed
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure D-2bj

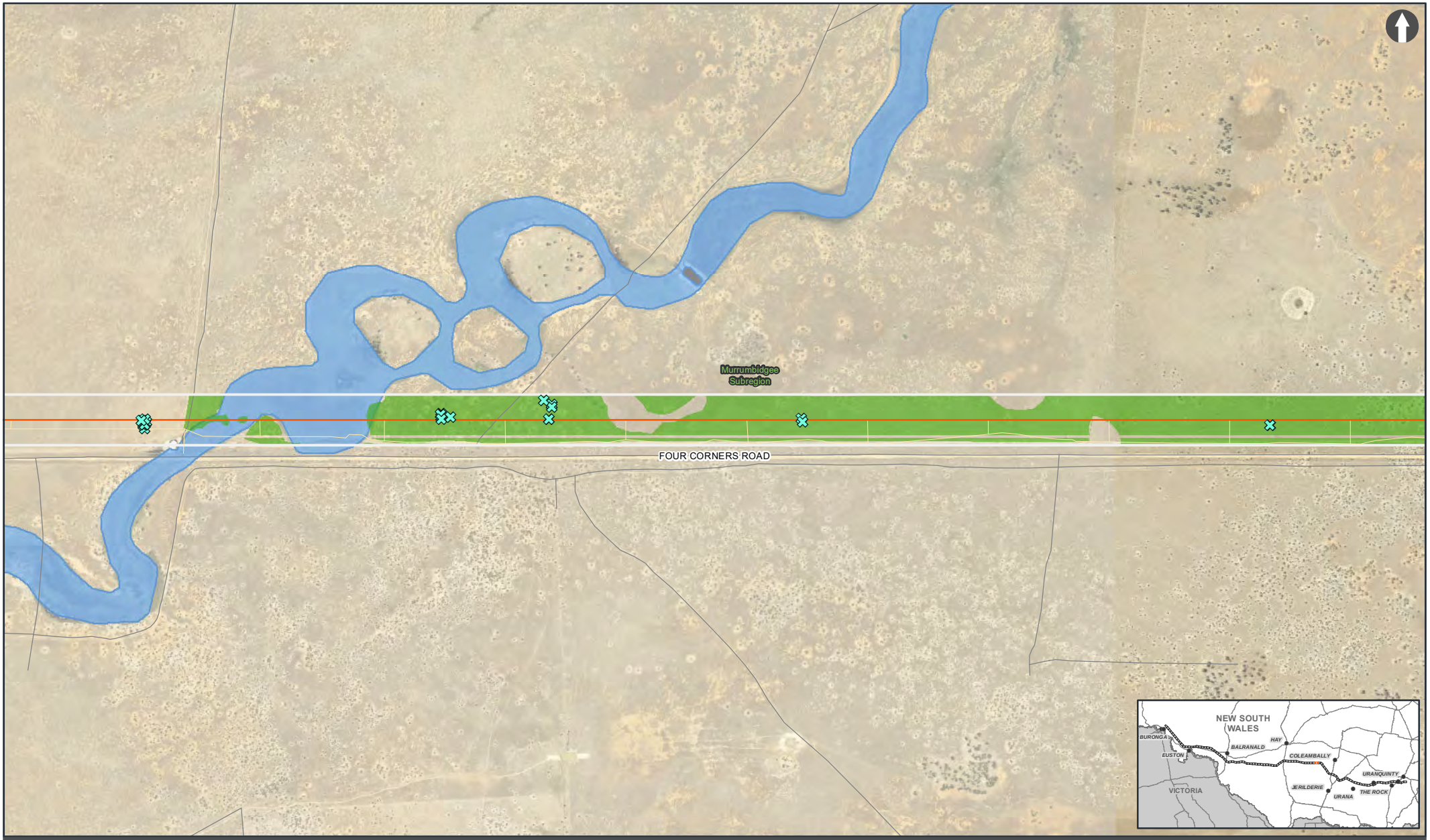
Matters of National Significance

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

Matters of National Significance
- Weeping Myall Woodlands - Endangered

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure D-2bk

Matters of National Significance

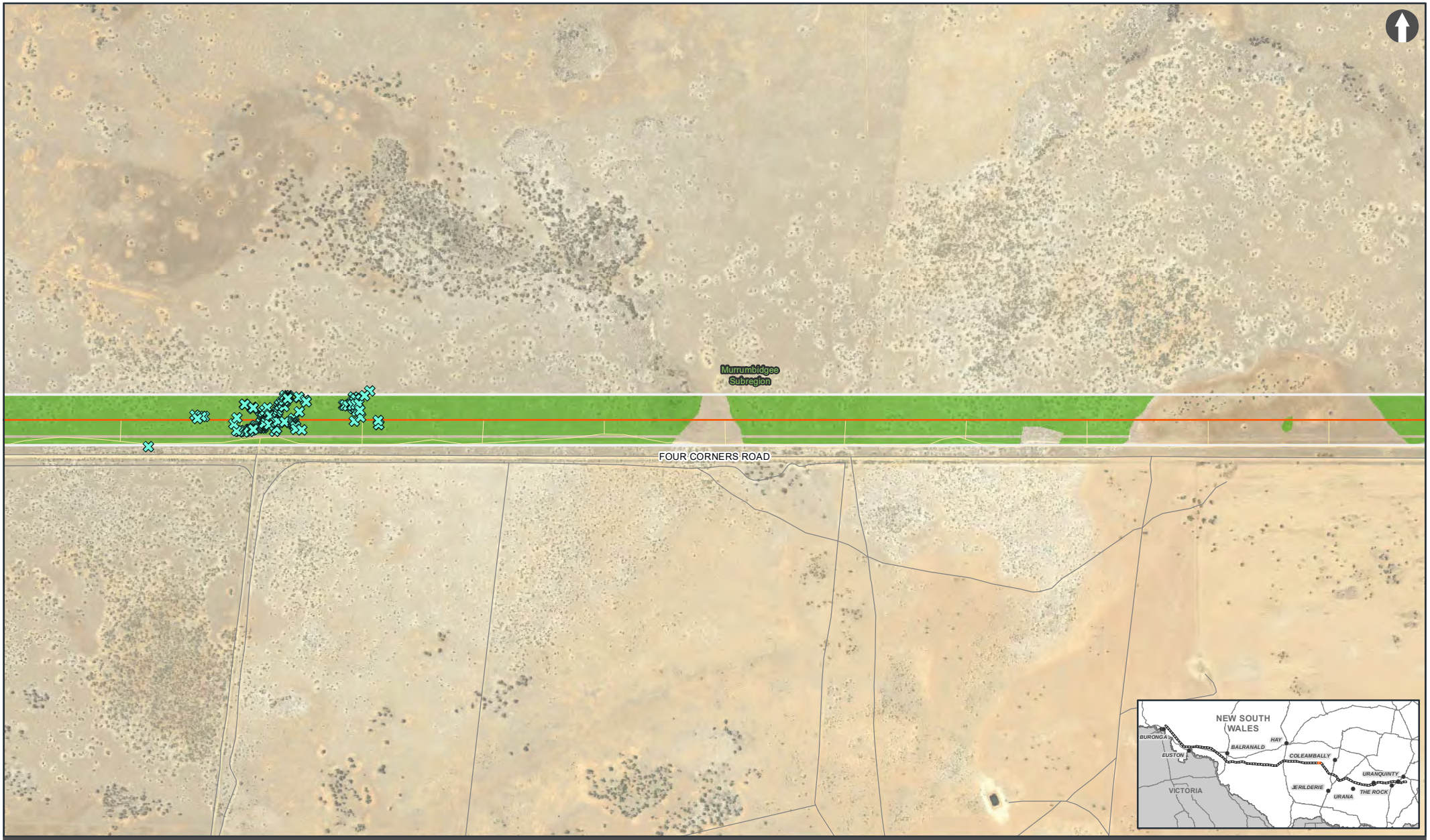
Project Components
- Proposed
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

Matters of National Significance
- Weeping Myall Woodlands - Endangered

Threatened Flora Species
- *Swainsona murrayana*

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure D-2bl

Matters of National Significance

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

Matters of National Significance
- Weeping Myall Woodlands - Endangered

Threatened Flora Species
- *Swainsona murrayana*

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure D-2bm

Matters of National Significance

Project Components

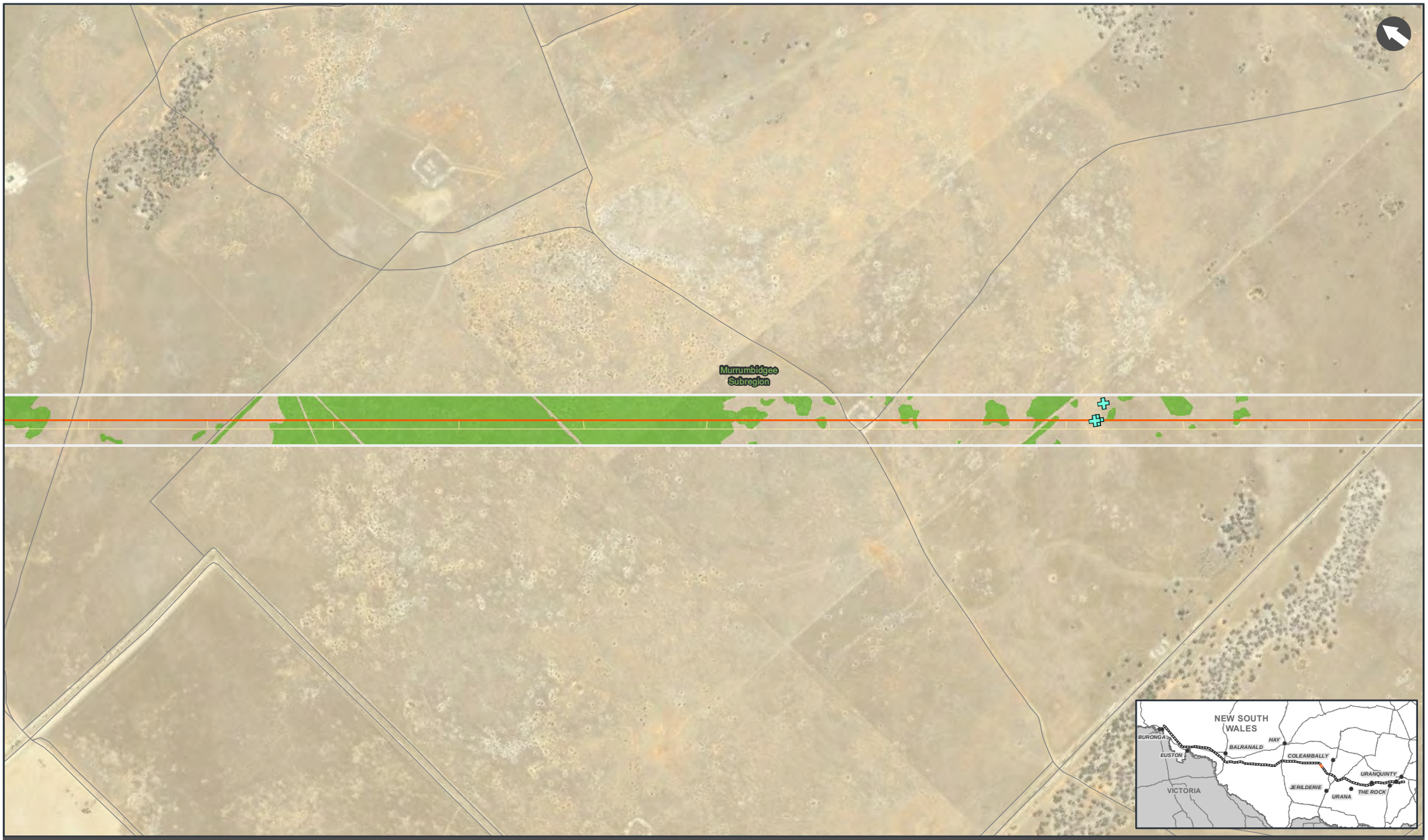
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

Matters of National Significance

- Weeping Myall Woodlands - Endangered

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure D-2bn

Matters of National Significance

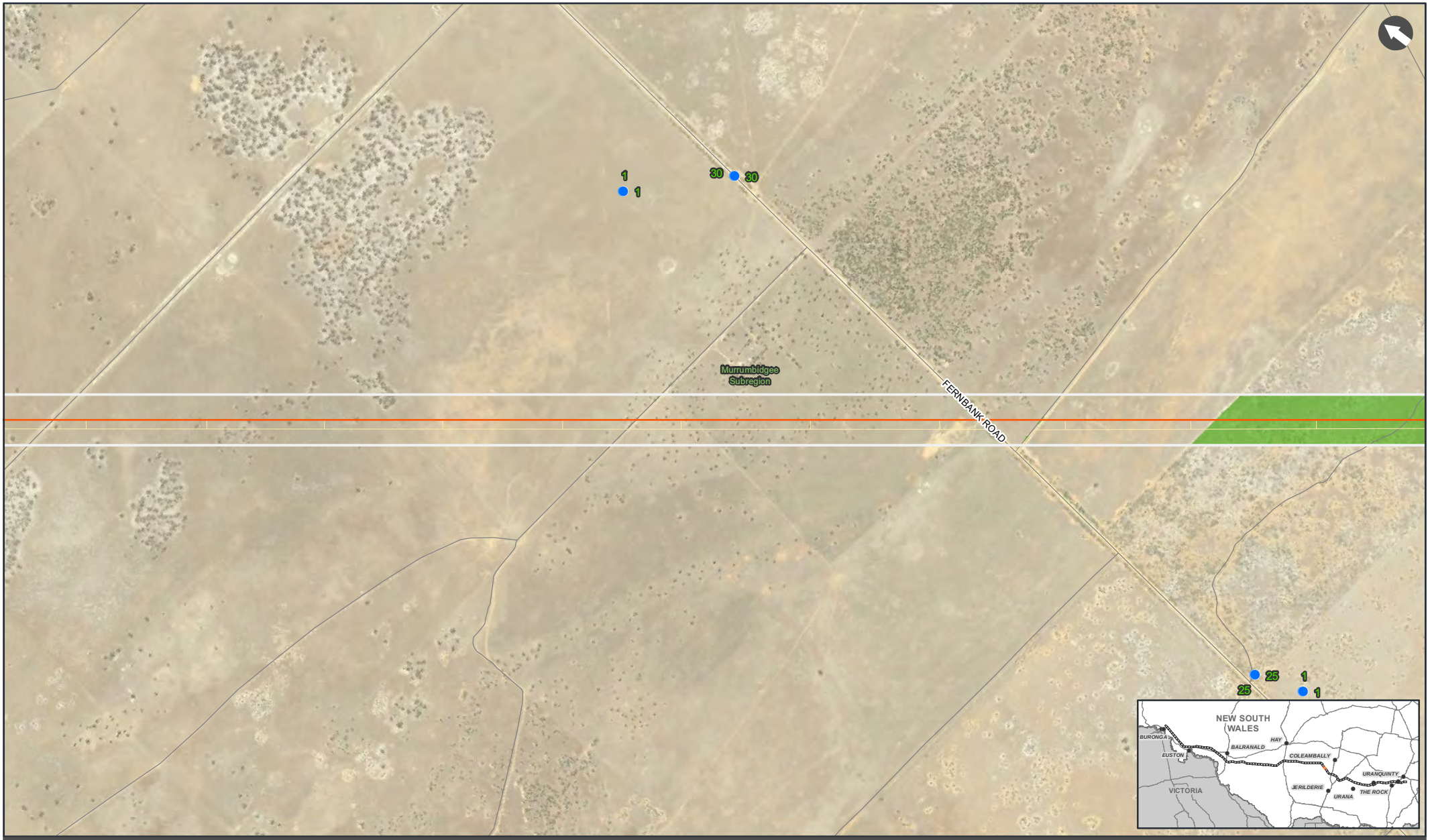
Project Components
- Proposed
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

Matters of National Significance
- Weeping Myall Woodlands - Endangered

Threatened Flora Species
- *Swainsona murrayana*

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure D-2bo

Matters of National Significance

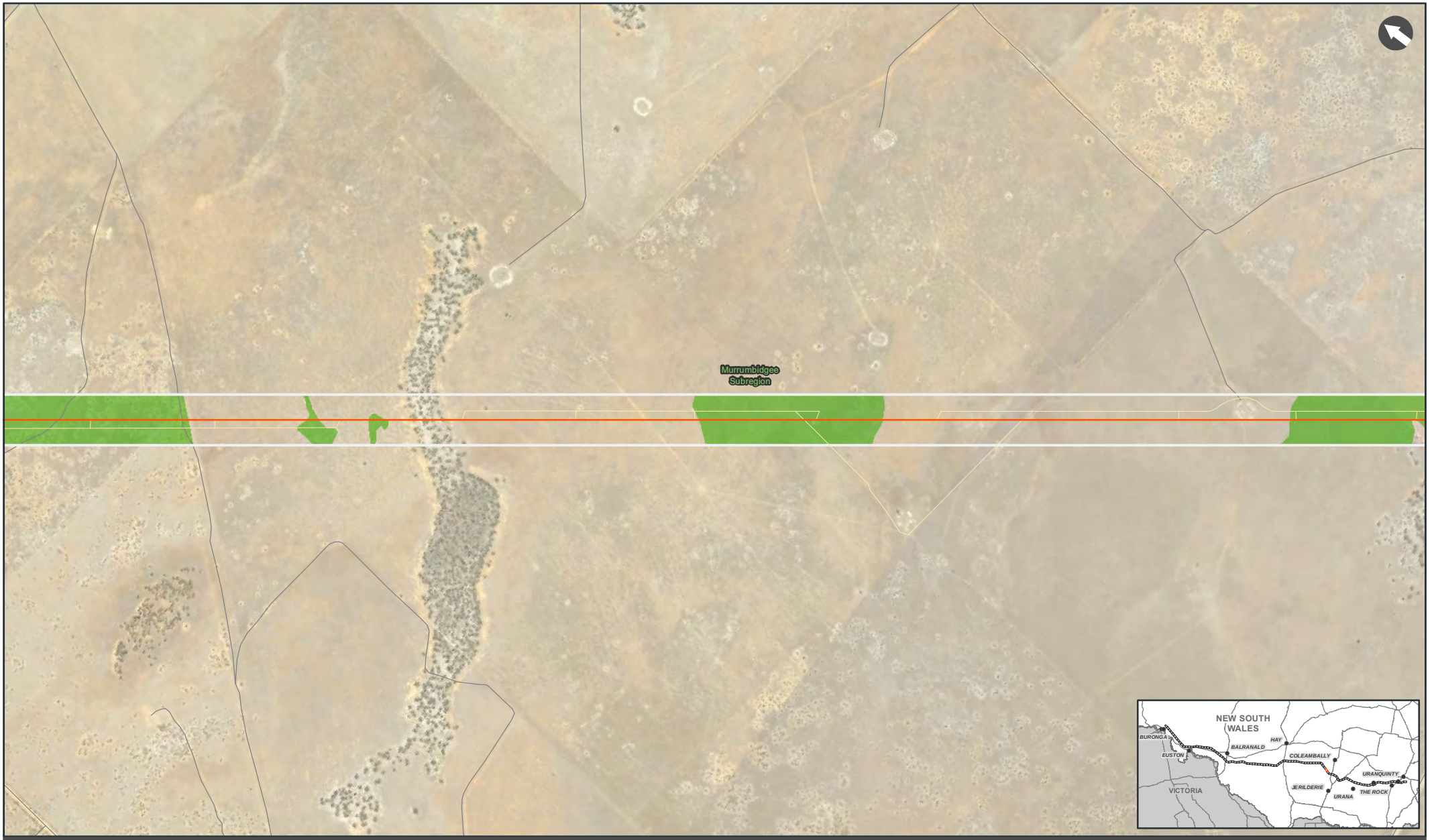
Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

Matters of National Significance
- Weeping Myall Woodlands - Endangered

Threatened Fauna Species
- Superb Parrot - *Polytelis swainsonii*

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure D-2bp

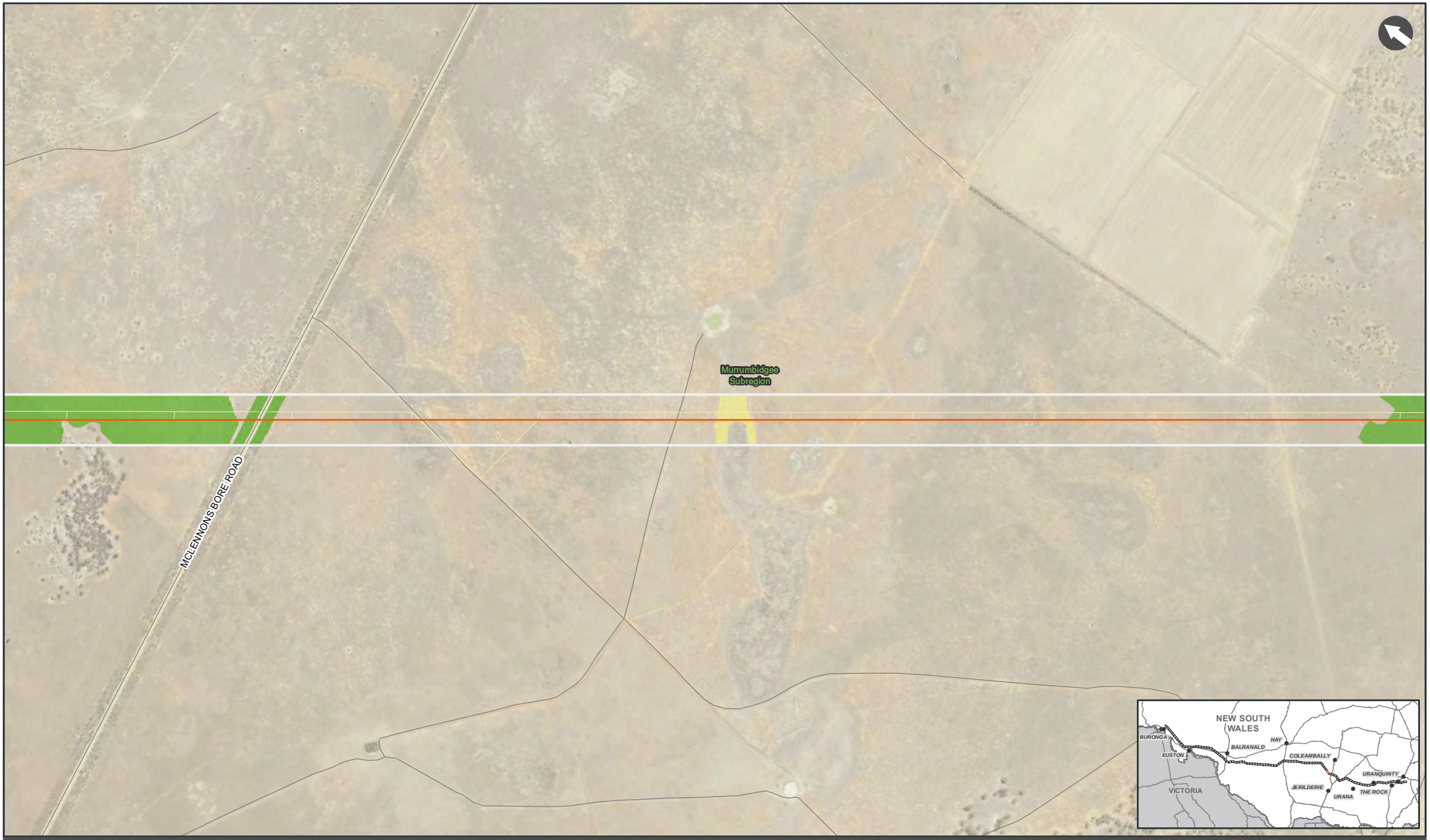
Matters of National Significance

Project Components
- Proposed
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

Matters of National Significance
- Weeping Myall Woodlands - Endangered

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure D-2bq

Matters of National Significance

Project Components

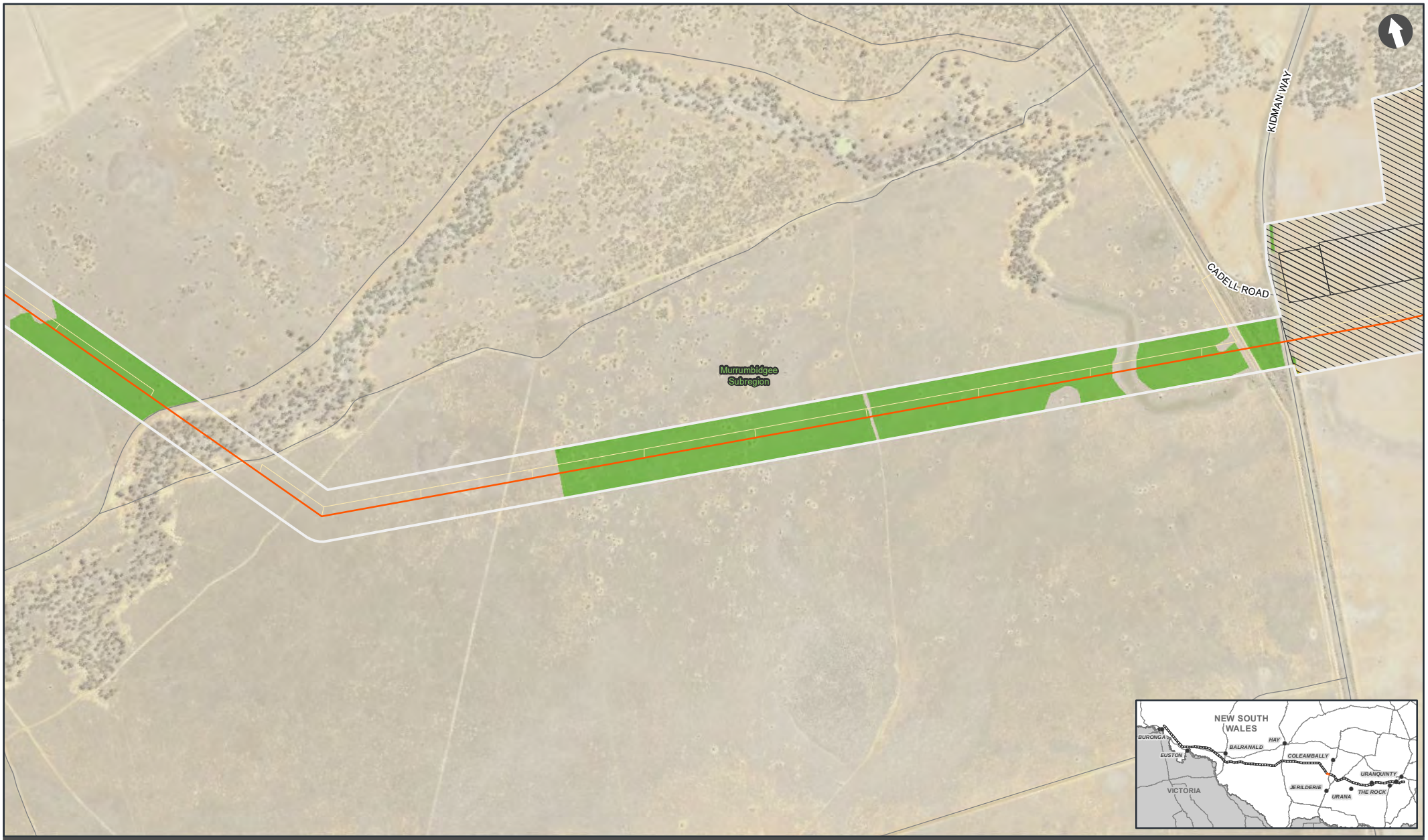
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

Matters of National Significance

- Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains – Critically Endangered
- Weeping Myall Woodlands - Endangered

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure D-2br

Matters of National Significance

Project Components

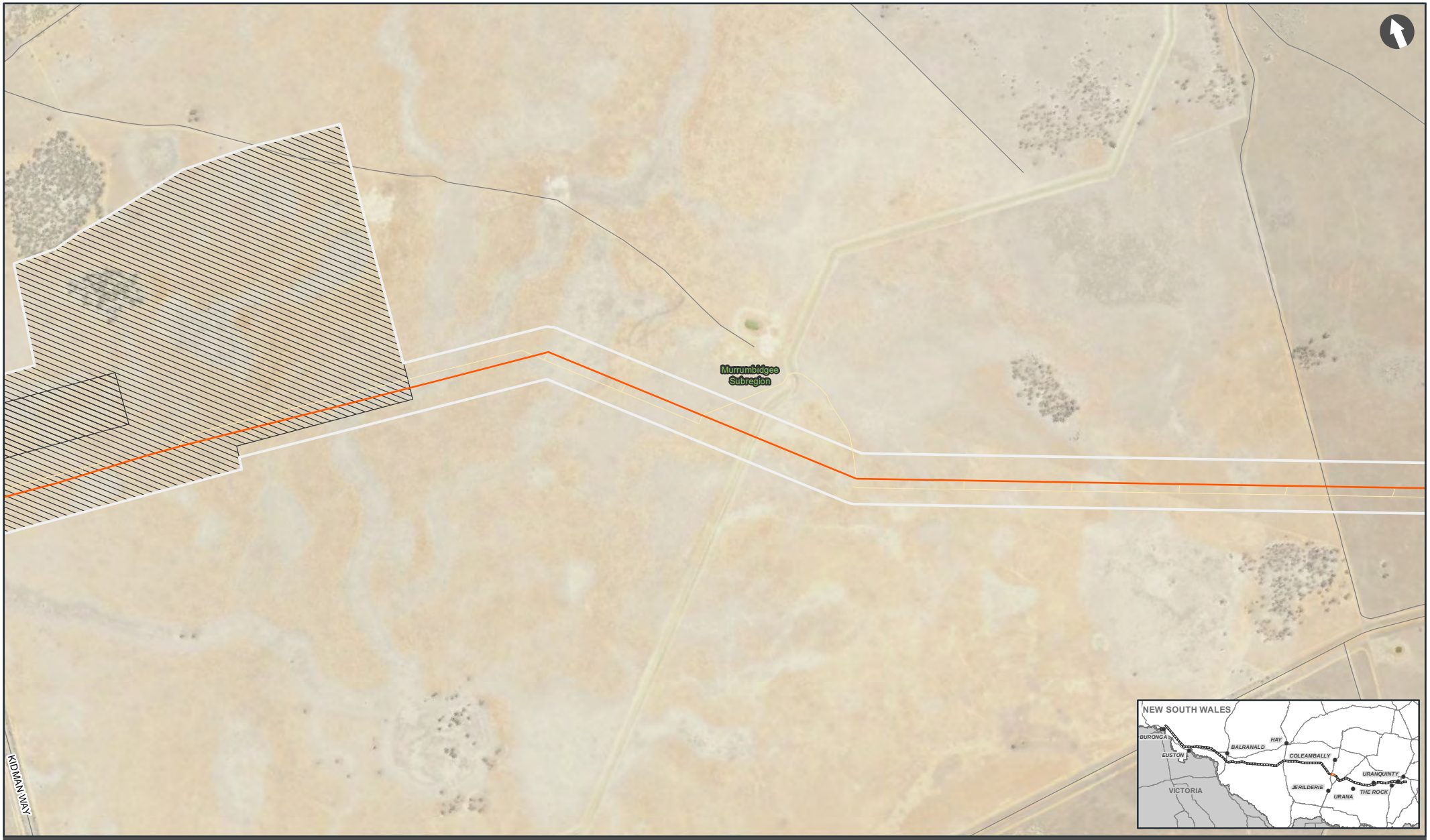
- Proposed
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions
- State Vegetation Mapping

Matters of National Significance

- Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains – Critically Endangered
- Weeping Myall Woodlands - Endangered

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure D-2bs

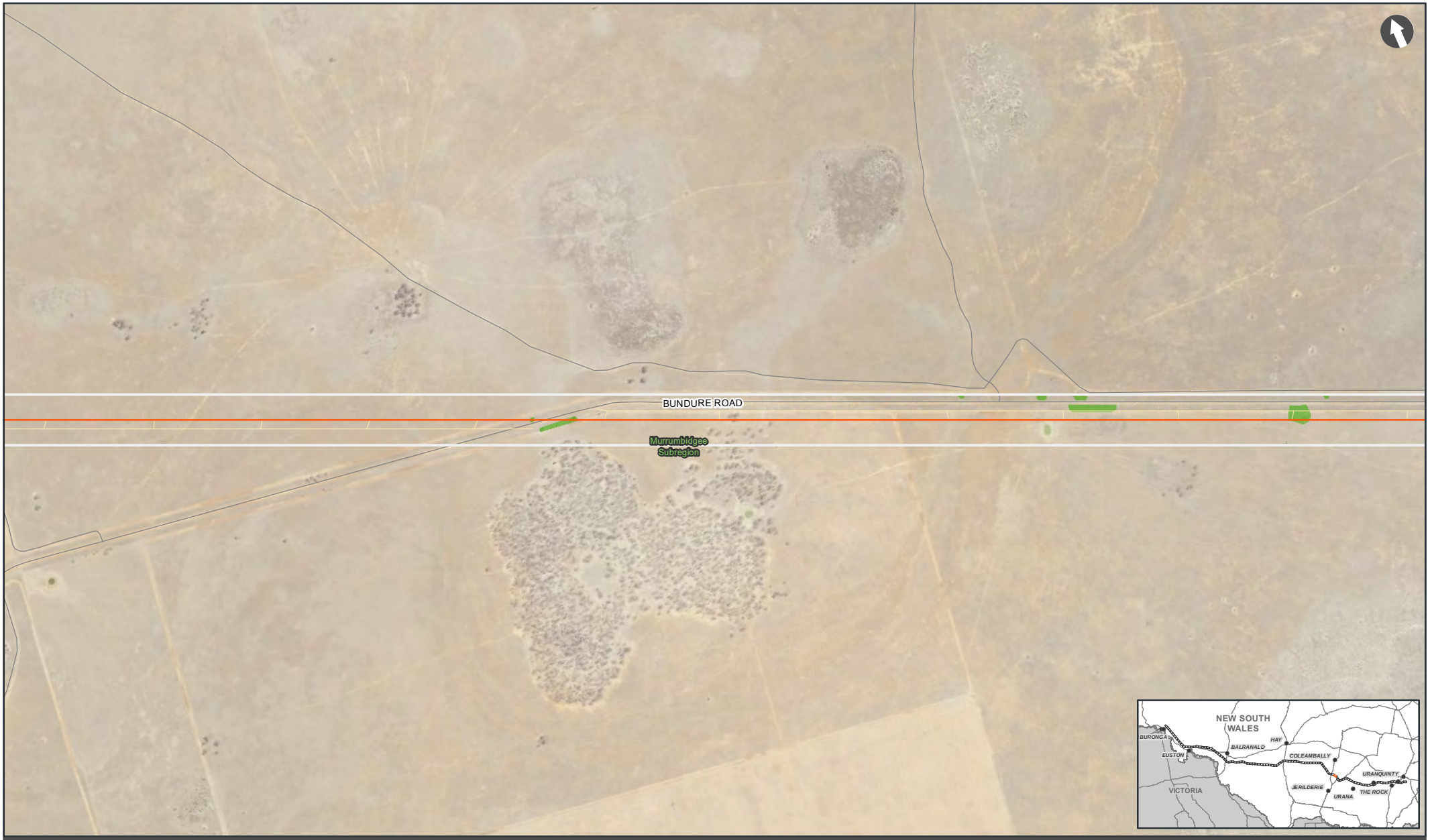
Matters of National Significance

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure D-2bt

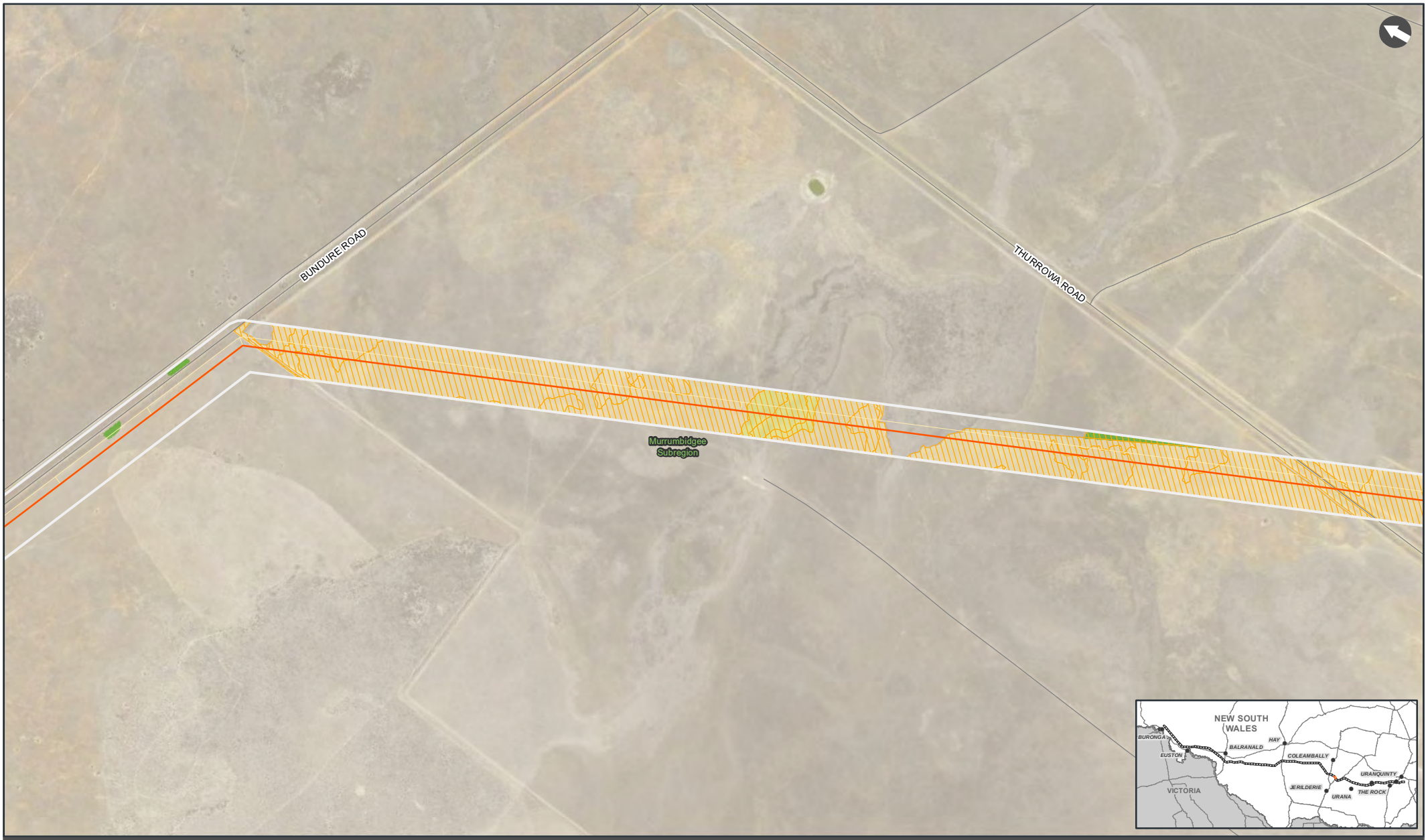
Matters of National Significance

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

Matters of National Significance
- Weeping Myall Woodlands - Endangered

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure D-2bu

Matters of National Significance

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions
- State Vegetation Mapping

Matters of National Significance

- Natural Grasslands of the Murray Valley Plains – Critically Endangered
- Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains – Critically Endangered
- Weeping Myall Woodlands - Endangered

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure D-2bv

Matters of National Significance

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions
- State Vegetation Mapping

Matters of National Significance
- Natural Grasslands of the Murray Valley Plains – Critically Endangered
- Weeping Myall Woodlands - Endangered

Threatened Fauna Species
- Superb Parrot - *Polytelis swainsonii*

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure D-2bw

Matters of National Significance

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions
- State Vegetation Mapping

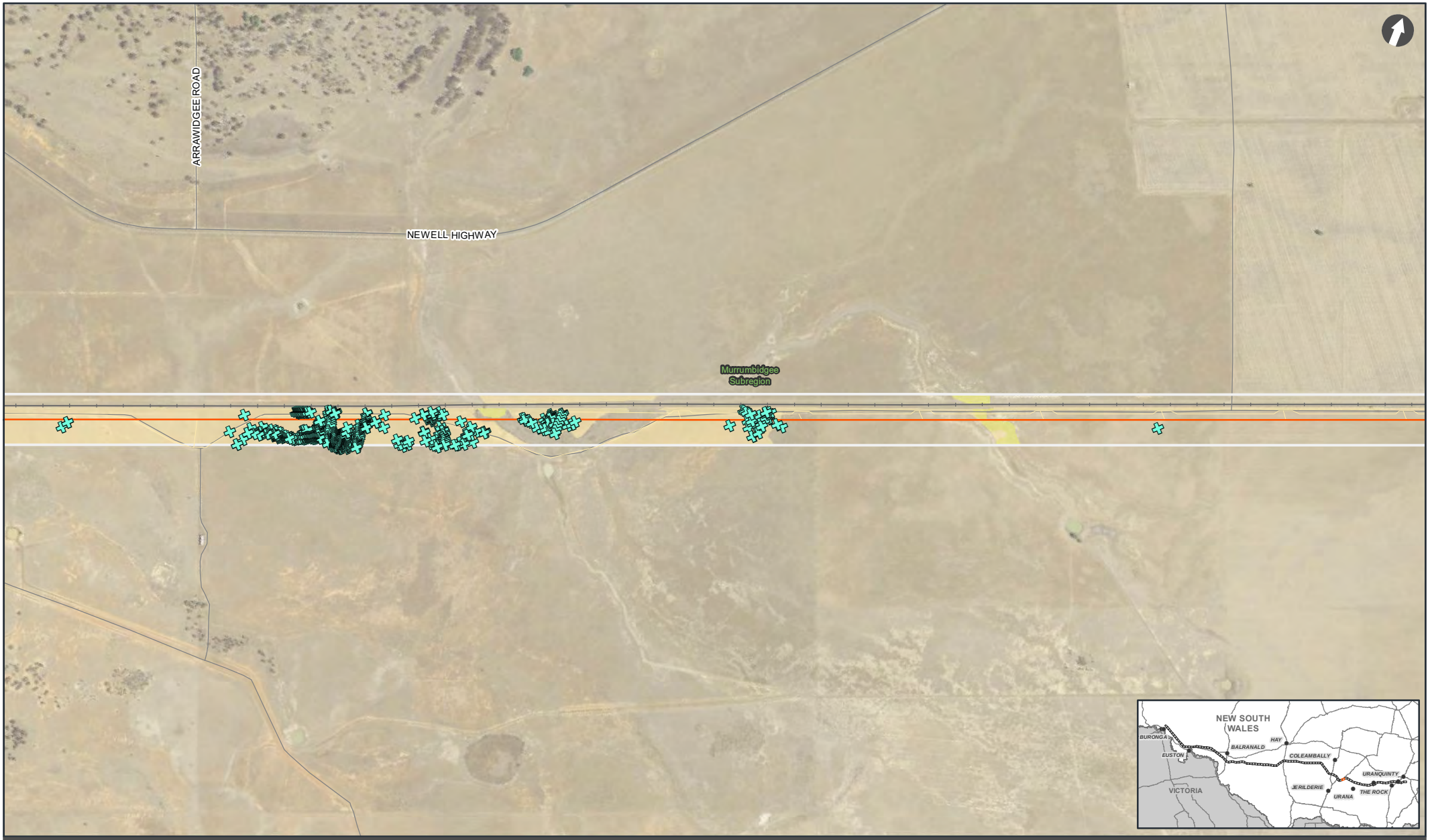
Matters of National Significance
- Natural Grasslands of the Murray Valley Plains – Critically Endangered
- Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains – Critically Endangered
- Weeping Myall Woodlands - Endangered

Threatened Fauna Species
- Plains-wanderer - *Pedionomus torquatus*

Threatened Flora Species
- *Swainsona murrayana*

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure D-2bx

Matters of National Significance

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

Matters of National Significance
- Natural Grasslands of the Murray Valley Plains – Critically Endangered
- Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains – Critically Endangered

Threatened Flora Species
- *Swainsona murrayana*

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure D-2by

Matters of National Significance

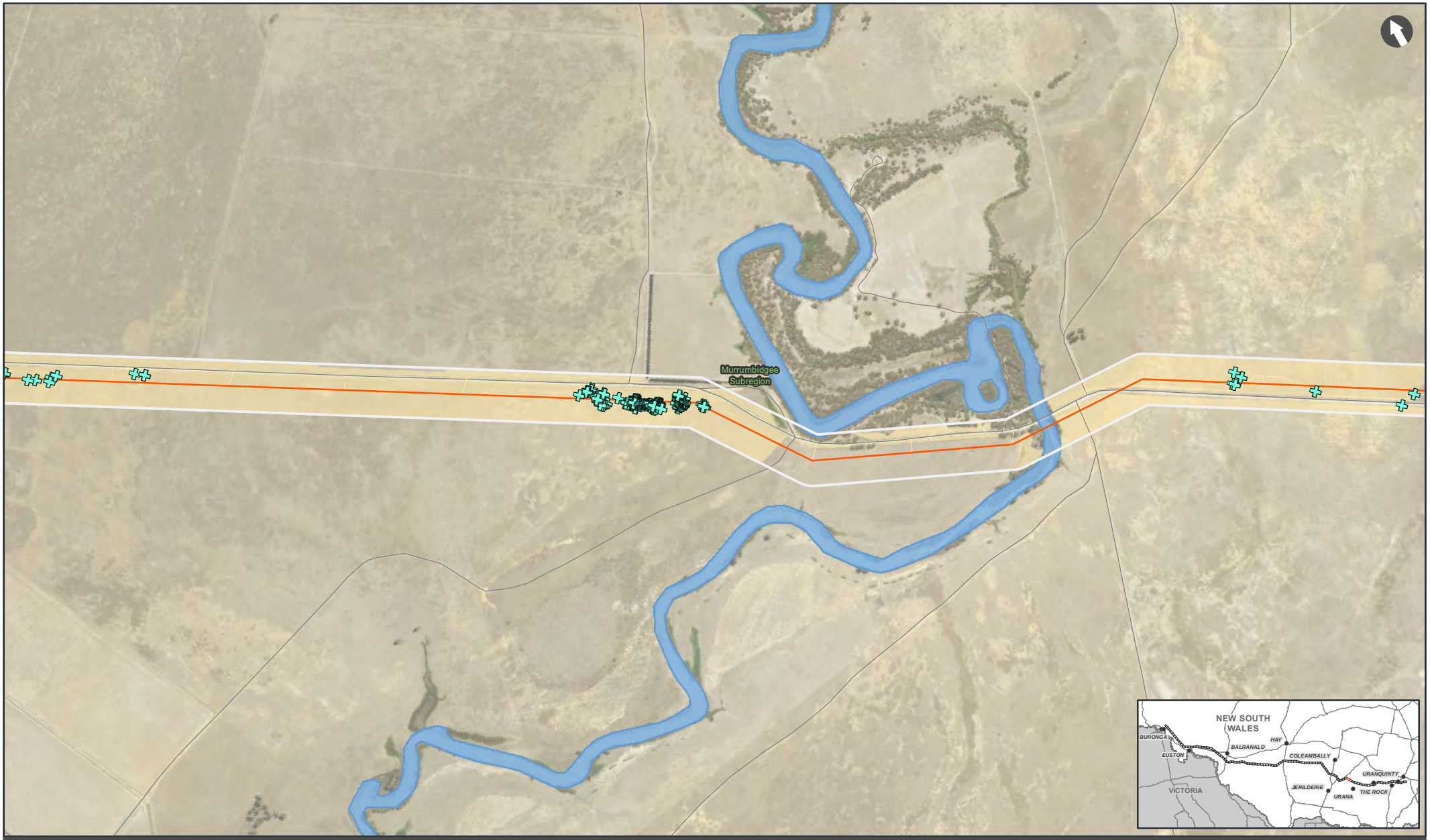
Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

Matters of National Significance
- Natural Grasslands of the Murray Valley Plains – Critically Endangered
- Weeping Myall Woodlands - Endangered

Threatened Flora Species
- *Swainsona murrayana*

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure D-2bz

Matters of National Significance

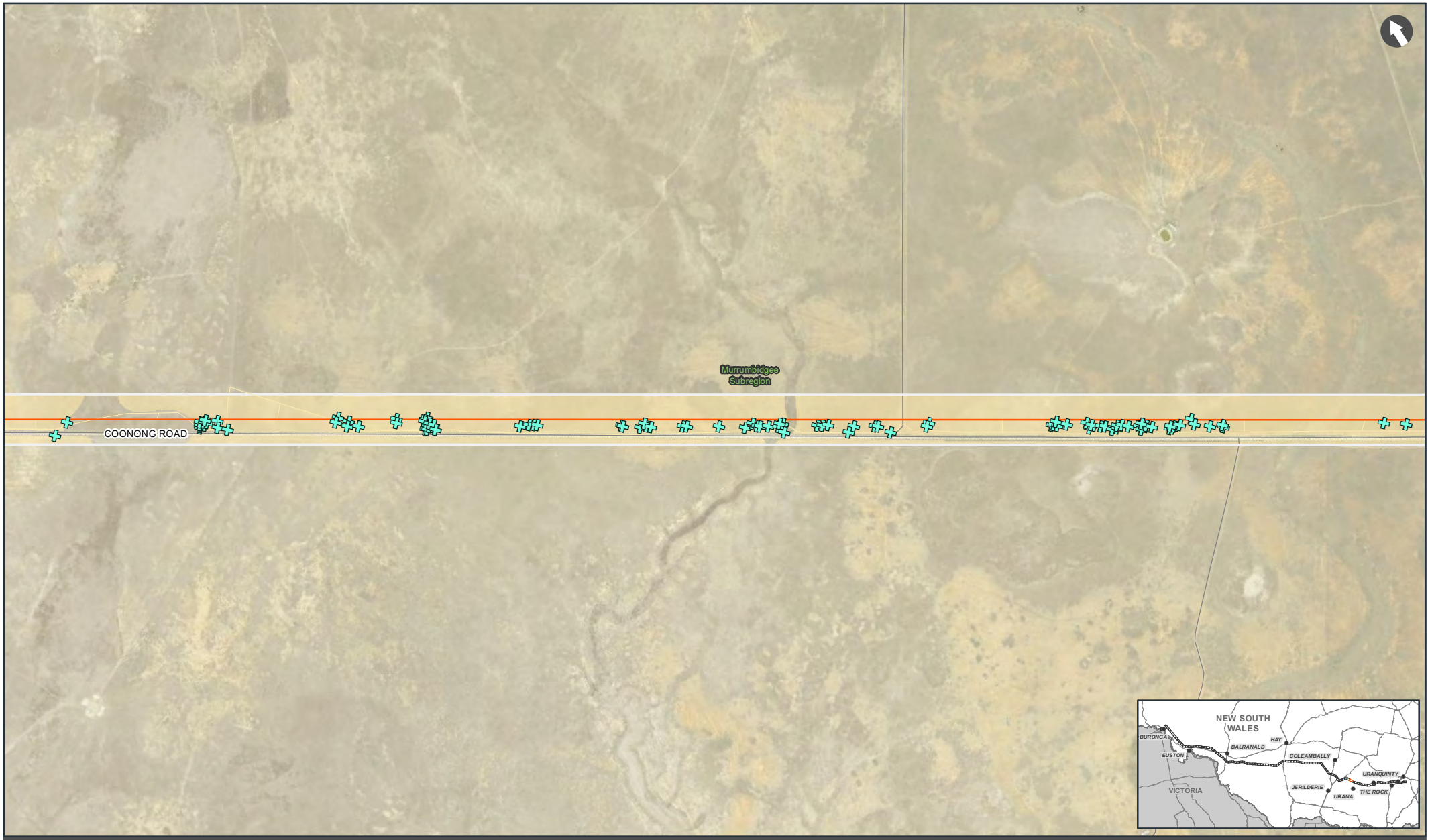
Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

Matters of National Significance
- Natural Grasslands of the Murray Valley Plains – Critically Endangered

Threatened Flora Species
- *Swainsona murrayana*

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure D-2ca

Matters of National Significance

Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

Matters of National Significance
- Natural Grasslands of the Murray Valley Plains – Critically Endangered

Threatened Flora Species
- *Swainsona murrayana*

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure D-2cb

Matters of National Significance

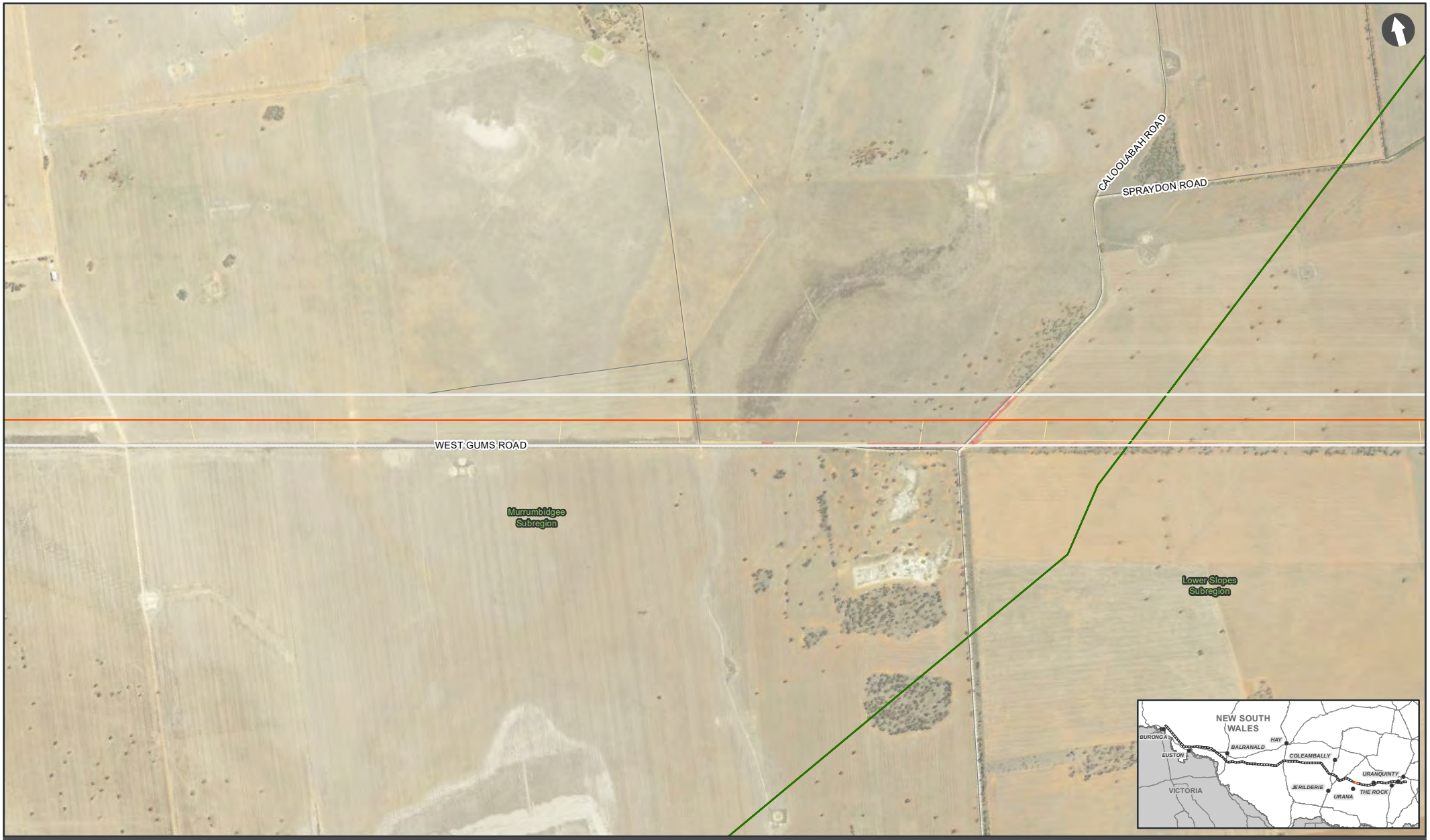
Project Components
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

Matters of National Significance
- Natural Grasslands of the Murray Valley Plains – Critically Endangered

Threatened Flora Species
- *Brachyscome papillosa*
- *Swainsona murrayana*

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure D-2cc

Matters of National Significance

Project Components

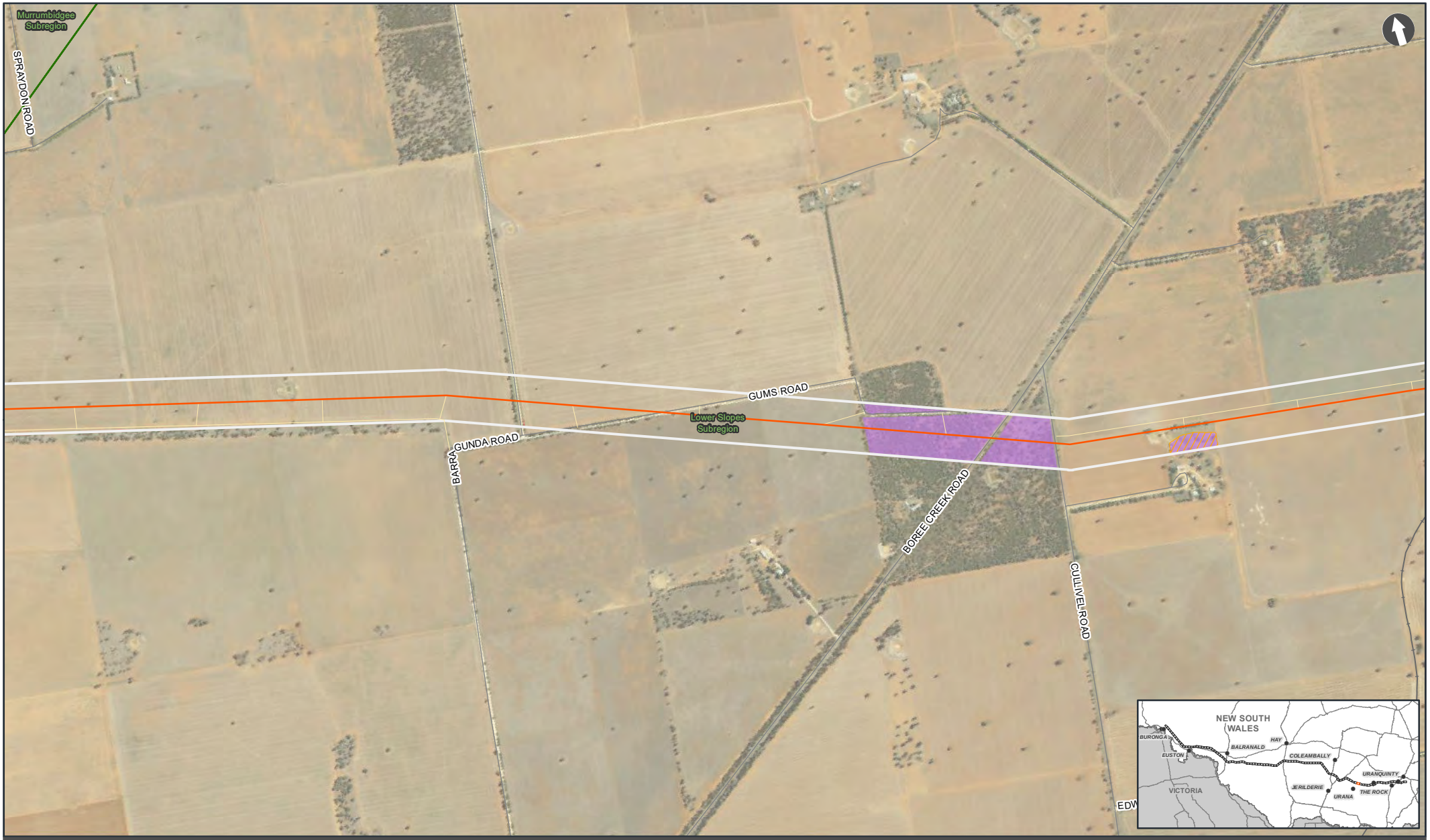
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

Matters of National Significance

- Natural Grasslands of the Murray Valley Plains – Critically Endangered
- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland – Critically Endangered

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure D-2cd

Matters of National Significance

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions
- State Vegetation Mapping

Matters of National Significance

- Grey Box (*E. microcarpa*) Grassy Woodlands and derived native grasslands of South-eastern Australia - Endangered
- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland – Critically Endangered

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure D-2ce

Matters of National Significance

Project Components

- Proposed
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions
- State Vegetation Mapping

Matters of National Significance

- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland – Critically Endangered

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure D-2cf

Matters of National Significance

Project Components
- Proposed
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure D-2cg

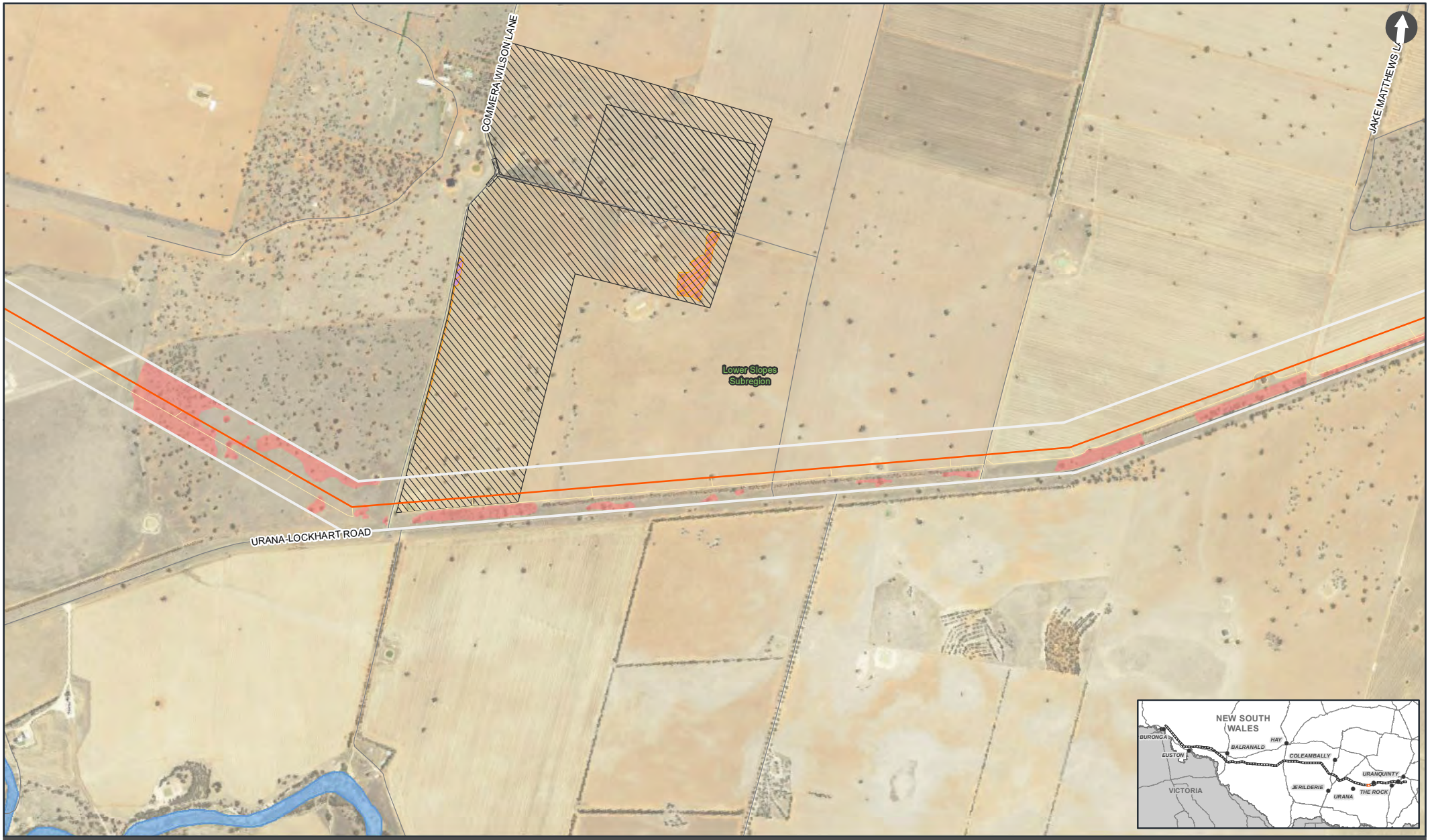
Matters of National Significance

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions
- State Vegetation Mapping

Matters of National Significance

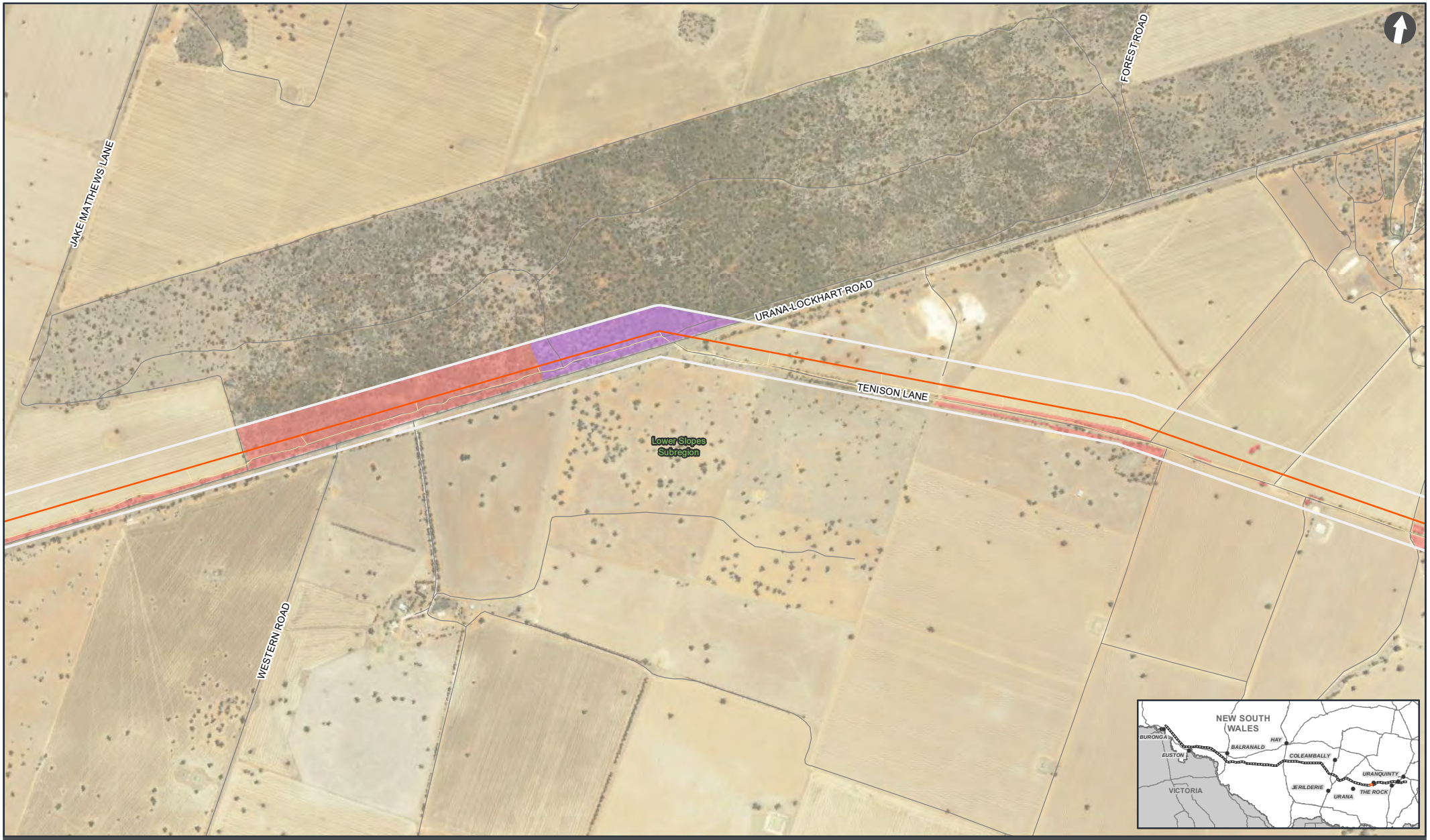
- Grey Box (*E. microcarpa*) Grassy Woodlands and derived native grasslands of South-eastern Australia - Endangered
- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland – Critically Endangered

BDAR - Figure D-2ch

Matters of National Significance

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

Matters of National Significance

- Grey Box (*E. microcarpa*) Grassy Woodlands and derived native grasslands of South-eastern Australia - Endangered
- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland – Critically Endangered

BDAR - Figure D-2ci

Matters of National Significance

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Proposed
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

Matters of National Significance

- Grey Box (*E. microcarpa*) Grassy Woodlands and derived native grasslands of South-eastern Australia - Endangered
- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland – Critically Endangered

BDAR - Figure D-2cj

Matters of National Significance

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure D-2ck

Matters of National Significance

Project Components

- Proposed
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

Matters of National Significance

- Grey Box (*E. microcarpa*) Grassy Woodlands and derived native grasslands of South-eastern Australia - Endangered
- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland – Critically Endangered

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure D-2cm

Matters of National Significance

Project Components
- Proposed
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions
- State Vegetation Mapping

Matters of National Significance
- Grey Box (*E. microcarpa*) Grassy Woodlands and derived native grasslands of South-eastern Australia - Endangered
- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland – Critically Endangered

Threatened Fauna Species
- Superb Parrot - *Polytelis swainsonii*

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure D-2cn

Matters of National Significance

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions
- State Vegetation Mapping

Matters of National Significance

- Grey Box (*E. microcarpa*) Grassy Woodlands and derived native grasslands of South-eastern Australia - Endangered

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure D-2co

Matters of National Significance

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

Matters of National Significance

- Grey Box (*E. microcarpa*) Grassy Woodlands and derived native grasslands of South-eastern Australia - Endangered

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure D-2cp

Matters of National Significance

Project Components

- Proposed
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

Matters of National Significance

- Grey Box (*E. microcarpa*) Grassy Woodlands and derived native grasslands of South-eastern Australia - Endangered

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure D-2cq

Matters of National Significance

Project Components

- Proposed
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

Threatened Fauna Species

- Superb Parrot - *Polytelis swainsonii*

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure D-2cr

Matters of National Significance

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

Matters of National Significance

- Grey Box (*E. microcarpa*) Grassy Woodlands and derived native grasslands of South-eastern Australia - Endangered
- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland – Critically Endangered

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure D-2cs

Matters of National Significance

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

Matters of National Significance

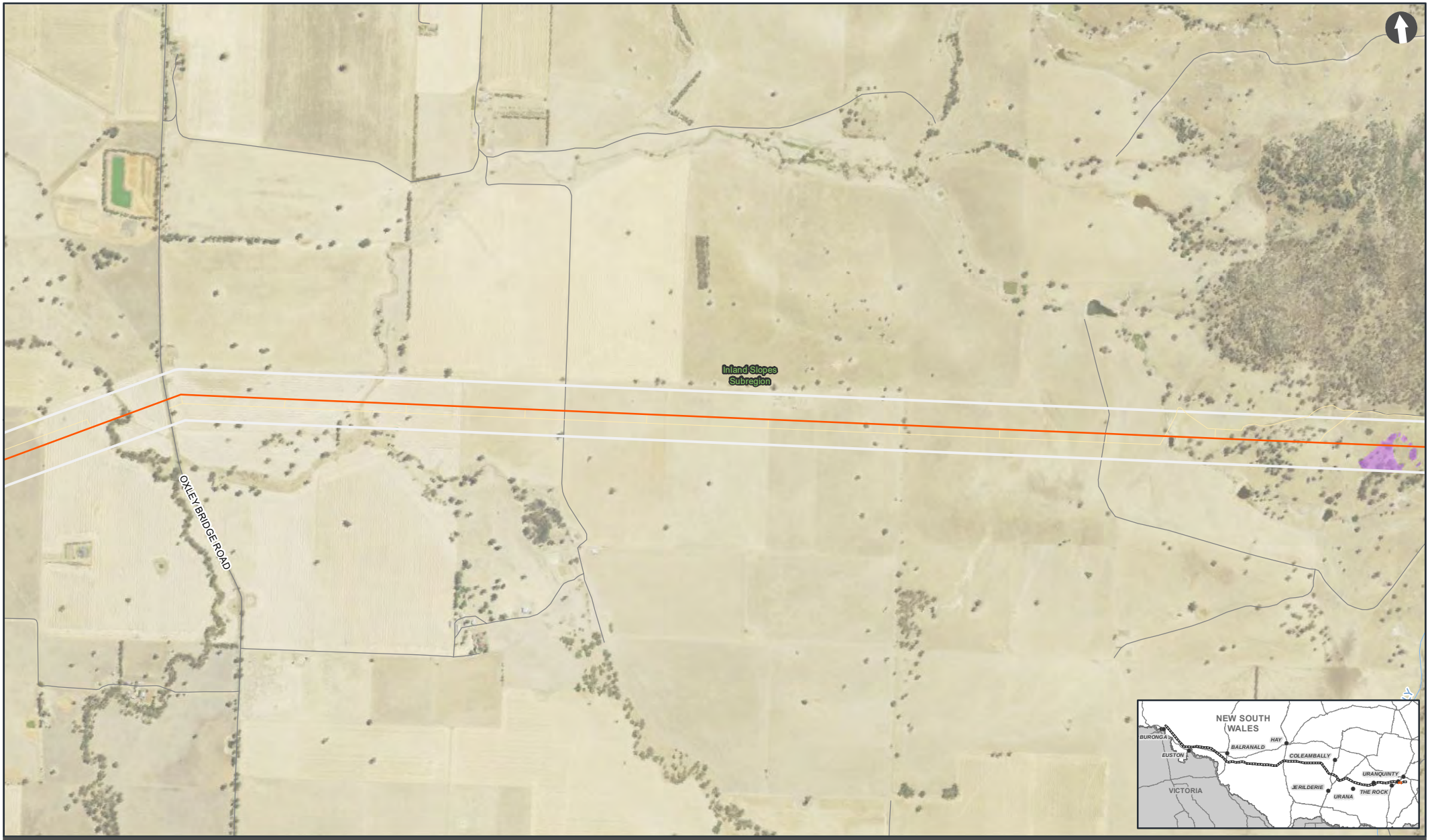
- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland – Critically Endangered

BDAR - Figure D-2ct

Matters of National Significance

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure D-2cu

Matters of National Significance

Project Components

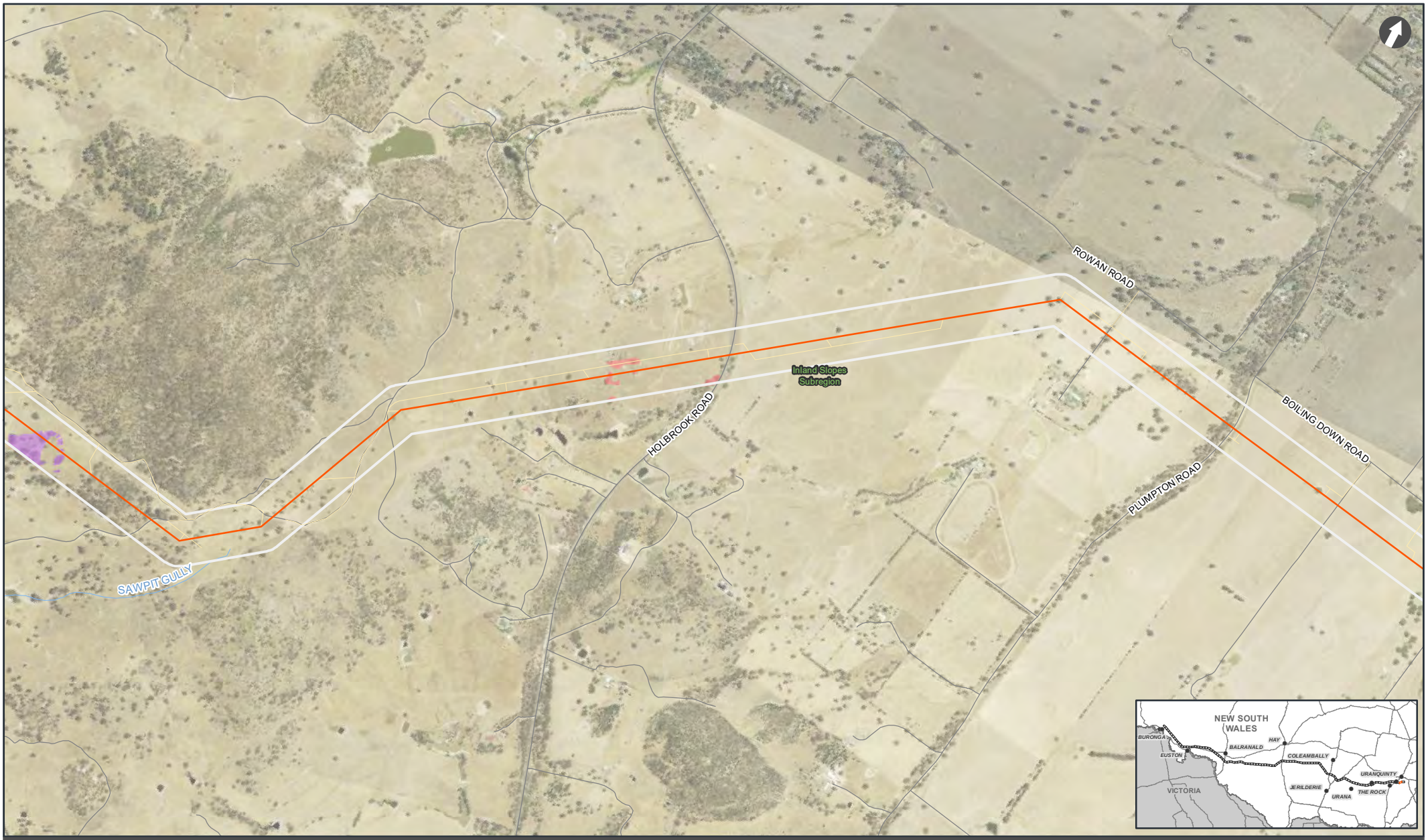
- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

Matters of National Significance

- Grey Box (*E. microcarpa*) Grassy Woodlands and derived native grasslands of South-eastern Australia - Endangered
- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland – Critically Endangered

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure D-2CV

Matters of National Significance

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

Matters of National Significance

- Grey Box (*E. microcarpa*) Grassy Woodlands and derived native grasslands of South-eastern Australia - Endangered
- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland – Critically Endangered

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure D-2CW

Matters of National Significance

Project Components

- Proposed Alignment
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- IBRA Subregions

Matters of National Significance

- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland – Critically Endangered

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Source: NSWSS, ESRI, Transgrid, WSP

APPENDIX D-3
Appendix A of the Secretary's Environmental Assessment Requirements cross-reference

D-3.1 APPENDIX A OF THE SECRETARY'S ENVIRONMENTAL ASSESSMENT REQUIREMENTS

Guidelines for preparing assessment documentation relevant to the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) for proposals being assessed under the NSW Assessment Bilateral.

Project EnergyConnect (NSW – Eastern Section) (EPBC 2020/8766)

Table D-3.1 details the response to requirements detailed in Appendix A of the SEARs, which commences from Paragraph 5 onwards. Paragraphs 1 to 4 outlines an introduction to the controlled action.

Table D-3.1 Appendix A of the Secretary's Environmental Assessment Requirements cross-reference

REQUIREMENT	PARAGRAPH	WHERE ADDRESSED IN THE EIS AND/OR TECHNICAL PAPER 1
Relevant regulations	**5** The Environmental Impact Statement (EIS) must address all matters outlined in Schedule 4 of the EPBC Regulations and all matters outlined below in relation to the controlling provisions.	The below provides a checklist against the matters outlined in Appendix A of the SEARs. Appendix A of the SEARs duplicates, in part, some provisions of Schedule 4 of the *Environment Protection and Biodiversity Conservation Regulations 2000* (Cth) (the EPBC Regulations). This checklist identifies the provisions of that Regulation not covered by the matters specifically identified in Appendix A of the SEARs.
Project description *(Clause 1 and Clause 2 of Schedule 4 of the EPBC Regulations)*	**6** The title of the action, background to the action and current status	The title of the action (being EnergyConnect (NSW – Eastern Section)) and details of the proponent are available in the Certification page of the EIS. This EIS seeks approval for the action. The objectives of the proposal are outlined in Section 1.1.1 of the EIS. The consequences of not proceeding with the proposal is outlined in Section 2.7 of the EIS.
	7 The precise location and description of all works to be undertaken (including associated offsite works and infrastructure), structures to be built or elements of the action that may have impacts on Matters of Nationally Environmental Significance (MNES).	A description of the proposal is provided in Chapter 5 and Chapter 6 of the EIS. The assessment considers an indicative disturbance area as described in Chapter 8 of the EIS. Further description is provided in sections 1.6, 7, 9.9 and Appendix E of this Technical paper 1.

REQUIREMENT	PARAGRAPH	WHERE ADDRESSED IN THE EIS AND/OR TECHNICAL PAPER 1
	8 how the action relates to any other actions that have been, or are being taken in the region affected by the action	The proposal is part of EnergyConnect, which would be constructed in progressive sections. A description of the South Australian Section, the Victorian Section and the NSW – Western Section is provided in Chapter 1 of the EIS. The South Australian Section (referral reference no 2019/6468) and the NSW – Western Section (referral reference no 2020/8673) were determined to be separate controlled actions. The NSW – Western Section was determined (approval) in September 2021. This action (being the proposal) is a standalone action which would have distinct potential impacts that would not change due to development of any subsequent sections of EnergyConnect. Further: — EnergyConnect has been divided by it's different jurisdictions, except in NSW. The proposal is able to operate independently of the NSW – Western Section, and subsequent sections of EnergyConnect would be geographically distinct to the proposal (the action). — The other components of EnergyConnect are subject to separate assessments and approvals. Assessing both sections of EnergyConnect in NSW or any other sections as a combined project would not change the assessment on relevant MNES compared to assessing as separate projects. Relevant MNES for subsequent sections of EnergyConnect are expected to be different and not of a cumulative nature to the MNES relevant to the currently proposed action.
	9 How the works are to be undertaken and design parameters for those aspects of the structures or elements of the action that may have relevant impacts on MNES	A description of the proposal is provided in Chapter 5 and Chapter 6 of the EIS. The assessment considers an indicative disturbance area as described in Chapter 8 of the EIS. Further description is provided in Sections 7, 9.5 and Appendix D of this Technical paper 1 (the BDAR).

REQUIREMENT	PARAGRAPH	WHERE ADDRESSED IN THE EIS AND/OR TECHNICAL PAPER 1
Impacts *(Clause 3 of Schedule 4 of the EPBC Regulations)*	**10** The EIS must include an assessment of the relevant impacts of the action on the matters protected by the controlling provisions, including: — a description and detailed assessment of the nature and extent of the likely direct, indirect and consequential impacts, including short term and long term relevant impacts — a statement whether any relevant impacts are likely to be unknown, unpredictable or irreversible — analysis of the significance of the relevant impacts — any technical data and other information used or needed to make a detailed assessment of the relevant impacts. For this requirement, Appendix A defines relevant impacts as those impacts likely to significantly impact on any matter protected under the EPBC Act.	Section 9.5 of this Technical paper 1 provides the impact assessment of matters of MNES.
Avoidance, mitigation and offsetting *(Clause 4 of Schedule 4 of the EPBC Regulations)*	**11** For each of the relevant matters protected that are likely to be significantly impacted by the action, the EIS must provide information on proposed avoidance and mitigation measures to manage the relevant impacts of the action including: — a description, and an assessment of the expected or predicted effectiveness of the mitigation measures — any statutory policy basis for the mitigation measures — the cost of the mitigation measures — an outline of an environmental management plan that sets out the framework for continuing management, mitigation and monitoring programs for the relevant impacts of the action, including any provisions for independent environmental auditing — the name of the agency responsible for endorsing or approving each mitigation measure or monitoring program.	As documented in this Technical paper 1, the proposal is predicted to have a significant impact on four ecological communities and three threatened flora species. Avoidance measures are discussed in Section 8 of Technical paper 1. Section 10 of Technical paper 1 summarises the mitigation measures specific to the biodiversity assessment. A consolidated list of mitigation measures is provided in Appendix E of the EIS.

REQUIREMENT	PARAGRAPH	WHERE ADDRESSED IN THE EIS AND/OR TECHNICAL PAPER 1
	12 Where a significant residual adverse impact to a relevant protected matter is considered likely, the EIS must provide information on the proposed offset strategy, including discussion of the conservation benefit associated with the proposed offset strategy	As documented in Technical paper 1, the proposal is predicted to have a significant impact on four ecological communities and three threatened flora species. All impacts of the proposal would be offset via the application of the Biodiversity Assessment Method (BAM) for the recorded MNES. The BAM is the approved method required to be implemented under the bilateral process.
	13 for each of the relevant matters likely to be impacted by the action the EIS must provide reference to, and consideration of, relevant Commonwealth guidelines and policy statements including any: — conservation advice or recovery plan for the species or community — relevant threat abatement plan for the species or community — wildlife conservation plan for the species — any strategic assessment Note: the relevant guidelines and policy statements for each species and community are available from the Department of Agriculture, Water and the Environment's Species Profiles and Threats Database. http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl	Refer to Section 9.5 and Appendix D of Technical paper 1.
Biodiversity	**14** The EIS must identify each EPBC Act listed threatened species and community and migratory species likely to be impacted by the action. For any species and communities that are likely to be impacted, the proponent must provide a description of the nature, quantum and consequences of the impacts. For species and communities potentially located in the project area or in the vicinity that are not likely to be impacted, provide evidence why they are not likely to be impacted	Refer to Sections 1.5.1, 7, and 9.5 and Appendix D of Technical paper 1 in relation to these factors.

REQUIREMENT	PARAGRAPH	WHERE ADDRESSED IN THE EIS AND/OR TECHNICAL PAPER 1
	1. For each of the EPBC Act listed threatened species and communities and migratory species likely to be impacted by the action the EIS must provide a separate: — description of the habitat (including identification and mapping of suitable breeding habitat, suitable foraging habitat, important populations and habitat critical for survival), with consideration of, and reference to, any relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan — details of the scope, timing and methodology for studies or surveys used and how they are consistent with (or justification for divergence from) published Australian Government guidelines and policy statements — description of the relevant impacts of the action having regard to the full national extent of the species or community's range — description of the specific proposed avoidance and mitigation measures to deal with relevant impacts of the action — identification of significant residual adverse impacts likely to occur after the proposed activities to avoid and mitigate all impacts are taken into account — a description of any offsets proposed to address residual adverse significant impacts and how these offsets will be established — details of how the current published NSW Biodiversity Assessment Method (BAM) has been applied in accordance with the objects of the EPBC Act to offset significant residual adverse impacts — details of the offset package to compensate for significant residual impacts including details of the credit profiles required to offset the action in accordance with the BAM and/or mapping and descriptions of the extent and condition of the relevant habitat and/or threatened communities occurring on proposed offset sites	These factors have specifically been considered in Appendix D of Technical paper 1.

REQUIREMENT	PARAGRAPH	WHERE ADDRESSED IN THE EIS AND/OR TECHNICAL PAPER 1
	15 Note: For the purposes of approval under the EPBC Act, it is a requirement that offsets directly contribute to the ongoing viability of the specific protected matter impacted by a proposed action and deliver an overall conservation outcome that improves or maintains the viability of the MNES i.e. 'like for like'. Any significant residual impacts not addressed by the BAM may need to be addressed in accordance with the EPBC Act 1999 Environmental Offset Policy. http://www.environment.gov.au/epbc/publications/epbc-act-environmental-offsets-policy	As documented in Technical paper 1, the proposal is predicted to have a significant impact on four ecological communities and three threatened flora species. All impacts of the project will be offset via the application of the Biodiversity Assessment Method (BAM) for the recorded MNES. The BAM is the approved method required to be implemented under the bilateral process. Any biodiversity offsets will be provided in accordance with the EPBC Act 1999 Environmental Offset Policy.
Other approvals and conditions	**16** Information in relation to any other approvals or conditions required must include the information prescribed in Schedule 4 Clause 5 (a) (b) (c) and (d) of the EPBC Regulations 2000.	This EIS presents the environmental impact assessment to support the application for the proposal under Division 5.2, Part 5 of the EP&A Act. The status of the NSW planning approval process is summarised in Section 1.4 of the EIS. A determination from the NSW Minister for Planning and Public Spaces will be required in addition to an approval under the EPBC Act. Other approvals, licences or permits required under NSW legislation is summarised in Appendix C of this EIS. Other than the EIS, no other environmental assessment has been, or is being carried out for the project for the purpose of any local or state plan or policy.
Environmental record of person proposing to take the action	**17** Information in relation to the environmental record of a person proposing to take the action must include details as prescribed in Schedule 4 Clause 6 of the EPBC Regulations 2000.	Refer to the detail provided below this table.

REQUIREMENT	PARAGRAPH	WHERE ADDRESSED IN THE EIS AND/OR TECHNICAL PAPER 1
Information sources	For information given in an EIS, the EIS must state the source of the information, how recent the information is, how the reliability of the information was tested; and what uncertainties (if any) are in the information.	Technical paper 1 was prepared by suitably qualified and accredited ecologists based on extensive seasonal targeted field surveys, application of Government ecological mapping layers and reviews of relevant publicly available desktop sources. As such, the level of reliability is high and relatively conservative. Internal reviews by experienced ecologists were undertaken to confirm the reliability of the information and no uncertainties exist. It should be noted that in areas where land access was not permitted, the conservative accepted practice was adopted. This resulted in the adoption of state based vegetation mapping and / or application of the precautionary principle to these areas. Additional survey would be undertaken when access is available, including pre-construction to confirm the data adopted. A table presenting the information sources and the associated required details is presented in Technical paper 1 (References section).

Environmental record of person proposing to take the action

Transgrid has a consistent record of proactively seeking environmental approvals where required and ensuring that any commitments or conditions placed on activities as a result of these approval processes are adhered to.

In 2001, Transgrid was subject to proceedings under State Environmental laws for clearing vegetation in the vicinity of transmission lines. Transgrid subsequently invested $5 million toward site rehabilitation. Since the 2001 incident, Transgrid has not been subject to any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources.

Transgrid is committed to conducting its activities and services in a manner that minimises pollution and complies with relevant environmental legislation, industry standards and codes of practice. Transgrid implores all employees and contractors to stop and consider the potential impact to the environment from their activities.

Transgrid aim to enhance their systems and processes in a manner that promotes continuous improvement in environmental management and which will lead to the achievement of industry best practice.

In meeting these commitments, Transgrid:

- maintains an Environmental Management System (EMS) that provides the framework for setting and reviewing our environmental objectives and targets, including the implementation, monitoring and review of these objectives and targets, as well as facilitating continuous improvement in environmental performance
- continues to develop systems that recognise sensitive environmental and cultural sites on or near our infrastructure, and provides processes to manage and our activities with the aim of preventing environment harm or adversely impacting the environment
- integrates environmental management considerations into the planning, design, siting, construction, maintenance, operation, decommissioning and disposal of all Transgrid assets

- provides environmental training, assessment and authorisation under our Environmental Management System to employees and contractors to enable them to perform their duties in an environmentally sensitive manner;
- engages with the community, customers, employees, government and other stakeholders regarding potential environmental or cultural impacts associated with our plans and activities
- pursues opportunities to maximise resource efficiencies and reduce the generation of waste through avoidance, reduction, reuse and recycling programs.
- identifies, sets and monitors realistic environmental measures and communicates them to all employees and stakeholders.

The proposal (the action) would be undertaken in accordance with Transgrid's environmental policy and planning framework Transgrid Environment Policy is available on their web site, and the construction contractor's EMS. Both EMS' are accredited under ISO 14001:2015.

Transgrid's Environmental Policy commits to protecting and enhancing the natural environmental and social values in all Transgrid's activities. Transgrid's planning framework allows for early identification of environment and social values and methods for avoiding, minimising and mitigating impacts caused as a result of their developments via preliminary detailed screening and risk assessments within the development envelope and finally subsequent footprint selection.

Transgrid's EMS is independently certified and covers all of their processes and activities that have the potential to impact on the environment. The EMS enables compliance with Transgrid's environment and heritage compliance obligations, providing the framework for driving environmental requirements throughout leadership, planning, support, operation, performance evaluation and continuous improvement actions. The proposed action, therefore, will be undertaken, monitored and measured in accordance with the Transgrid's EMS.

Appendix E

Impact assessment

APPENDIX E-1
FM Act Assessment of significance

E-1.1 Aquatic ecological community in the natural drainage system of the Lower Murray River catchment

E-1.1.1 Conservation status

Lower Murray River aquatic ecological community is listed as Endangered under the FM Act.

E-1.1.2 Description

The Lower Murray aquatic ecological community includes all native fish and aquatic invertebrates within all natural creeks, rivers and associated lagoons, billabongs, and lakes of the regulated portions of the Murray, Murrumbidgee, and Tumut rivers, as well as all their tributaries and branches. The listing includes:

- Murray River below Hume Weir
- Murrumbidgee River below Burrinjuck Dam
- Tumut River below Blowering Dam
- Billabong Creek, Yanco Creek, Colombo Creek, and their tributaries
- Frenchmans Creek
- Edward River, the Wakool River, and their tributaries
- Rufus River
- Lake Victoria.

The Lachlan and Darling rivers and their tributaries, along with artificial canals, water distribution and drainage works, farm dams and off-stream reservoirs, are excluded from the aquatic ecological community. The community includes 23 native fish species and over 400 recorded native invertebrate species. The lower Murray ecological community occurs in a lowland riverine environment, characterised by meandering channels and wide floodplains. The land is generally flat to gently sloping. In their natural state, these lowland rivers experienced extremely variable water flows, ranging from floods to droughts. Variability in environmental conditions has led to adaptations in the native aquatic flora and fauna; for example, many species rely on floods to trigger spawning and create suitable breeding habitats. Lowland rivers provide a wide range of habitats for fish and invertebrates, including pools, runs or riffles, backwaters and billabongs, large woody habitats, and aquatic plants. Floodplains also provide a mosaic of habitat types, including permanent and temporary wetlands, as well as terrestrial habitats.

E-1.1.3 Specific impacts

Impacts from the proposal on aquatic habitats, particularly mapped key fish habitats (Strahler 4/5th Order streams) are considered likely to be negligible. Avoiding and minimising impacts on aquatic habitats would be a priority of detailed design and any residual indirect impacts would be subject to mitigation measures. The Lower Murray aquatic ecological community is considered affected by the proposal based on clearing of riparian vegetation. Riparian native vegetation recorded within the proposal study area is considered to comprise of the following native vegetation types:

- PCT 5 – River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion
- PCT 7 – River Red Gum – Warrego Grass – herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion

- PCT 8 – River Red Gum – Warrego Grass – Couch Grass riparian tall woodland wetland of the semi-arid (warm) climate zone (Riverina Bioregion and Murray Darling Depression Bioregion)
- PCT 11 – River Red Gum – Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
- PCT 13 – Black Box – Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
- PCT 15 – Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
- PCT 249 – River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW.

The maximum aquatic impact likely to occur to any riparian vegetation would be the removal or trimming of tree canopy on the riverbanks to facilitate the construction and operation of the powerlines spanning each riparian area. All trunk bases and understorey would be retained in-situ adjoining the riverbanks. All potential erosion and sedimentation impacts would be managed and monitored to ensure that these do not impact the riparian areas. At most, any impact to water quality would be temporary and negligible. Each riparian area would continue to function as it currently functions.

E-1.1.4 Determination of whether proposed development or activity likely to significantly affect threatened species, population or ecological community

In accordance with Section 221ZV of the FM Act, the following is to be taken into account for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species, populations or ecological communities (unless it is carried out in critical habitat):

In the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction:

Not applicable

In the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction:

Not applicable

In the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

- *is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or*
- *is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction*

The proposal disturbance area would lead to modification of native vegetation associated with the riparian zone influence of this community. Disturbance within the riparian zone would be limited to upper stratum tree removal with all shrub and ground stratum vegetation below two metres in height would be retained in-situ. All potential erosion and sedimentation impacts would be managed and monitored to ensure that these do not impact the riparian areas. At most, any impact to water quality would be temporary and negligible. Each riparian area would continue to function as it

currently functions. It is unlikely that the minor works would adversely affect or modify the extent of this ecological community such that its occurrence is placed at risk of extinction.

In relation to the habitat of a threatened species, population or ecological community:

- *the extent to which habitat is likely to be removed or modified as a result of the action proposed*
- *whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action*
- *the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality*

The proposal disturbance area would lead to modification of native vegetation associated with the riparian zone influence of this community. Disturbance within the riparian zone would be limited to upper stratum tree removal with all shrub and ground stratum vegetation below two metres in height would be retained in-situ. At most, any impact to water quality would be temporary and negligible. Each riparian area would continue to function as it currently functions.

Additionally, mitigation measures would be implemented during construction to minimise the likelihood of spread of weeds or pathogens into the site. These mitigation measures would aid in reducing potential impacts associated with the proposed action that may otherwise result in the further reduction of the community's quality.

It is recommended that mitigation measures include the implementation of weed and pest management plans, vegetation clearing protocols, and installation vehicle wash stations to reduce the limit the spread of weeds, pathogens, and disease. Sediment and control measures around large-scale excavation works and stockpiles areas that occurs within or near these TECs to minimise sedimentation and hydrological impacts. As such, it is unlikely that the proposed action would significantly further fragment, isolate or substantially modify the community to the point that the community does not persist in the locality.

Whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly)

No critical habitat has been listed for the community. Furthermore, it is unlikely that the persistence of the community within the proposal study area constitutes important habitat, and as such, is not considered the occurrence of the community with the proposal study area is critical to the survival of the community.

Whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan

No recovery plan has been produced for this community. However, the following recovery actions have been provided for the community within its range (NSW Department of Primary Industries 2007):

- allocate and manage environmental water flows in regulated rivers to lessen the impacts of unseasonal flow and temperature patterns
- conserve and (where possible) restore habitats by protecting aquatic and riparian vegetation and encouraging the use of effective erosion control measures
- mitigate the impact of cold water pollution from major regulating structures
- develop and implement control programs for introduced species
- reinstate large woody debris where appropriate
- manage fishing activities to ensure sustainable fisheries are maintained
- provide fish passage by removing barriers or installing fishways in consultation with affected stakeholders.

The proposed action is not consistent with the '*conserve and (where possible) restore habitats by protecting aquatic and riparian vegetation'*. However, riparian vegetation removal would be limited to minor works around riparian vegetation trimming on riverbanks and mitigation measures would be put in place to limit indirect impacts from the proposal including the implementation of weed and pest management plans, sediment and control measures around large-scale excavation works and stockpiles areas that occurs within or near these TECs to minimise sedimentation and hydrological impacts. It is therefore unlikely that the proposed action would be significantly impact this community or adversely interfere with any of the recovery actions outlined.

Whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

A key threatening process (KTP) is a process that threatens, or may have the capability to threaten, the survival or evolutionary development of a species, population or ecological community. KTPs of relevance to this community are listed under the FM Act. Of these KTPs, the proposal involves degradation of native riparian vegetation along NSW water courses. The extent of native vegetation clearing, and habitat removal associated with the proposal (minor works around riparian vegetation trimming on riverbanks) is considered negligible in terms of the habitat impacted for the community within the surrounding landscape. Additionally, mitigation measures would be implemented during construction to minimise the likelihood of spread of weeds or pathogens into the site. These mitigation measures would aid in reducing potential impacts associated with the proposed action that may otherwise result in the further reduction of the community's quality.

Conclusion

The proposal would provide minor direct impacts on the vegetation that forms part of this ecological community. The proposal disturbance area would lead to modification of native vegetation associated with the riparian zone influence of this community. Disturbance within the riparian zone would be limited to upper stratum tree removal with all shrub and ground stratum vegetation below two metres in height would be retained in-situ. All potential erosion and sedimentation impacts would be managed and monitored to ensure that these do not impact the riparian areas. At most, any impact to water quality would be temporary and negligible. Each riparian area would continue to function as it currently functions. It is unlikely that the proposed action would lead to a significant impact to this listed community.

E-1.2 Macquarie Perch

E-1.2.1 Conservation status

Macquarie Perch (*Macquaria australasica)* is listed as Endangered under the FM Act.

E-1.2.2 Description

The Macquarie Perch occurs in around 20 locations in the Murray-Darling Basin. Once widespread in the southern tributaries of the Murray-Darling Basin, Macquarie Perch are now considered isolated to the upper reaches of the Lachlan and Murrumbidgee Rivers in southern NSW. Other populations of the species occur in Mongarlowe River (likely the result of a translocation from the Murray-Darling), Cataract Dam, Burrinjuck, Cotter (Murrumbidgee) Wyangala impoundments, and a breeding population (translocation) in the Queanbeyan River. Macquarie Perch are naturally a riverine fish, inhabiting clear water and deep, rocky holes with lots of cover. Shelter can include aquatic vegetation large boulders, debris and overhanging banks (Department of Agriculture Water and the Environment 2021).

E-1.2.3 Specific impacts

Impacts from the proposal on aquatic habitats, particularly mapped key fish habitats (Strahler 4/5th Order streams) are considered likely to be negligible. Avoiding and minimising impacts on aquatic habitats would be a priority of detailed design and any residual indirect impacts would be subject to mitigation measures.

The maximum aquatic impact likely to occur to any of the key fish habitat would be the removal or trimming of tree canopy on the riverbanks to facilitate the construction and operation of the powerlines spanning each riparian area. All trunk bases and understorey would be retained in-situ adjoining the riverbanks. All potential erosion and sedimentation impacts would be managed and monitored to ensure that these do not impact the riparian areas. At most, any impact to water quality would be temporary and negligible. Each riparian area would continue to function as it currently functions.

Regarding the Macquarie Perch it is unlikely that any direct impact on potential habitat (i.e. permanent freshwater creeks/rivers) would occur because of the proposal. Minor works around riparian vegetation trimming on riverbanks would be negligible and managed through mitigation measures.

E-1.2.4 Determination of whether proposed development or activity likely to significantly affect threatened species, population or ecological community

In accordance with Section 221ZV of the FM Act, the following is to be taken into account for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species, populations or ecological communities (unless it is carried out in critical habitat):

In the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction:

Macquarie perch spawn from October to December at sites located at the downstream end of pools. Eggs of the species then drift downstream and lodge amongst gravel and cobble in riffles. Hatching occurs after 10–11 days at water temperatures between 15–17°C. Adult and sub-adult Macquarie perch are most active at dusk and night with individuals sticking to defined home sites during the day (Department of the Environment 2013).

Potential habitat for the species was identified in the proposal study area in relation to freshwater rivers. It is unlikely that any direct impact on known or potential habitat (i.e. permanent freshwater rivers) would occur because of the proposal. Minor works involving riparian vegetation trimming on riverbanks would be negligible and managed through mitigation measures. Due to the minor works to be undertaken it is unlikely that the proposed action would affect the life cycle of individuals within the population through the minor disturbance of vegetation trimming of riparian banks.

Given that the proposal is only likely to remove a small proportion of adjacent habitat for the species and that measures to minimise any potential indirect impacts, the proposal is unlikely to affect the life cycle of the species to such an extent that the local population would to be placed at risk of extinction.

In the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction:

Not applicable

In the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

- *is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or*
- *is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction*

Not applicable

In relation to the habitat of a threatened species, population or ecological community:

- *the extent to which habitat is likely to be removed or modified as a result of the action proposed*
- *whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action*
- *the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality*

Regarding the Macquarie Perch, is it unlikely that any direct impact on potential habitat (i.e. permanent freshwater rivers) would occur because of the proposal. Minor works around riparian vegetation trimming on riverbanks would be negligible and managed through mitigation measures. The proposed action would only be spanning of freshwater creeks/rivers and not result in the fragmenting of any potential habitat that either species may utilise. It is unlikely that the potential habitat within the proposal study area constitutes important habitat for Macquarie Perch in the locality. The area of potential habitat to be disturbed is unlikely to be of critical importance to the long-term survival of this species.

Whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly)

No critical habitat has been declared for this species (Department of Agriculture Water and the Environment 2021).

Whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan

A national recovery plan for the Macquarie Perch has been developed (Department of the Environment and Energy 2018). This recovery plan has the overall objective to 'Ensure the recovery and ongoing viability of Macquarie perch populations throughout the species' range (including historically translocated populations in Cataract Reservoir and the Mongarlowe and Yarra rivers).' The recovery plan has six key recovery strategies that build toward this overarching objective:

- conserve existing Macquarie perch populations (including historically translocated populations in Cataract Reservoir and the Mongarlowe and Yarra rivers)
- protect and restore Macquarie perch habitat
- understand and address threats to Macquarie perch populations and habitats
- establish additional Macquarie perch populations within the species' natural range
- improve understanding of the biology and ecology of the Macquarie perch and its distribution and abundance
- increase participation by community groups in Macquarie perch conservation.

As the proposed action is likely to be limited to minor works around riparian vegetation trimming on riverbanks and any additional indirect impacts limited through detailed design and mitigation measures, the proposal would not be considered to interfere significantly with any of the recovery strategies outlined.

Whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

A key threatening process (KTP) is a process that threatens, or may have the capability to threaten, the survival or evolutionary development of a species, population or ecological community. KTPs of relevance to this species are listed under the FM Act. Of these KTPs, the proposal involves degradation of native riparian vegetation along NSW water courses. The extent of native vegetation clearing, and habitat removal associated with the proposal (minor works around riparian vegetation trimming on riverbanks) is considered negligible in terms of the habitat impacted for the species within the surrounding landscape. Additionally, mitigation measures would be implemented during construction to minimise the likelihood of spread of weeds or pathogens into the site. These mitigation measures would aid in reducing potential impacts associated with the proposed action that may otherwise result in the further reduction of habitat quality.

Conclusion

Regarding the Macquarie Perch it is unlikely that any impact on potential habitat (i.e. permanent freshwater rivers) would occur because of the proposal. Minor works around riparian vegetation trimming on riverbanks would be negligible and managed through mitigation measures. The minor works will not fragment any known population, nor is it considered that the potential habitat within the proposal study area is considered important habitat for this species. It is therefore unlikely that the proposed action will significantly impact this species.

E-1.3 Flathead Galaxias

E-1.3.1 Conservation status

The Flathead Galaxias (*Galaxias rostratus)* is listed as Critically Endangered.

E-1.3.2 Description

Flathead Galaxias are known only from the southern half of the Murray-Darling Basin system, previously known to occur in the in the Macquarie, Lachlan, Murrumbidgee and Murray Rivers in NSW, though are now only known from the upper Murray River near Tintaldra and wetland areas near Howlong (Threatened Species Scientific Committee 2016, NSW Department of Primary Industries 2021). The species inhabits still or slow moving water bodies such as wetlands and lowland streams and use a range of habitats including rock and sandy bottoms and aquatic vegetation.

E-1.3.3 Specific impacts

Impacts from the proposal on aquatic habitats, particularly mapped key fish habitats (Strahler 4/5th Order streams) are considered likely to be negligible. Avoiding and minimising impacts on aquatic habitats would be a priority of detailed design and any residual indirect impacts would be subject to mitigation measures.

The maximum aquatic impact likely to occur to any of the key fish habitat would be the removal or trimming of tree canopy on the riverbanks to facilitate the construction and operation of the powerlines spanning each riparian area. All trunk bases and understorey would be retained in-situ adjoining the riverbanks. All potential erosion and sedimentation impacts would be managed and monitored to ensure that these do not impact the riparian areas. At most, any impact to water quality would be temporary and negligible. Each riparian area would continue to function as it currently functions.

Regarding the Flathead Galaxias it is unlikely that any impact on potential habitat (i.e. permanent freshwater creeks/rivers) would occur because of the proposal. Minor works around riparian vegetation trimming on riverbanks would be negligible and managed through mitigation measures.

E-1.3.4 Determination of whether proposed development or activity likely to significantly affect threatened species, population or ecological community

In accordance with Section 221ZV of the FM Act, the following is to be taken into account for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species, populations or ecological communities (unless it is carried out in critical habitat):

In the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction:

The Flathead Galaxias spawns in August and September when water temperatures rise above 10.5°C. Eggs are spawned randomly and settle on the bottom, hatching in 8–9 days. Individuals are thought to mature in their first year of life. Little is currently known about this species' ecology, however there are indications that they move upstream in November and December (Threatened Species Scientific Committee 2016).

Potential habitat for this was identified in the proposal study area in relation to freshwater rivers & creeks. It is unlikely that any significant impact on known or potential habitat (i.e. wetlands, permanent freshwater creeks/rivers) would occur because of the proposal. Minor works involving riparian vegetation trimming on riverbanks would be negligible and managed through mitigation measures. Given that the proposal is only likely to remove a small proportion of adjacent habitat for the species and that mitigation measures would be put in place to minimise any potential indirect impacts it is unlikely that the proposed action would affect the life cycle of individuals to such an extent that the local population would to be placed at risk of extinction.

Given that the proposal is only likely to remove a small proportion of adjacent habitat for the species and that measures to minimise any potential indirect impacts, the proposal is unlikely to affect the life cycle of either species to such an extent that the local population would to be placed at risk of extinction.

In the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction:

Not applicable.

In the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

- *is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or*
- *is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction*

Not applicable

In relation to the habitat of a threatened species, population or ecological community:

- *the extent to which habitat is likely to be removed or modified as a result of the action proposed*
- *whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action*
- *the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality*

Regarding the Flathead Galaxias, is it unlikely that any impact on potential habitat (i.e. wetlands, permanent freshwater creeks/rivers) would occur because of the proposal. Minor works around riparian vegetation trimming on riverbanks would be negligible and potential indirect impacts from the proposal would be managed through mitigation measures. The proposed action would only be spanning of freshwater creeks/rivers and not result in the fragmenting of any potential habitat that this species may utilise. It is unlikely that the potential habitat within the proposal study area constitutes important habitat for this species in the locality. The area of potential habitat to be disturbed is unlikely to be of critical importance to the long-term survival of the species.

Whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly)

No critical habitat has been declared for this species (Department of Agriculture Water and the Environment 2021).

Whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan

There is currently no formal recovery plan for this species. A recovery plan is not currently required, as many of the threats to the flathead galaxias are threats to other EPBC Act-listed threatened fish species that occur within the Murray-Darling Basin and recovery actions being implemented through other programs (i.e. other species recovery plans, water management plans, actions being undertaken by relevant catchment management authorities) are thought to be sufficient for Flathead Galaxias (Department of Agriculture Water and the Environment 2021). The approved conservation advice for the species outlines a number of priority conservation and management actions intended to 'Halt decline and stabilise populations in the immediate term, then recover the range of the flathead galaxias to historical extent and rebuild populations' (Threatened Species Scientific Committee 2016). The proposal is unlikely to interfere with any of the recovery actions outlined.

Whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process

A key threatening process (KTP) is a process that threatens, or may have the capability to threaten, the survival or evolutionary development of a species, population or ecological community. KTPs of relevance to this species are listed under the FM Act. Of these KTPs, the proposal involves degradation of native riparian vegetation along NSW water courses. The extent of native vegetation clearing, and habitat removal associated with the proposal (minor works around riparian vegetation trimming on riverbanks) is considered negligible in terms of the habitat impacted for the species within the surrounding landscape. Additionally, mitigation measures would be implemented during construction to minimise the likelihood of spread of weeds or pathogens into the site. These mitigation measures would aid in reducing potential impacts associated with the proposed action that may otherwise result in the further reduction of habitat quality.

Conclusion

It is unlikely that any direct impact on known or potential habitat (i.e. wetlands, permanent freshwater creeks/rivers) for Flathead Galaxias would occur because of the proposal. Minor works around riparian vegetation trimming on riverbanks would be negligible and managed through mitigation measures. The minor works will not fragment any known population, nor is it considered that the potential habitat within the proposal study area is considered important habitat for either species. It is therefore unlikely that the proposed action will significantly impact this species.

E-1.4 Murray Hardyhead and Silver Perch

E-1.4.1 Conservation status

- Silver Perch (*Bidyanus bidyanus)* is listed as Vulnerable under the FM Act.
- Murray Hardyhead (*Craterocephalus fluviatilis)* is listed as Critically Endangered under the FM Act.

E-1.4.2 Description

The Silver Perch most abundant remaining natural population occurs in the central Murray River downstream of Yarrawonga Weir as well as several of its anabranches and tributaries. The central Murray population is considered secure and self-sustaining. There have also been reports of self-sustaining populations in other rivers, including the MacIntyre and Macquarie Rivers in northern NSW and the Warrego River in Queensland, mostly from recreational anglers. It prefers fast-flowing waters but is also known from rivers, lakes, and reservoirs.

Murray Hardyhead live along the edges of slow-flowing lowland rivers, as well as in lakes, billabongs, and backwaters. They are often found amongst aquatic weeds, in both fresh and quite saline waters. They were once widespread and abundant in the Murray and Murrumbidgee river systems in southern NSW and northern Victoria; however, they have suffered a serious population decline, and now seem to be limited to a few sites, mainly in northern Victoria. Since 2000, only one individual has been collected in extensive surveys in NSW.

E-1.4.3 Specific impacts

Impacts from the proposal on aquatic habitats, particularly mapped key fish habitats (Strahler 4/5th Order streams) are considered likely to be negligible. Avoiding and minimising impacts on aquatic habitats would be a priority of detailed design and any residual indirect impacts would be subject to mitigation measures.

The maximum aquatic impact likely to occur to any of the key fish habitat would be the removal or trimming of tree canopy on the riverbanks to facilitate the construction and operation of the powerlines spanning each riparian area. All trunk bases and understorey would be retained in-situ adjoining the riverbanks. All potential erosion and sedimentation impacts would be managed and monitored to ensure that these do not impact the riparian areas. At most, any impact to water quality would be temporary and negligible. Each riparian area would continue to function as it currently functions.

Regarding the Murray Hardyhead and Silver Perch, it is unlikely that any direct impact on potential habitat (i.e. permanent freshwater creeks/rivers) would occur because of the proposal. Minor works around riparian vegetation trimming on riverbanks would be negligible and managed through mitigation measures.

E-1.4.4 Determination of whether proposed development or activity likely to significantly affect threatened species, population or ecological community

In accordance with Section 221ZV of the FM Act, the following is to be taken into account for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species, populations or ecological communities (unless it is carried out in critical habitat):

In the case of a threatened species, whether the action proposed is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction:

The Murray Hardyhead has a prolonged spawning season from September to March, with peak larval abundance occurring in late October to early November. The species is a batch spawner, with females depositing clutches of eggs. Regarding the Silver Perch, adult Silver Perch can move large distances, often associated with spawning activity in spring and summer. Juveniles disperse over large distances and are often seen at fishways travelling upstream in large schools. Silver Perch have been found in a wide range of habitats and climates across the Murray-Darling Basin. They are found in faster-flowing water including rapids and races and more open sections of river. Individuals sometimes form large shoals in open water.

Potential habitat for both species was identified in the proposal study area in relation to freshwater rivers & creeks. It is unlikely that any significant impact on known or potential habitat (i.e. permanent freshwater creeks/rivers) would occur because of the proposal. Minor works involving riparian vegetation trimming on riverbanks would be negligible and managed through mitigation measures. Due to the minor works to be undertaken it is unlikely that the proposed action would affect the life cycle of individuals within the population through the minor disturbance of vegetation trimming of riparian banks.

Given that the proposal is only likely to remove a small proportion of adjacent habitat for the species and that measures to minimise any potential indirect impacts, the proposal is unlikely to affect the life cycle of either species to such an extent that the local population would to be placed at risk of extinction.

In the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction:

Not applicable

In the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

- *is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or*
- *is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction*

Not applicable

In relation to the habitat of a threatened species, population or ecological community:

- *the extent to which habitat is likely to be removed or modified as a result of the action proposed*
- *whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action*
- *the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality*

Regarding both the Murray Hardyhead and Silver Perch it is unlikely that any direct impact on potential habitat (i.e. irrigation pipelines or permanent freshwater creeks/rivers) would occur because of the proposal. Minor works around riparian vegetation trimming on riverbanks would be negligible and managed through mitigation measures. The proposed action would only be spanning of freshwater creeks/rivers and not result in the fragmenting of any potential habitat that either species may utilise. It is unlikely that the potential habitat within the proposal study area constitutes important habitat for either species in the locality. The area of potential habitat to be disturbed is unlikely to be of critical importance to the long-term survival of either species.

Sediment laden runoff and spills affect water quality and adversely affect aquatic life particularly during construction near rivers, creeklines and Key Fish Habitats. These impacts have the potential to reduce the viability of habitat for aquatic and semi aquatic species temporarily.

The proposal has been carefully designed to minimise impact to these sensitive environmental receivers through targeting narrow width crossing points of waterways and flood out areas (and their associated riparian habitats e.g. around the Murrumbidgee River, Yanco Creek and Colombo Creek).

The mobilisation of sediments would be contained within the indicative disturbance area as sediment containment measures would be implemented as part of mitigation measures.

Whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly)

No critical habitat has been declared for either species.

Whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan

A NSW recovery plan (NSW Department of Primary Industries 2006) listing a number of recovery actions has been prepared for the Silver Perch. The recovery plan includes five recovery areas:

- research
- habitat protection and restoration
- introduced species and disease
- fishing, and
- aquaculture and stocking

Owing to the small area of minor works around riparian vegetation trimming on riverbanks to be removed, the proposal is not likely to interfere with these recovery actions or significantly interfere with the recovery of this species.

The Murray Hardyhead has a National Recovery Plan (Backhouse, Lyon et al. 2008) which listed a number of recovery objectives and actions for the species across its distribution. The recovery plan includes seven recovery areas:

- investigate and manage threats to populations and habitats
- determine population persistence and trends
- determine habitat preferences
- investigate important life history attributes
- establish and maintain the Murray Hardyhead in captivity
- establish new populations of Murray Hardyhead in the wild
- increase community awareness of Murray Hardyhead conservation.

It is unlikely that the proposed action (i.e. minor works around riparian vegetation trimming on riverbanks) would be significant to either species and will not interfere significantly with any of the management or recovery actions for either species.

Whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process

A key threatening process (KTP) is a process that threatens, or may have the capability to threaten, the survival or evolutionary development of a species, population or ecological community. KTPs of relevance to these species are listed under the FM Act. Of these KTPs, the proposal involves degradation of native riparian vegetation along NSW water courses. The extent of native vegetation clearing, and habitat removal associated with the proposal (minor works around riparian vegetation trimming on riverbanks) is considered negligible in terms of the habitat impacted for these species within the surrounding landscape. Additionally, mitigation measures would be implemented during construction to minimise the likelihood of spread of weeds or pathogens into the site. These mitigation measures would aid in reducing potential impacts associated with the proposed action that may otherwise result in the further reduction of habitat quality.

Conclusion

Regarding the Murray Hardyhead and Silver Perch it is unlikely that any direct impact on potential habitat (i.e. permanent freshwater creeks/rivers) would occur because of the proposal. Minor works around riparian vegetation trimming on riverbanks would be negligible and managed through mitigation measures. The minor works will not fragment any known population, nor is it considered that the potential habitat within the proposal study area is considered important habitat for either species. It is therefore unlikely that the proposed action will significantly impact either species.

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APPENDIX E-2
Powerline impacts and ameliorative measures

E-2.1 Birds and power transmission infrastructure

Ecologically, birds encounter power transmission infrastructure in two broad ways, as landscape features occurring in their resident territories, whether those territories are permanent or seasonal, or as unfamiliar features they encounter during long or short-distance movements. For birds which migrate, both broad types of power transmission infrastructure interaction may apply during different periods of their lifecycle.

The distinct types of impacts power transmission infrastructure represent to birds also fall into two broad categories; impacts associated with the power being carried through the infrastructure and impacts the infrastructure represents as collision risks. The different ways birds encounter power transmission infrastructure determines the type of risk infrastructure will represent to them.

The potential effects of power carried by electrical infrastructure are more likely to affect birds that are familiar with the infrastructure, and who use it on a day to day basis, while the collision risks power transmission infrastructure represents to birds are more likely to affect those birds that are unfamiliar with its presence or distracted by important behaviours.

Both behavioural groups are at risk from electrocution, for the same two behavioural reasons, both familiarity and ignorance.

Collision risk also represents a significant hazard to birds that are familiar with power infrastructure at a given location, just as humans might fall foul of familiar hazards due to concentration distractions. For example, while birds are defending territories, hunting, are being hunted, or area displaying, they will naturally be more susceptible to collisions with infrastructure that is usually familiar to them and otherwise avoided, particularly if the obstacles have some degree of detection difficulty.

E-2.2 Power transmission and electric and magnetic fields

Electricity is generated from both natural and artificial sources. Extremely low frequency (ELF) Electrical and Magnetic fields (EMF) are those that fall within the 0–3000 Hz frequency range. ELF EMF's exist wherever electricity is generated, transmitted or distributed in power lines or cables, or used in electrical appliances (arpansa, 2020). Although ELF EMF's are sometimes produced through natural processes, artificial sources are the most common sources of ELF EMF and are generally a product of the generation, distribution and use of electricity at the frequency of 50 Hz in Australia or 60 Hz in some other countries (arpansa, 2020). The electrical component of ELF EMF is formed by voltage, but current produces the magnetic field component of ELF EMF (arpansa, 2020).

The level of electrical fields is measured in thousands (k) of volts (V) per (/) metre (m), kV/m or just as V/m. The level of magnetic fields is measured in units of amperes (A) per (/) metre (m), A/m, however it is often denoted by its magnetic flux density quantified in units of tesla (T) or microtesla (μT). Another unit that is often applied to the quantification of magnetic fields is the gauss (G) or milliGauss (mG), where one gauss is equal to 10^{-4} T (or 1 mG = 0.1 μT) (arpansa, 2020).

E-2.2.1 ELF EMF and birds

It is widely known and observed that, of all fauna groups, birds most regularly use electrical power lines, and their associated infrastructure, such as towers and poles, for perching and nesting. The reasons bird species use tall structures, such as electrical transmission infrastructure include:

- increased separation from terrestrial threats
- as vantage points to allow early detection of airborne and terrestrial threats
- for a commanding view over a patch of hunting territory
- for the defence and proclamation of breeding territories, and
- as safe elevated locations to build nests and raise their young.

The use of power lines does not extend across all bird species, as the open spaces in which aerial power infrastructure are located is too exposed for many bird species, especially smaller cover preferring bird groups. Therefore, the most common powerline using groups are birds that use open and aerial habitats.

The infrastructure of electricity transmission is often desirable as nesting locations for large species, such as birds of prey and the corvids (ravens and crows), due to their propensity to build on high landscape features in otherwise open habitats.

While several small open country birds, such as larks, pipits and finches will use power lines through direct observations, there appears to be a reduced use of the tallest power infrastructure by such species, due to the considerable expenditure of energy required to reach it and the considerable separation it represents from their territories.

Aerial foraging species, such as dollarbirds, bee-eaters, swallows, martins and woodswallows are also frequent users of electricity infrastructure for resting or as hunting vantage points, however, the insect prey that this group targets can often be in greater densities closer to the ground, and so lower perches are more desirable when available.

Therefore, as the distance between vegetation from associated electricity infrastructure increases, many smaller bird species appear less likely to use it, particularly when lower and less exposed options are present in their habitats.

In wooded habitats where vegetation heights more closely approach the height of power lines, avifauna appear more likely to use them, due to the increased opportunity to perch on power infrastructure where it is more accessible, because of higher adjacent canopy heights.

Apart from those birds that use power infrastructure as perching opportunities, a small group of birds also use power infrastructure for nesting sites. Birds of prey, storks and cranes, and the corvids are the groups that are most likely to use the tallest power line infrastructure.

E-2.3 Effects of electric and magnetic fields on birds

Considerable research has been undertaken to determine if there are any significant effects from EMF upon living organisms, including birds. Several scientific papers have endeavoured to determine if there are changes to bird biology because of proximity to EMF with few undertaken on wild birds outside of laboratory contexts. Nevertheless, there are some studies which have tested the effects of EMFs on wild birds.

In their 2005 review paper, Fernie and Reynolds (2005) observe that electrical power lines are widely used throughout the developed world, and that, all electric currents, including those conducted by electrical power lines, produce electric and magnetic fields (EMFs) (Fernie and Reynolds, 2005). They note that, due to their propensity to use power line infrastructure, some birds, like humans, are exposed to EMFs throughout their lives. They also note that EMFs have been, not without controversy, implicated in adversely affecting different components of human health, and that past and ongoing laboratory research have used mammal and bird surrogates to determine if EMFs may adversely affect key life systems in humans. Their 2005 review, draws on previous EMF research on effects to wild and aviary kept birds, to

determine if this body of work might contribute to the current knowledge on EMF potential to adversely affect humans (Fernie and Reynolds, 2005). They found that the majority of studies found when birds are subjected to EMFs, changes are observed in; bird behaviour, reproductive success, growth and development, physiology and endocrinology, and oxidative stress, although not always with a consistent effect or direction (Fernie and Reynolds, 2005).

Fernie *et al* (1999) observe that some bird groups reproduce within EMFs from transmission lines, and that critical survival processes are dependent on melatonin, while melatonin has only been equivocally suppressed by EMFs in mammalian species. They erected a study to examined whether EMFs affect photophasic plasma melatonin in adult and fledgling American Kestrels (*Falco sparverius*) during short-term (one breeding season) and long-term (two breeding seasons) breeding behaviours, and compared the results to observed changes in body mass (Fernie et al., 1999). The study included kestrels subjected to EMF effects and a control group of kestrels (56 pairs in all) against which results could be compared. They found that EMFs affected plasma melatonin in male kestrels, by suppressed plasma values at 42 days and elevated plasma values at 70 days of EMF exposure. The 42 day melatonin levels in EMF males were the same levels as 70 day control males, suggesting a seasonal phase-shift in melatonin profile due to EMF exposure (Fernie et al., 1999). Melatonin levels were also suppressed in long-term fledglings but not short-term fledglings or females. They propose higher levels of melatonin in male kestrels than females may affect the sexually different results to EMF exposure. Results found that melatonin levels were not correlated to body-mass in American Kestrels and it was considered likely that results returned by the study are relevant to wild raptors nesting within EMFs (Fernie et al., 1999).

Fernie *et al* (2000a) observed that although there was documentation of reduced avian reproductive success when associated with power lines, such impacts had not been directly attributable to EMFs. They also noted that while laboratory studies had been undertaken to determine the effects of EMFs on embryonic development, such studies were unable to test the effects of EMFs on other factors that affect breeding success in wild birds, such as fertility, egg size, hatching, and fledgling success (Fernie et al., 2000a). In response, they undertook a study to determine the effect of EMFs on the reproductive success on birds, using captive American Kestrels (*Falco sparverius*) over two consecutive annual breeding seasons. The kestrels were separated into separate control and EMF effect groups (Fernie et al., 2000a). EMF exposure was set to the same levels as would be experienced by wild breeding kestrels and weakly correlated with a reduction in egg laying in only the first year (Fernie et al., 2000a). In both breeding events pairs subjected to EMF exposure, experienced higher fertility and lower hatching success than control pairs (Fernie et al., 2000a). Fledgling success was higher for EMF subjected pairs than control pairs in only one of the breeding events. In a single year when egg composition and embryonic development were examined, eggs were larger, with more yolk, albumen, and water, but exhibited thinner egg shells than control eggs (Fernie et al., 2000a). Late-term EMF embryos were larger and longer than control embryos, although hatchlings were similar in body mass and size (Fernie et al., 2000a). For their study Fernie *et al* (2000a) found that there was a different result in reproductive success in EMF exposed kestrels, resulting in increased fertility, egg size, embryonic development and fledgling success and reducing hatching success when compared to control kestrels.

Fernie *et al* (2006b) note that wild birds particularly raptors use electrical transmission infrastructure for perching, hunting, roosting nesting, and consequently are exposed to EMFs. They determined the time periods wild American Kestrels (*Falco sparverius*) were exposed to EMFs from 735-kV power lines, so that the effect of EMFs on the behaviour of captive breeding kestrels could be studied (Fernie et al., 2000b). During their study they found that wild kestrels were exposed to EMFs for 25% to 75% of the observation periods. Over a 24 hr period, it was estimated that EMF exposure to wild kestrels ranged from 71% during courtship, to 90% during incubation, which was comparable to the exposure figures (88%) that captive breeding kestrels were subjected to (Fernie et al., 2000b). The results found that captive female EMF kestrels exhibited increased activity and alertness, and, in comparisons to control females, perched more often on the pen roof. EMF female kestrels were observed to preen and rest less often during the rearing of their broods (Fernie et al., 2000b). As with female EMF kestrels, male EMF kestrels were observed to be more active than control males during courtship, and more alert during incubation (Fernie et al., 2000b). The observed behavioural changes in breeding EMF kestrels were unlikely to contribute to increased growth of nestlings or increase the survival rates of fledglings, or reduce hatching success, though previously reported as such (Fernie et al., 2000b). Fernie *et al* (2000b) note that behavioural changes observed in captive EMF kestrels may be observed in wild kestrels.

Fernie and Bird (2001) observe that exposure to EMFs alters melatonin, behaviour, growth, and reproduction of captive American Kestrels (*Falco sparverius*), particularly males. Therefore, they undertook a study to determine whether EMF exposure triggers an avian immune response and alters oxidative stress levels. Captive kestrels were bred under control or EMF conditions at levels similar to those wild kestrels are subject to (Fernie and Bird, 2001). They found that short-term (single breeding season) exposure to EMFs suppressed plasma total proteins, hematocrits and carotenoids in the first half of the breeding cycle, as well as suppressing erythrocyte cells and lymphocyte proportions at the end of the breeding season (Fernie and Bird, 2001). Long-term (two breeding seasons) studies also resulted in a suppression of hematocrits in the first half of the reproductive period (Fernie and Bird, 2001). The study deduced that the elevation of granulocytes, and the suppression of carotenoids, total proteins, and previously melatonin in the same kestrels, signified that the short-term EMF male kestrels had higher level of oxidative stress, due to an immune response and/or EMF exposure and that long-term EMF exposure may be linked to higher levels of oxidative stress through EMF exposure alone (Fernie and Bird, 2001).

In a study conducted over nine (9) breeding seasons, Tomas *et al* (2012) note that within a single population of Great Tits (*Parus major*), breeding occurrences subjected to the effects of EMF exposure showed an increase in clutch size (7%) and an increase in egg volume (3%) (Tomas et al., 2012). Although the study showed that there was an increase in both clutch size and egg volume the overall average productivity as a function of fledgling and reproductive success, including nestling body mass, did not exhibit any change (Tomas et al., 2012). In comparison to Great Tit breeding events not associated with artificial EMF influences, researchers noted Great Tit breeding events subjected to artificial EMF's influences realise the same breeding success, but with a greater expenditure of energy resources (Tomas et al., 2012).

E-2.4 Power transmission line bird strike

Bernardino *et al.* (2018) observe that growing global energy demands are causing worldwide increases in electrical infrastructure, representing significant negative impacts to biodiversity, predominantly birds.

They undertook a systematic review of available literature, dealing with bird power line related collisions, with attention to specific areas of previous research, including:

- an assessment of overall trends in scientific research in recent decades
- a review of existing knowledge of bird collision factors, as well as their effectiveness in reducing collision risk; including
  - species-specific factors (e.g. vision, morphology)
  - site-specific factors (e.g. topography, light and weather conditions, and anthropogenic disturbance), and
  - power line-specific factors (e.g. number of wire levels, wire height and diameter)
- an evaluation of existing mitigation measures (e.g. power line routing, underground cabling, power line configuration, and wire marking), as well as their effectiveness in reducing collision risk (Bernardino et al., 2018).

The Bernardino *et al.* (2018) review concluded:

- a general paucity of specific scientifically tested information regarding factors leading to bird power line collision
- there are few studies conducted in Asia, Africa, and South America; and
- several suggested methods of good practice were not at the time of publication, supported by scientific evidence.

Gap analysis undertaken by the Bernardino *et al.* (2018) study identified three key directions for future research, innovation, and scientific testing of current impact avoidance methodologies:

1 Bird behaviour – including the use of data loggers and sensors
2 Impact assessment – the identification and understanding of specific drivers at mortality hotspots, assessment of population-level impacts, development of methods for automatic detection of bird impacts; and
3 Mitigation measures – outlining a greater need for BACI level studies to determine the effectiveness of different wire- marking/bird avoidance devices and strategies (Bernardino et al., 2018).

They conclude by observing that, globally, the predictiveness and effectiveness of bird power line impact and mitigation, is compromised by a general lack of understanding about the regionally specific complexity of bird ecologies and how they interact with different collision drivers (Bernardino et al., 2018).

In a review of 14 studies, qualified by specific inclusion criteria, Loss *et al* (2014) estimated that between 12 and 64 million birds are killed each year in the United States (U.S.) through power line associated fatalities. Eighty-nine percent (89%) of the bird fatalities were attributable to collision mortality, the remaining eleven percent (11%) were caused by electrocution (Loss et al., 2014). Variations in mortality rates were a product of the relatively small number of rigorous studies available that deal with the study of bird mortality (Loss et al., 2014). The review found that while there is a general dearth of studies, and most were limited in scope (relating to diversity of species, habitat types and locations), the data collected showed that bird mortality associated with power lines in the U.S. is substantial and requires conservation management and policies to lower mortality rates (Loss et al., 2014).

E-2.5 Power transmission line impacts and the proposal

E-2.5.1 Collision risks

E-2.5.1.1 Alignment geographical context

The proposal study area traverses some 150 km of south-western NSW in a general east-west orientation from the South Australian border to Buronga. It occurs within the NSW rangelands, occurring within the semi-arid zone of south-western NSW. In effect, large areas of the proposal study area occur on the boundary between areas with more regular rainfall and inland areas that are classified as being deprived of rainfall.

The rangelands of semi-arid and arid Australia occur as areas bereft of significant water for extended periods of time, although they encompass the most extensive proportions of the largest catchment areas of the Australian continent. Nevertheless, when periodic high rainfall events fill their basin's reservoirs, such areas transform to represent foraging and breeding opportunities for a wide range of water birds, including waterfowl, wading birds, and both resident and migratory shorebirds, as well a host of open country terrestrial birds, which move to take advantage of transformed inland areas after high inland rainfall events. While birds respond to such rainfall events with movements to and from a variety of regions, the greatest proportion of water bird movements to, and from, inland areas in response to rain, or the deprivation of it, are from, or back to, coastal areas.

The proposal alignment falls within the basin of the Murry-darling system, the Murray occurring to the alignment's south, the Darling to the north. It crosses the Darling and its Great Anabranch to the north of Wentworth.

To the north of the alignment, the Darling is an important feeder of large ephemeral lake systems, including the Menindee lakes, and its Great Anabranch feeding the Nearie Lakes cluster to the southwest of Menindee.

To the south of the alignment, the Murray's flooding influence broadens to extend across low lying topographies that are inundated by the river during periods of high flow. The river is a source of water level continuity for Lake Victoria and a portion of its flows are used to maintain environmental water for wetland habitats like Chowilla Regional Reserve, which occurs within South Australia in lands immediately adjacent to the NSW/South Australia border, south of Renmark Road.

E-2.5.1.2 Migratory and nomadic birds

Large numbers of resident water birds are attracted to the ebb and flow of water levels between regional and state level distributions, which often entail long-distance movements to and from ephemeral wetlands, including those that occur to the north and south of the proposal study area. Apart from resident waterbirds, large numbers of international migratory shorebirds also respond to such variations in water availability during their seasonal occupation of Australian habitats.

A number of waterbirds and shorebirds have been observed to undertake movements from one wetland habitat to another during nocturnal hours (Richardson, 2016a). During winter occupation of the Hunter River estuary, migratory wading birds were observed to move equally during day and night periods, as a response to the availability of foraging areas and the need to access roosting areas during high tide levels (Richardson, 2004). Long distance movements, representing 1,000's of kilometres, by a number of shorebird species take place continuously without breaks throughout nocturnal and diurnal hours (Battley et al., 2012). McEvoy (2015) observed that long distance movements undertaken by radio-tracked South Australian Pacific Black Ducks, in response to moderate to high rainfall events, were almost exclusively undertaken during nocturnal hours (McEvoy, 2015). During the Pacific Black Duck study, reasons for nocturnal movements could not be clearly determined, although avoidance of diurnal avian predators, which are key predators of waterbirds and shorebirds, were cited as a likely incentive to avoiding long distance movements during the day (McEvoy, 2015). Birds of prey were observed to be the major predatory risk for diurnal shorebirds in a study of wintering shorebirds in the Hunter River Estuary (Richardson, 2004, Richardson, 2016c).

Considering the orientation of the alignment from east to west, it likely intersects flight lines between inland and coastal wetlands. As such, there is a likelihood that large numbers of waterbirds would periodically cross the alignment from south to north and back again, often during nocturnal hours. This suggests that increasing the number of power lines in the current easement would realise an increase in potential for bird strike.

Other groups of birds prone to nomadic movements are also likely to be at risk of collision, such as the larger birds of prey. While possessing excellent eyesight, birds of prey are at risk of power line strike as a consequence of their potential to strike obstacles before them when searching the ground for prey and the location of power lines within elevations where they fly.

While most birds of prey are not usually migratory, many periodically move in relation to variations in productivity (i.e. prey availability). Birds of prey respond by moving to areas where greater productivity increases survival and breeding-cycle success. The larger birds of prey, with some of the largest wingspans (WS) of Australia's birds, have been observed in habitats associated with the alignment, or are considered likely to occur in its vicinity from time to time, include; Wedge-tailed Eagle (WS~2.8 m), White-bellied Sea-eagle (WS~2.0 m), Black-breasted Buzzards (WS~1.5 m), Square-tailed Kite (WS~1.3 m), Little Eagle (WS~1.3 m), Spotted Harrier (WS~1.2 m) Black Kite (WS~1.2) Whistling Kite (WS~1.2), Brown Falcon (WS~1.2) and Black Falcon (WS~1.2) (Pizzey and Knight, 2012).

While it is highly likely that some bird species, within collision risk bird groups, would be at lesser risk of collision than others, even when closely related (Loss et al., 2014) to those at greatest risk, a greater or lesser proportion of different migrating or nomadic bird species are likely to be impacted by the introduction of additional infrastructure into their flight paths.

E-2.5.1.3 Resident birds

A substantial proportion of birds that occur in territories through which the alignment passes, will not be at risk of power lines strike, since their use of habitat never extends to open areas especially at elevations where power lines are located. Nevertheless, there are some groups of resident birds that favour open areas, which are at increased risk of collision, because power lines occur in the habitats they often frequent. Although resident birds around the alignment footprint are likely to quickly adapt to changes made within their well-known territories, new infrastructure represents an increase in hazardous obstacles with which some groups might collide when distracted by high priority activities, such as hunting, territorial defence, breeding behaviours and learning to fly.

As noted above, a proportion of local birds are unlikely to be placed at risk of collision since their habits do not extend to the open elevated habitats where greater risk of collisions occurs. Large areas of the alignment are associated with either open country or low canopied mallee and black box communities, where the flight lines of small to small-medium sized birds are much less likely to intercept power lines and for such species, the chances of impact are considered unlikely.

Tall vegetation communities where riparian canopies are dominated by tall River Red Gum trees are areas most likely to represent higher risk for smaller resident woodland bird guilds, although their lower flight speeds and sedentary behaviour reduce collision risks for many in this group.

Those considered as bird species to be at higher risk of collision include local birds that fall into guilds of larger and higher-flying birds, and which reside over larger territories, such as birds of prey, ravens and magpies, cockatoos and some parrots, waterbirds, and waterfowl.

E-2.5.2 Mitigation of collision risks to birds

Power lines represent a collision risk to birds, because they occur within spaces where they do not expect to encounter obstacles, and, due to relatively narrow linear profile, power lines easily blend in with the landscape or are obscured by lighting conditions, such as darkness or other light conditions that obscure the presence of the lines or make them appear much further away. Key strategies for reducing the numbers of birds striking power lines is making them visible to birds. Mitigation measures employed in areas where birds are at greater risk often take the form of large bright beacon-like objects to make birds aware of the presence of power lines.

E-2.5.3 EMF and electrocution risks

E-2.5.3.1 Migratory and nomadic birds

Even though some species of migratory birds are electrocuted when they collide with power lines, it is most likely that many of these incidents are associated with smaller power line infrastructure, or installations where individual conductors and earth potentials are close together, such that birds have the potential to touch multiple components of different electrical potential. For birds moving through the alignment, it is considered unlikely that birds would be at high risk of electrocution, as electrocution would require contact with different phases or conductor potentials, and the horizontal separation between individual conductors, or bundled conductors, exceeds the wingspans (WS) of all birds, including the largest migratory birds, such as Brolgas (WS~2.4 m) Pelicans (WS~2.4–2.6 m) Black Swans (WS~2.0 m) and Australian Shelduck (WS~1.2 m) (Pizzey and Knight, 2012). Separation distances between tower arms and conductors achieved by insulators are shorter than between different conductors (7,200 mm and smaller designs 5,700 mm), but the separation, at 3,720 mm, is beyond the wingspans of all the world's birds. Large bird species are at a greater risk of collision impact injuries, than electrocution, due to their size and flight speed.

The other group of nomadic birds of sufficient sizes to be at risk of electrocution are the larger birds of prey, although as with other large bird species their wing spans are not sufficient to reach between different conductors or from conductors to conductive tower components. While most are not migratory many periodically move in relation to variations of ecological productivity, since dryer and wetter periods drive resource increases and lulls, and birds of prey respond by moving to areas where greater productivity increases survival and breeding-cycle success. Those larger birds of prey observed in habitats associated with the alignment, or are considered likely to occur in its vicinity from time to time,

include; Wedge-tailed Eagle (WS~2.8 m), White-bellied Sea-eagle (WS~2.0 m), Black-breasted Buzzards (WS~1.5 m), Square-tailed Kite (WS~1.3 m), Little Eagle (WS~1.3 m), Spotted Harrier (WS~1.2 m) Black Kite (WS~1.2) Whistling Kite (WS~1.2 m), Brown Falcon (WS~1.2 m), Black Falcon (WS~1.2 m) and Peregrine Falcons (WS~0.95 m) (Pizzey and Knight, 2012). All bird of prey species have wingspans that are well below the smallest separations between conductors and other conductors, or potential earthing infrastructure components.

Although some birds of prey undertaking dispersive or nomadic movements may occasionally land on powerline infrastructure, under such circumstances they are unlikely to be sufficiently affected by EMF's to be of any significant effect. Nevertheless, birds of prey, which are resident in habitats associated with the alignment, are part of the group of birds which are most likely at risk to longer periods of exposure to EMFs.

E-2.5.3.2 Resident birds

Those birds that occur as residents in the habitats surrounding power line infrastructure are that subset of all birds that will have to live with power transmission infrastructure for a good portion, if not all, of their lives. However, for many of the birds that live in close association with such infrastructure the greatest risk is loss of habitat during the construction phase of the project. Providing sufficient habitat has been retained for them to survive after the infrastructure's installation their behaviour will continue as it did before construction. A range of small birds that prefer the cover and foraging opportunities that the foliage of trees and shrubs offer will never ascend to the powerline region of the installation or use the bottom of towers for perches.

Those species most likely to ascend to power lines and the tops of towers are those species that are tolerant of open spaces and which habitually fly at those elevations and above. The candidates to use power line infrastructure are large passerines like ravens and crows, birds of prey preferring open habitats, and aerial foraging species, such as woodswallows, swallows and martins, and dollarbirds and bee-eaters. Although magpies will use power lines, they forage on the ground and prefer perches and nesting locations with the added cover of trees. Often the height of high transmission lines is too high for them, and for much of the time smaller aerial foragers, which also prefer to perch low when foraging close to the ground.

There is a small group of birds for which transmission towers are preferable for nest building, including ravens and crows, medium to large birds of prey and, in some areas, storks and cranes. Several nests located in the top of transmission line towers were observed during field surveys, but not all could be assigned to species. Most nests were in the size range built or used by the corvids and medium sized birds of prey, although due to the longevity of nests, it isn't always the builders that utilise the nests in subsequent breeding seasons. Several nests of sufficient size to be built by Wedge-tailed Eagles or White-bellied Sea-eagles were observed on the existing transmission line towers between Trentham Cliffs and Red Cliff, and both species were observed in the area. A pair of Peregrine Falcons were observed to be using a tower in the existing easement for nesting and were raising young at the time of observation. The nest was discovered on 21 October 2019 at -33.923420, 142,075656 in an older transmission tower type, not protected by galvanising treatments, southeast of Pooncarie Road.

It is such species that have the greatest risk of EMF effects, due to their familiarity with infrastructure and extended periods in relatively close proximity to conductors. Most towers are designed to minimise their use by birds, however the benefits of power infrastructure to bird behavioural priorities make birds determined to use such structures across locations where elevated nest sites in old growth trees are limited.

In assessing the types of large transmission towers likely to be used for the project, the dimensions of transmission tower structures were considered. The minimum distance from conductors to earthed infrastructure that birds might build nests on is 3,930 mm, and greater than the wingspans of the largest Australian birds. If a nest is built on an arm with a conductor above it, the height of the nest and the bird will reduce that figure.

The period chicks will occupy the nest from the laying of the egg to leaving the nest has been added below for the birds of prey most likely to occur. For all these species the nest is not usually occupied outside the breeding period.

The largest Australian birds of prey occurring in the alignment locality are the Wedge-tailed Eagle and White-bellied Sea-Eagle, which have the longest incubation and nestling periods of Australian birds of prey with a maximum incubation period of 45 days and 40 days, respectively, and maximum nestling periods of 85 days and 70 days respectively. The maximum nest occupation time for these species, from egg laying to departure, is around 130 days (~19 weeks) and 110 days (~16 weeks) respectively.

For the next largest group of birds of prey (size wise), including species such as the Black-breasted Buzzard, Little Eagle, Square-tailed Kite and Spotted Harrier, the incubation periods are around 40 days and nestling period around 60 days. The maximum nest occupation time for these species, from egg laying to departure, is around 100 days (~14 weeks).

Nest occupancy periods for smaller birds of prey from medium sized birds, such as Whistling Kites and Black Kites (~83 days), reduce progressively with size through the Pacific Baza and falcons, down to the smallest, represented by the Nankeen Kestrel, which has an incubation period of 29 days and a nestling period of 35 days, representing a total nest occupation time of 64 days (~9 weeks). The corvids will fall into a group that is smaller than the kites and largest falcons.

From data derived from a range of studies, it is considered likely that EMF's may influence the physiology of birds nesting on transmission towers. However, the levels of those effects to each species under all different conditions is not easily quantifiable and there is currently no conclusive evidence that such effects would have a significant effect on the long-term viability of local bird populations.

E-2.5.4 Mitigation of EMF impacts to birds

Mitigation for EMF impacts are best implemented by tower designs that discourage birds from building nest on them. As it is an important priority for managers maintaining power transmission lines to ensure that nesting birds do not constitute a risk to power delivery, towers being considered are currently designed to discourage their use by birds, which also reduces the numbers of birds which may be affected by EMFs to a minimum.

E-2.6 Conclusions and recommendations

Based on the available research, the following conclusions on potential impacts have be reached:

- The bird species considered to be at higher risk of collision include local birds that fall into guilds of larger and higher-flying birds, and which reside over larger territories. These birds include birds of prey, ravens and magpies, cockatoos and some parrots, waterbirds, and waterfowl.
- It is likely that EMF's may influence the physiology of birds nesting on transmission towers. However, the levels of those effects to each species under a range of different conditions is not easily quantifiable and there is currently no conclusive evidence to suggest that such effects would have a significant effect on the long-term viability of local bird populations.

Recommendations for management and mitigation consist of the following:

- line markers, otherwise known as "bird flappers" and "diverters" are well known throughout the world to be an effective mitigation strategy to warn birds of the presence of powerlines and would be included in the project design
- towers would be designed to discourage nesting to reduce both potential collision and EMF impacts
- a monitoring program would be considered for implementation to assess the ongoing risk to fauna, particularly birds from the proposal.

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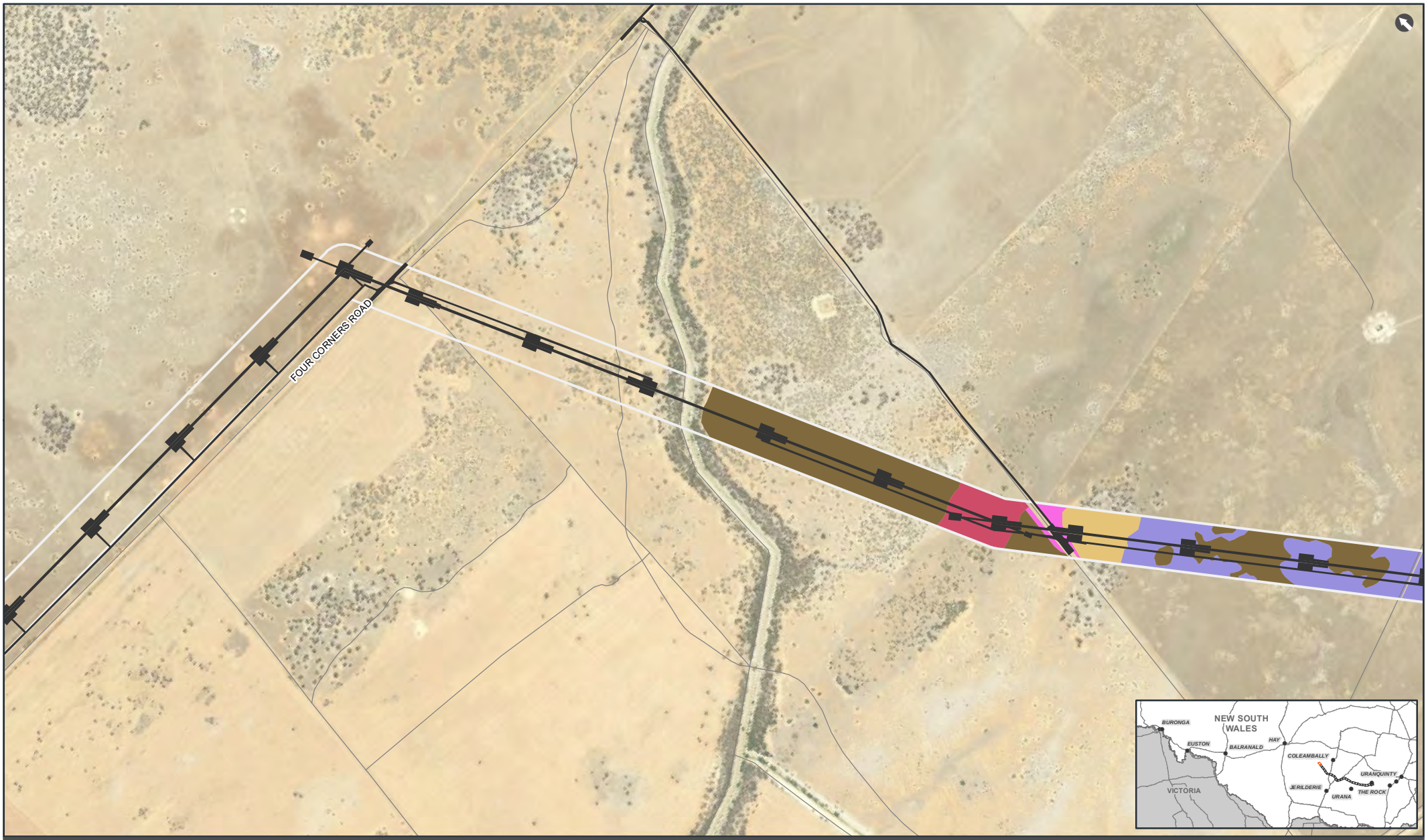
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APPENDIX E-3
Impacts assessment – maps indirect impacts



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Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- PCT15 - Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Derived
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Mod-good
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Moderate
- PCT28 - White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone | Mod-good

BDAR - Figure E-3-1a

Indirect Impacts on Little Eagle

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure E-3-1b

Indirect Impacts on Little Eagle

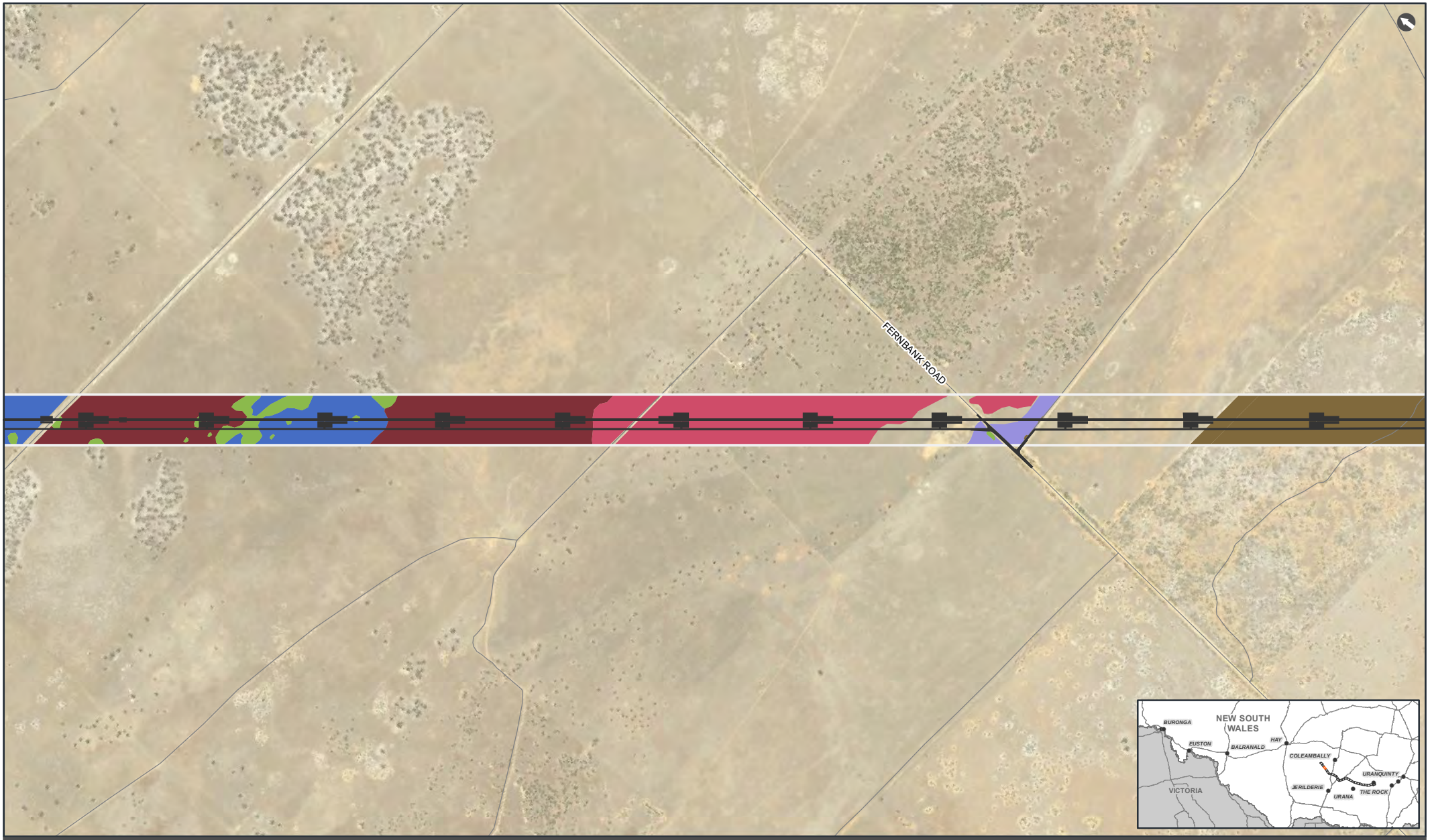
Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area

- PCT13 - Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT216 - Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion | Mod-good
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Derived
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Mod-good
- PCT46 - Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion | Mod-good

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

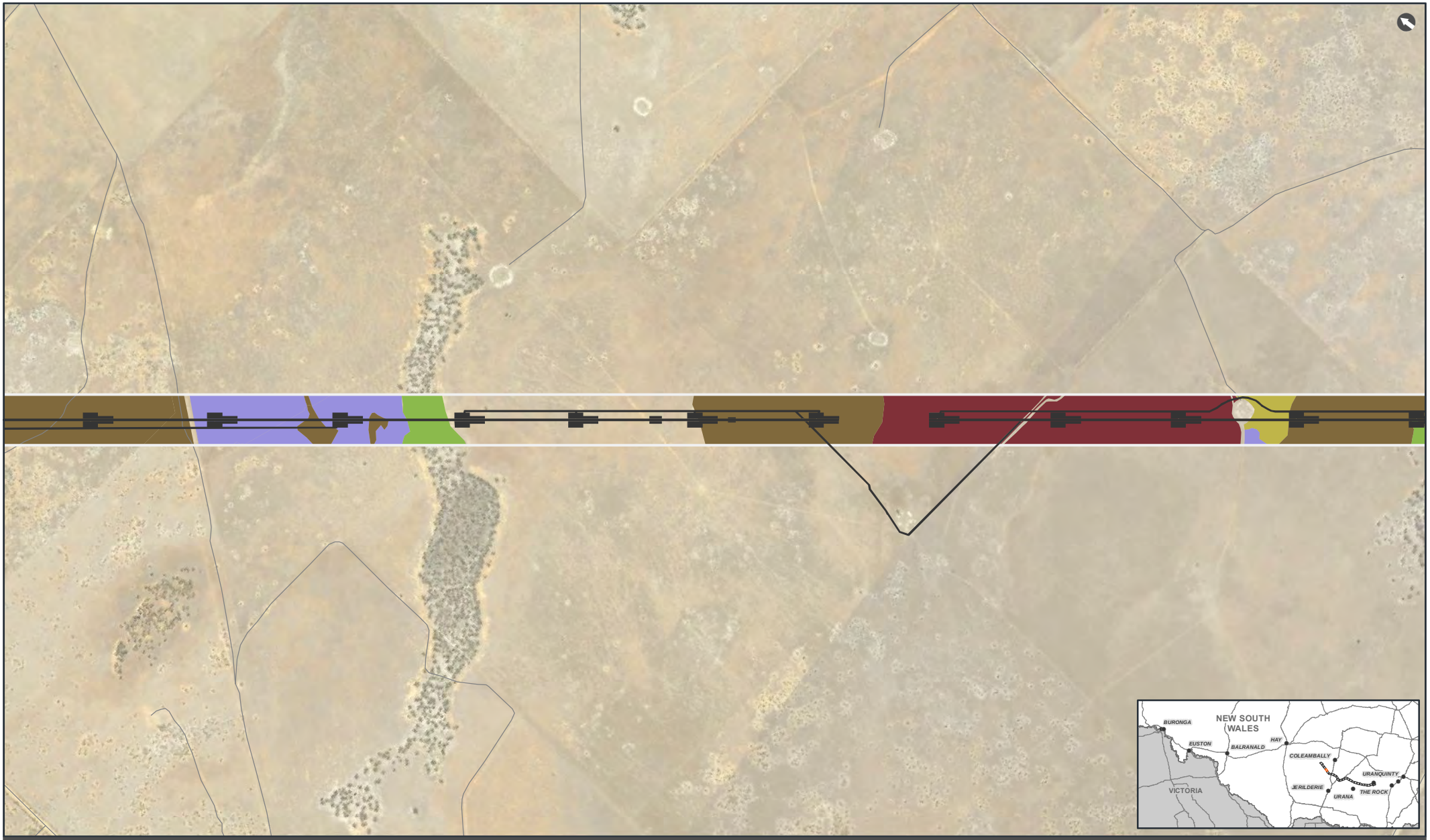
- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area

BDAR - Figure E-3-1c

Indirect Impacts on Little Eagle

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

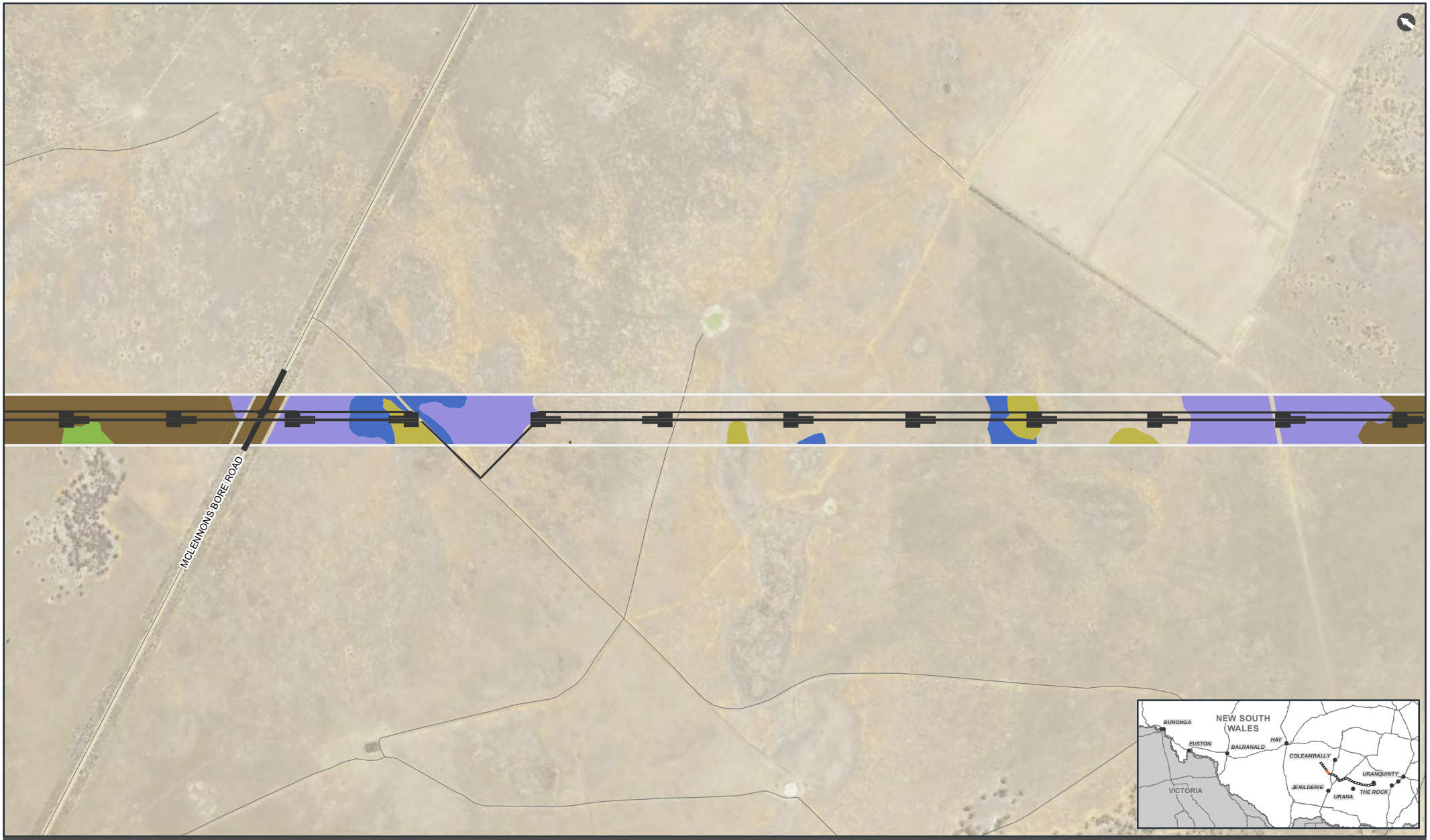
- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- PCT13 - Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Derived
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Mod-good
- PCT46 - Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion | Mod-good

BDAR - Figure E-3-1d

Indirect Impacts on Little Eagle

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure E-3-1e

Indirect Impacts on Little Eagle

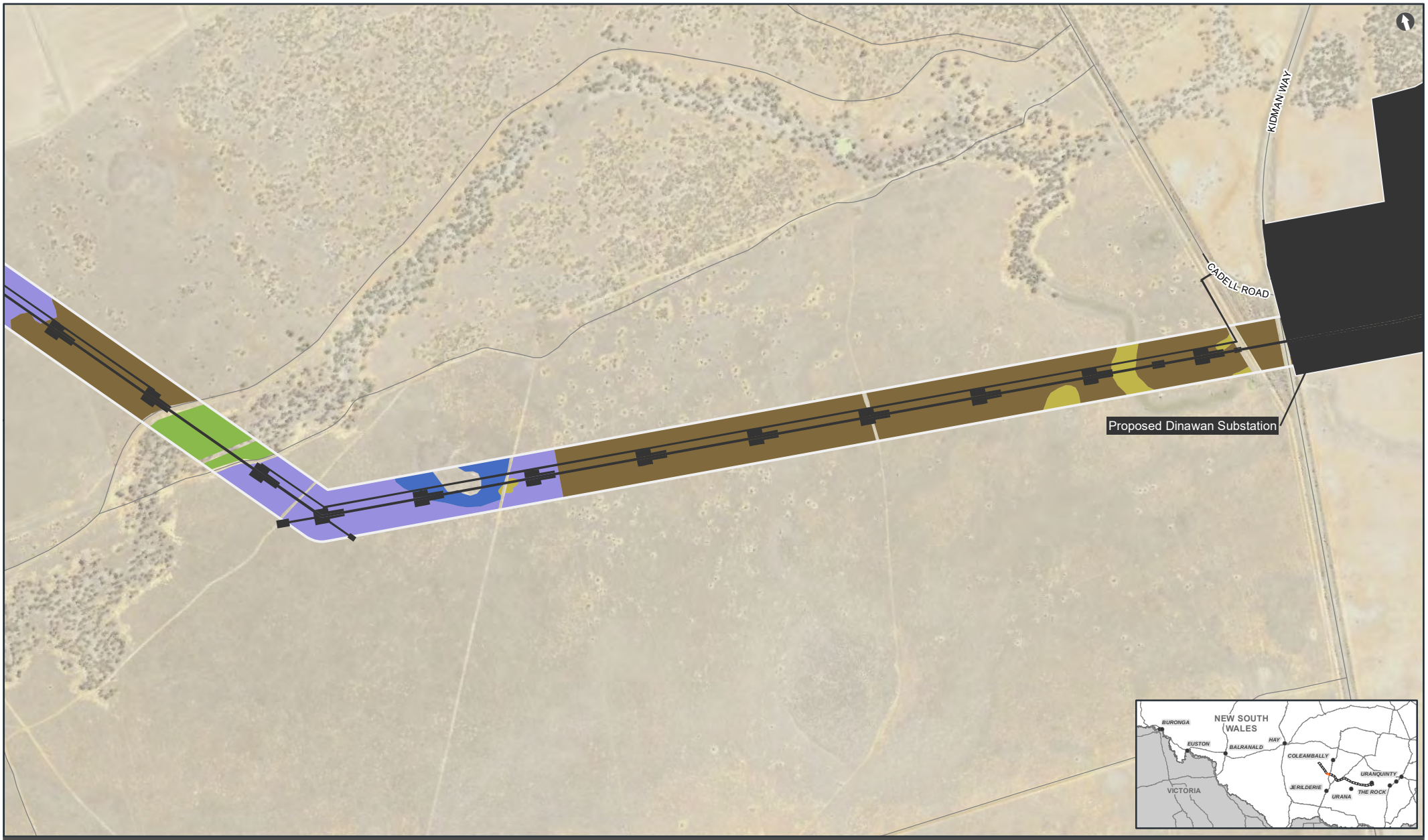
Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area

- PCT13 - Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT216 - Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion | Mod-good
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Derived
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Mod-good

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure E-3-1f

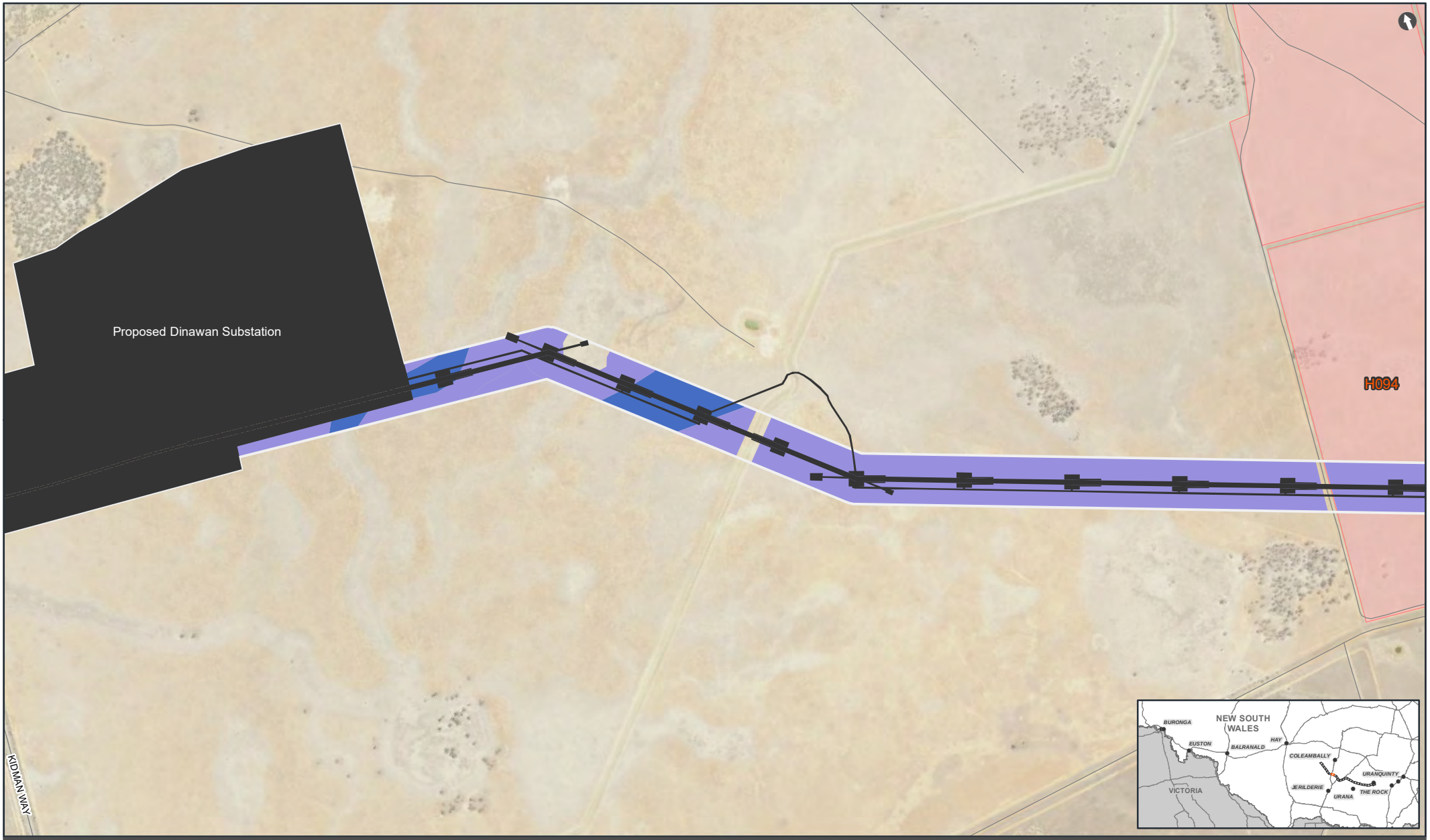
Indirect Impacts on Little Eagle

Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- PCT13 - Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT216 - Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion | Mod-good
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Derived
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Mod-good

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Holdings - No Access
- Biodiversity Study Area
- PCT216 - Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion | Mod-good
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Derived

BDAR - Figure E-3-1g

Indirect Impacts on Little Eagle

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure E-3-1h

Indirect Impacts on Little Eagle

Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Holdings - No Access
- Biodiversity Study Area

- PCT15 - Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Derived
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Moderate

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Holdings - No Access
- Biodiversity Study Area
- PCT17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | SVM_Bench
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Derived
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Moderate
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | SVM_Bench

BDAR - Figure E-3-1i

Indirect Impacts on Little Eagle

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Holdings - No Access
- Biodiversity Study Area

- PCT 7 - River Red Gum – Warrego Grass – herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion | SVM_Bench
- PCT11 - River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | SVM_Bench
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | SVM_Bench
- PCT5 - River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion. | Mod-good

BDAR - Figure E-3-1j

Indirect Impacts on Little Eagle

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure E-3-1k

Indirect Impacts on Little Eagle

Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | SVM_Bench
- PCT46 - Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion | Mod-good
- PCT5 - River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion. | Mod-good

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure E-3-1l

Indirect Impacts on Little Eagle

Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- PCT46 - Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion | Mod-good

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Moderate
- PCT46 - Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion | Mod-good

BDAR - Figure E-3-1m

Indirect Impacts on Little Eagle

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure E-3-1n

Indirect Impacts on Little Eagle

Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area

- PCT 7 - River Red Gum – Warrego Grass – herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion | Mod-good
- PCT216 - Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion | Mod-good
- PCT46 - Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion | Mod-good

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- PCT46 - Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion | Mod-good

BDAR - Figure E-3-1o

Indirect Impacts on Little Eagle

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Holdings - No Access
- Biodiversity Study Area
- PCT11 - River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT46 - Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion | Mod-good

BDAR - Figure E-3-1p

Indirect Impacts on Little Eagle

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure E-3-1q

Indirect Impacts on Little Eagle

Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- PCT75 - Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion | Mod-good

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure E-3-1r

Indirect Impacts on Little Eagle

Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- PCT75 - Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion | Mod-good
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | Mod-good
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | Moderate
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | SVM_Bench

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area

BDAR - Figure E-3-1s

Indirect Impacts on Little Eagle

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- PCT249 - River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW | Derived
- PCT249 - River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW | Moderate
- PCT249 - River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW | Poor

BDAR - Figure E-3-1t

Indirect Impacts on Little Eagle

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area

BDAR - Figure E-3-1u

Indirect Impacts on Little Eagle

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Source: NSWSS, ESRI, Transgrid, WSP



BDAR - Figure E-3-1v

Indirect Impacts on Little Eagle

Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Holdings - No Access
- Biodiversity Study Area

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure E-3-1w

Indirect Impacts on Little Eagle

Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- PCT75 - Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion | Derived
- PCT75 - Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion | Mod-good
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | Derived
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | Mod-good
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | Moderate

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure E-3-1x

Indirect Impacts on Little Eagle

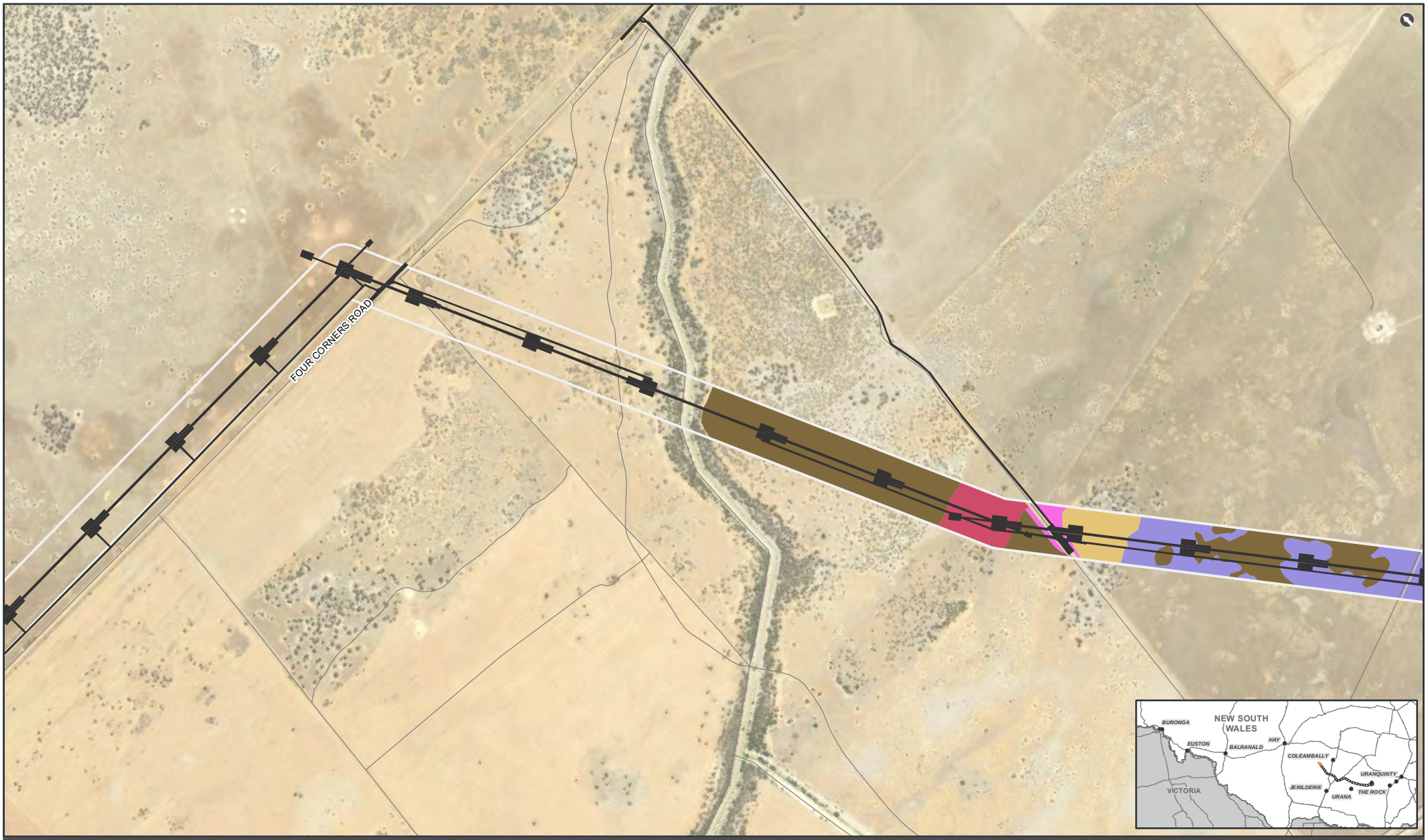
Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area

- PCT75 - Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion | Derived
- PCT75 - Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion | Mod-good
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | Derived
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | Mod-good
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | Moderate

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area

- PCT15 - Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Derived
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Mod-good
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Moderate
- PCT28 - White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone | Mod-good

BDAR - Figure E-3-2a

Indirect Impacts on Major Mitchell Cockatoo

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

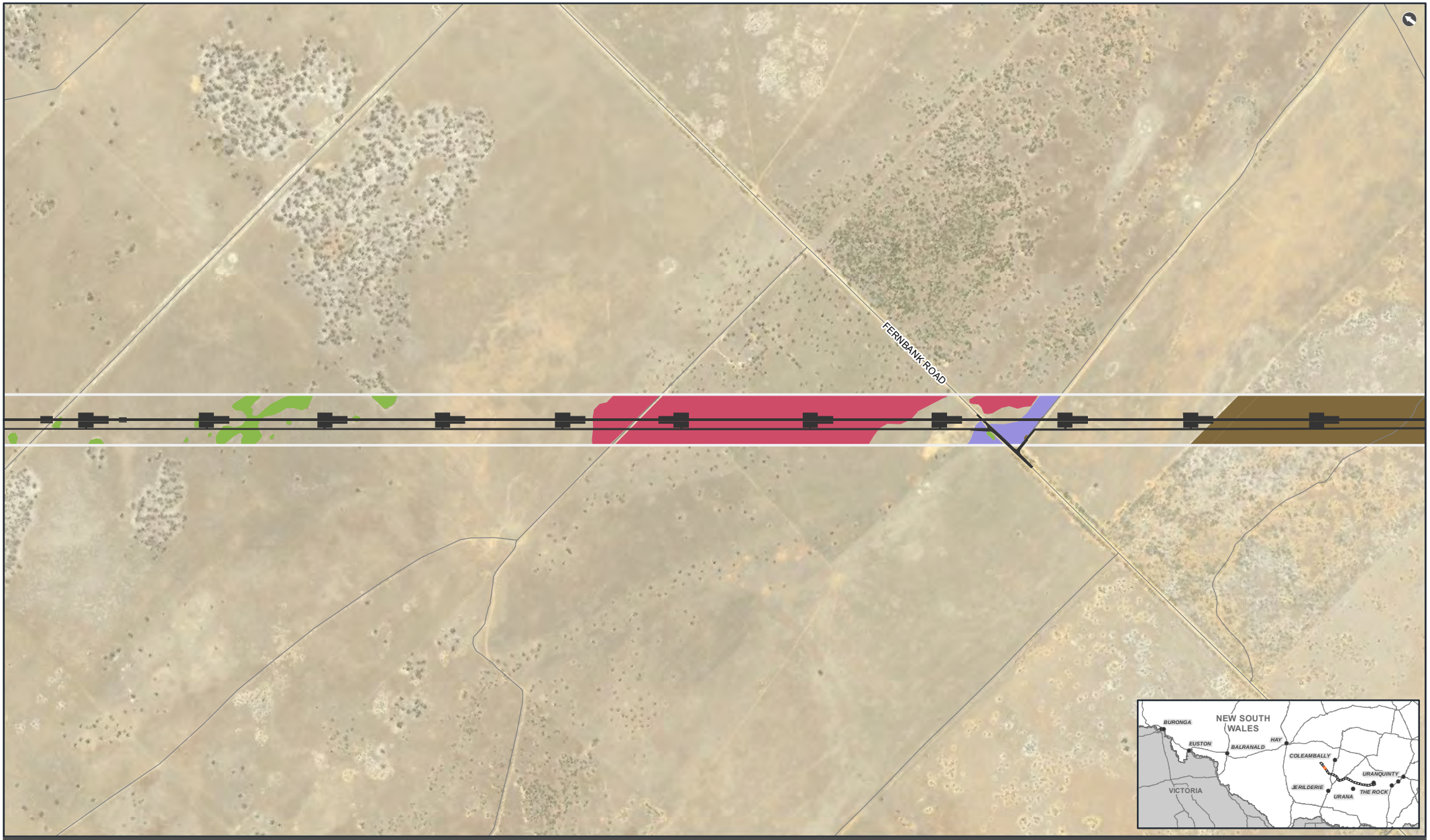
- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- PCT13 - Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Derived
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Mod-good

BDAR - Figure E-3-2b

Indirect Impacts on Major Mitchell Cockatoo

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

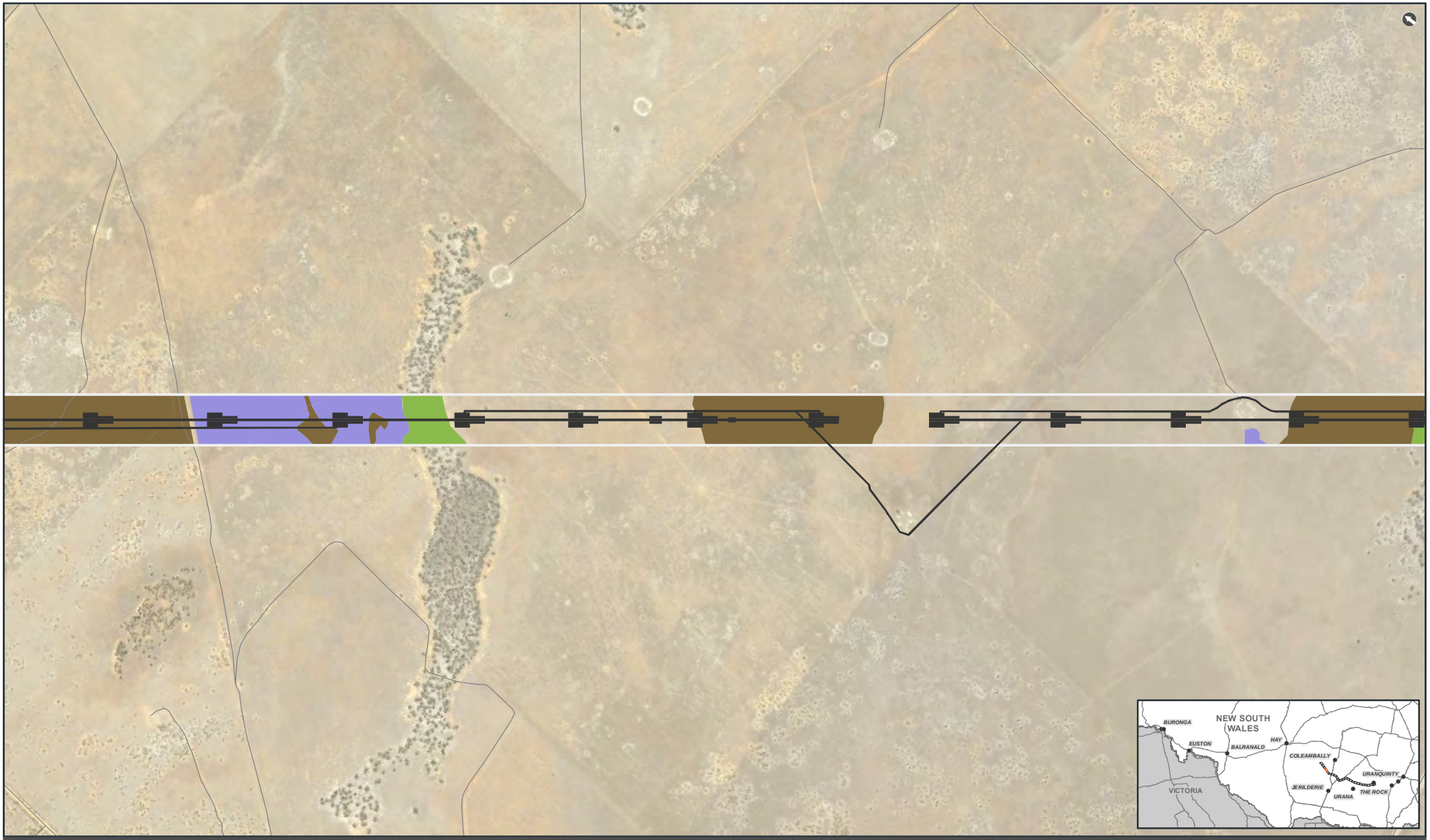
- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- PCT13 - Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Derived
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Mod-good
- PCT28 - White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone | Mod-good

BDAR - Figure E-3-2c

Indirect Impacts on Major Mitchell Cockatoo

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

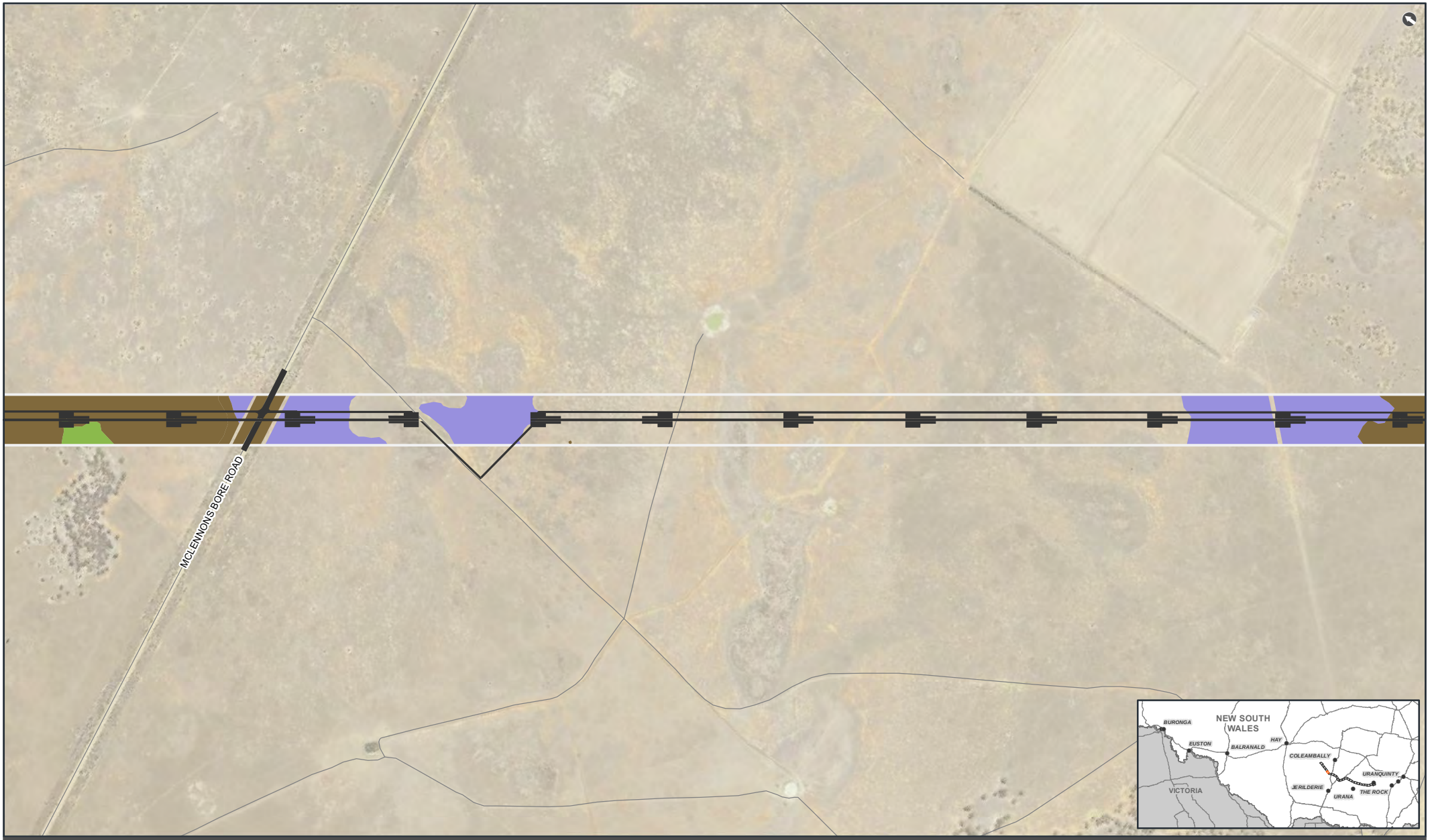
- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- PCT13 - Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Derived
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Mod-good

BDAR - Figure E-3-2d

Indirect Impacts on Major Mitchell Cockatoo

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

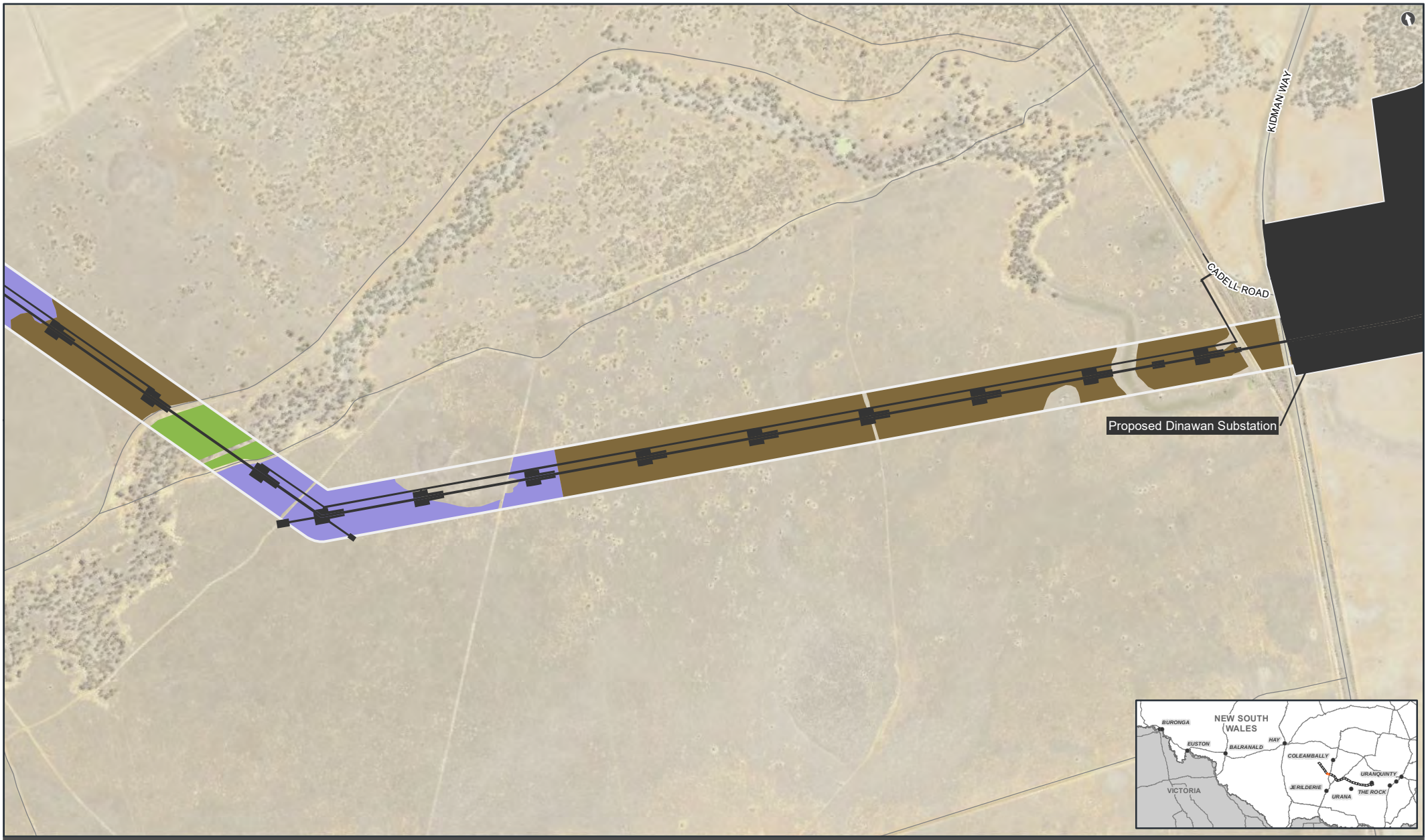
- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- PCT13 - Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Derived
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Mod-good

BDAR - Figure E-3-2e

Indirect Impacts on Major Mitchell Cockatoo

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

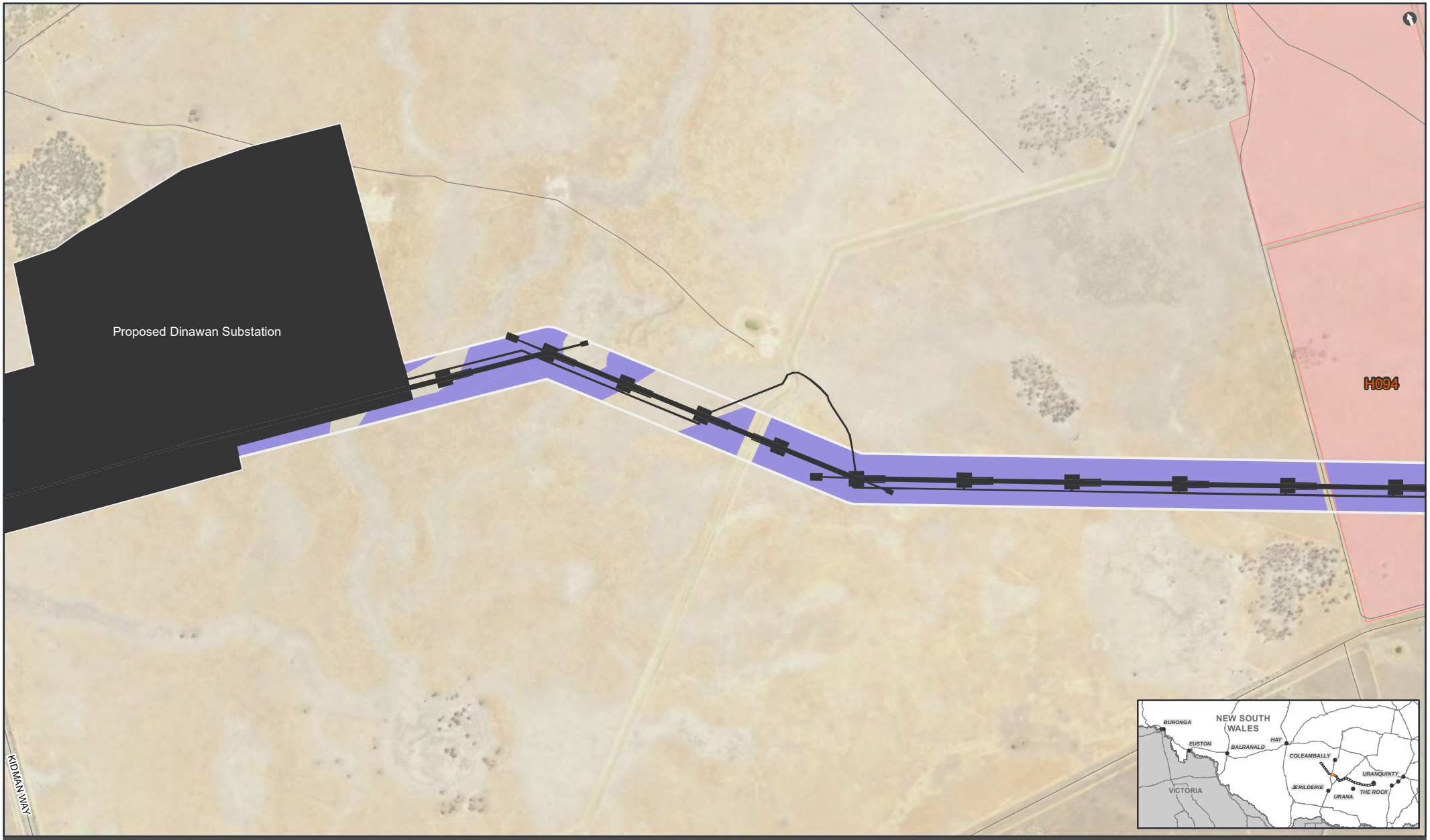
- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- PCT13 - Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Derived
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Mod-good

BDAR - Figure E-3-2f

Indirect Impacts on Major Mitchell Cockatoo

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Holdings - No Access
- Biodiversity Study Area
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Derived

BDAR - Figure E-3-2g

Indirect Impacts on Major Mitchell Cockatoo

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Holdings - No Access
- Biodiversity Study Area
- PCT15 - Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Derived
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Moderate

BDAR - Figure E-3-2h

Indirect Impacts on Major Mitchell Cockatoo

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Holdings - No Access
- Biodiversity Study Area
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Derived
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Moderate
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | SVM_Bench

BDAR - Figure E-3-2i

Indirect Impacts on Major Mitchell Cockatoo

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Holdings - No Access
- Biodiversity Study Area
- PCT 7 - River Red Gum – Warrego Grass – herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion | SVM_Bench
- PCT11 - River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | SVM_Bench

BDAR - Figure E-3-2j

Indirect Impacts on Major Mitchell Cockatoo

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

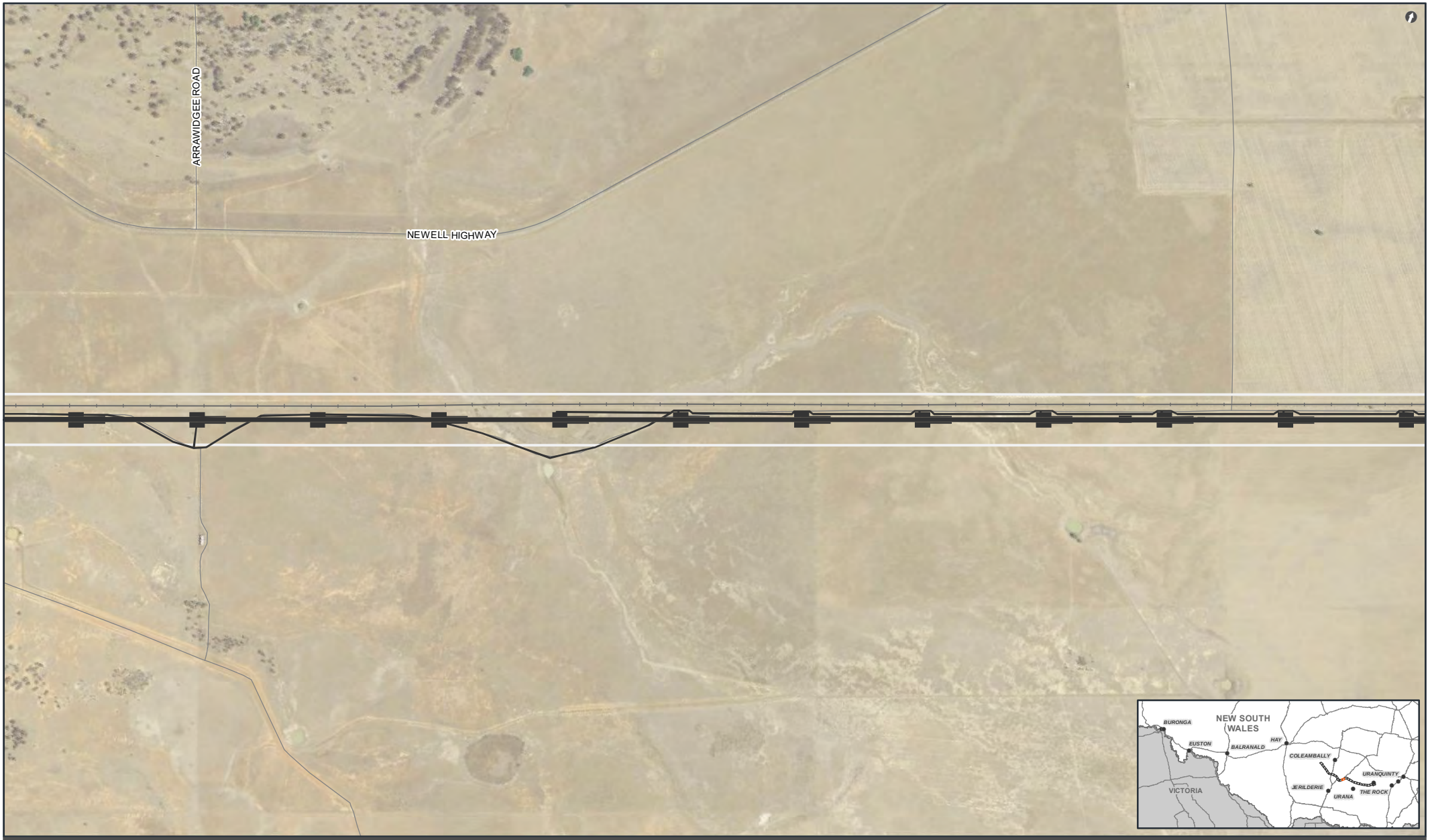
- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | SVM_Bench

BDAR - Figure E-3-2k

Indirect Impacts on Major Mitchell Cockatoo

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure E-3-2l

Indirect Impacts on Major Mitchell Cockatoo

Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

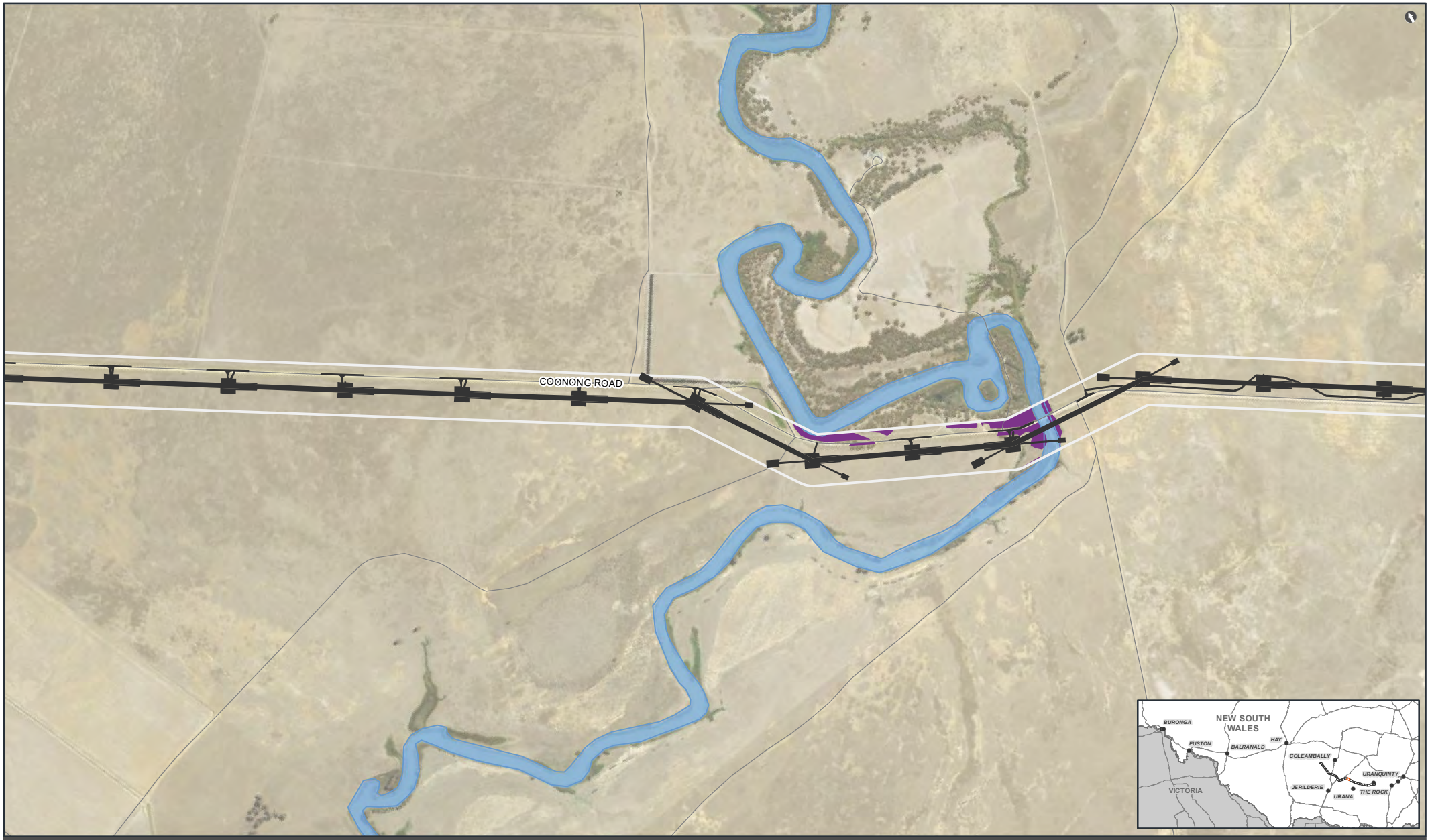
- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Moderate

BDAR - Figure E-3-2m

Indirect Impacts on Major Mitchell Cockatoo

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- PCT 7 - River Red Gum – Warrego Grass – herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion | Mod-good

BDAR - Figure E-3-2n

Indirect Impacts on Major Mitchell Cockatoo

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

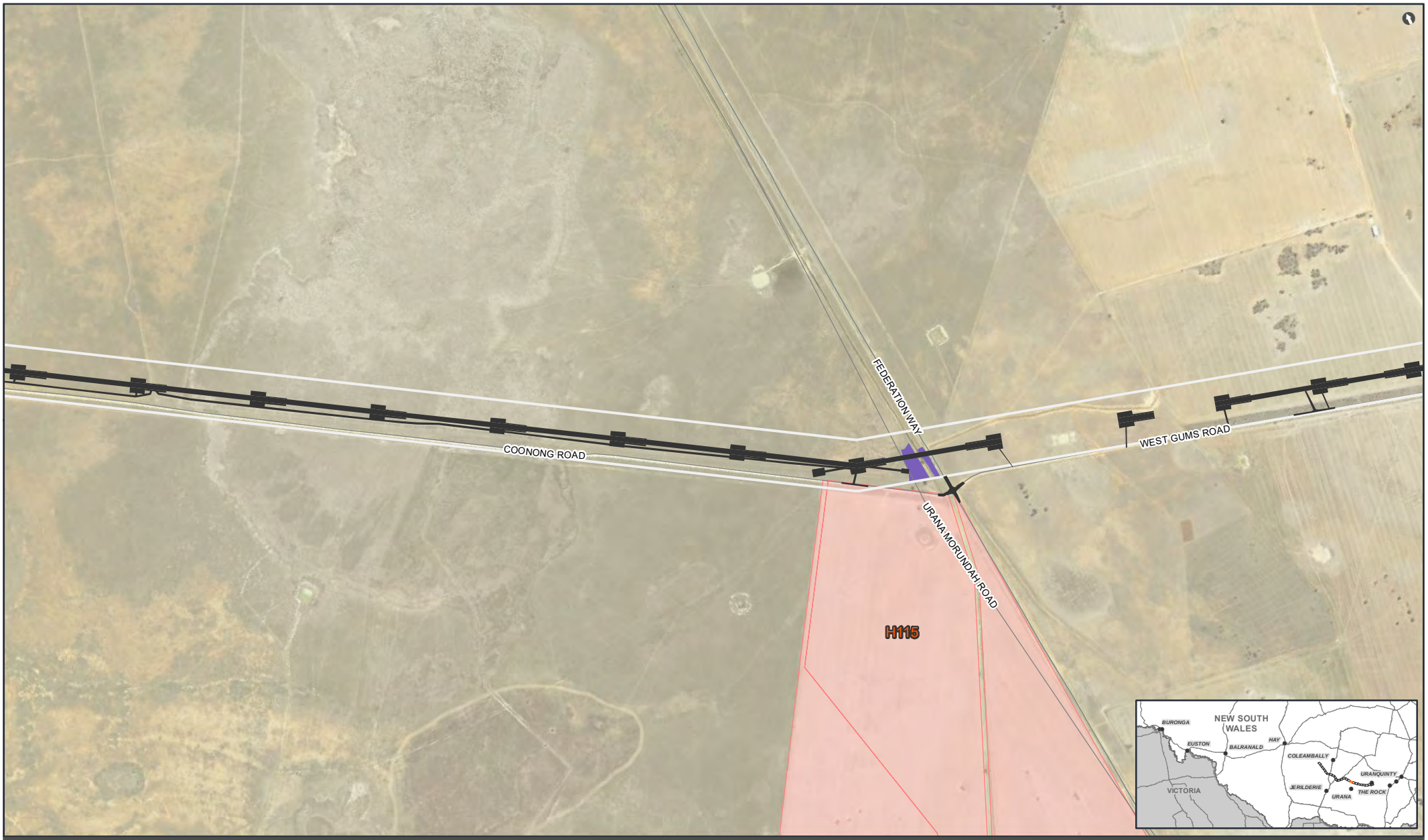
- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area

BDAR - Figure E-3-2o

Indirect Impacts on Major Mitchell Cockatoo

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Holdings - No Access
- Biodiversity Study Area

PCT11 - River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good

BDAR - Figure E-3-2p

Indirect Impacts on Major Mitchell Cockatoo

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Source: NSWSS, ESRI, Transgrid, WSP



0 0.25 0.5 KM

Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area

BDAR - Figure E-3-2q

Indirect Impacts on Major Mitchell Cockatoo

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Source: NSWSS, ESRI, Transgrid, WSP



0 0.25 0.5 KM

BDAR - Figure E-3-2r

Indirect Impacts on Major Mitchell Cockatoo

Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | Mod-good
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | Moderate
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | SVM_Bench

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- PCT249 - River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW | Moderate
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | Derived
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | Moderate

BDAR - Figure E-3-2s

Indirect Impacts on Major Mitchell Cockatoo

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Source: NSWSS, ESRI, Transgrid, WSP



0 0.25 0.5 KM

Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- PCT249 - River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW | Derived
- PCT249 - River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW | Moderate
- PCT249 - River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW | Poor

BDAR - Figure E-3-2t

Indirect Impacts on Major Mitchell Cockatoo

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Source: NSWSS, ESRI, Transgrid, WSP



0 0.25 0.5 KM

Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area

BDAR - Figure E-3-2u

Indirect Impacts on Major Mitchell Cockatoo

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Source: NSWSS, ESRI, Transgrid, WSP



0 0.25 0.5 KM

Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Holdings - No Access
- Biodiversity Study Area
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | SVM_Bench

BDAR - Figure E-3-2v

Indirect Impacts on Major Mitchell Cockatoo

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | Derived
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | Mod-good
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | Moderate

BDAR - Figure E-3-2w

Indirect Impacts on Major Mitchell Cockatoo

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Source: NSWSS, ESRI, Transgrid, WSP



0 0.25 0.5 KM

Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation Sites
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | Derived
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | Mod-good
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | Moderate

BDAR - Figure E-3-2x

Indirect Impacts on Major Mitchell Cockatoo

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Source: NSWSS, ESRI, Transgrid, WSP



0 0.25 0.5 KM

BDAR - Figure E-3-3a

Indirect Impacts on Regent Parrot

Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- PCT15 - Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure E-3-3b

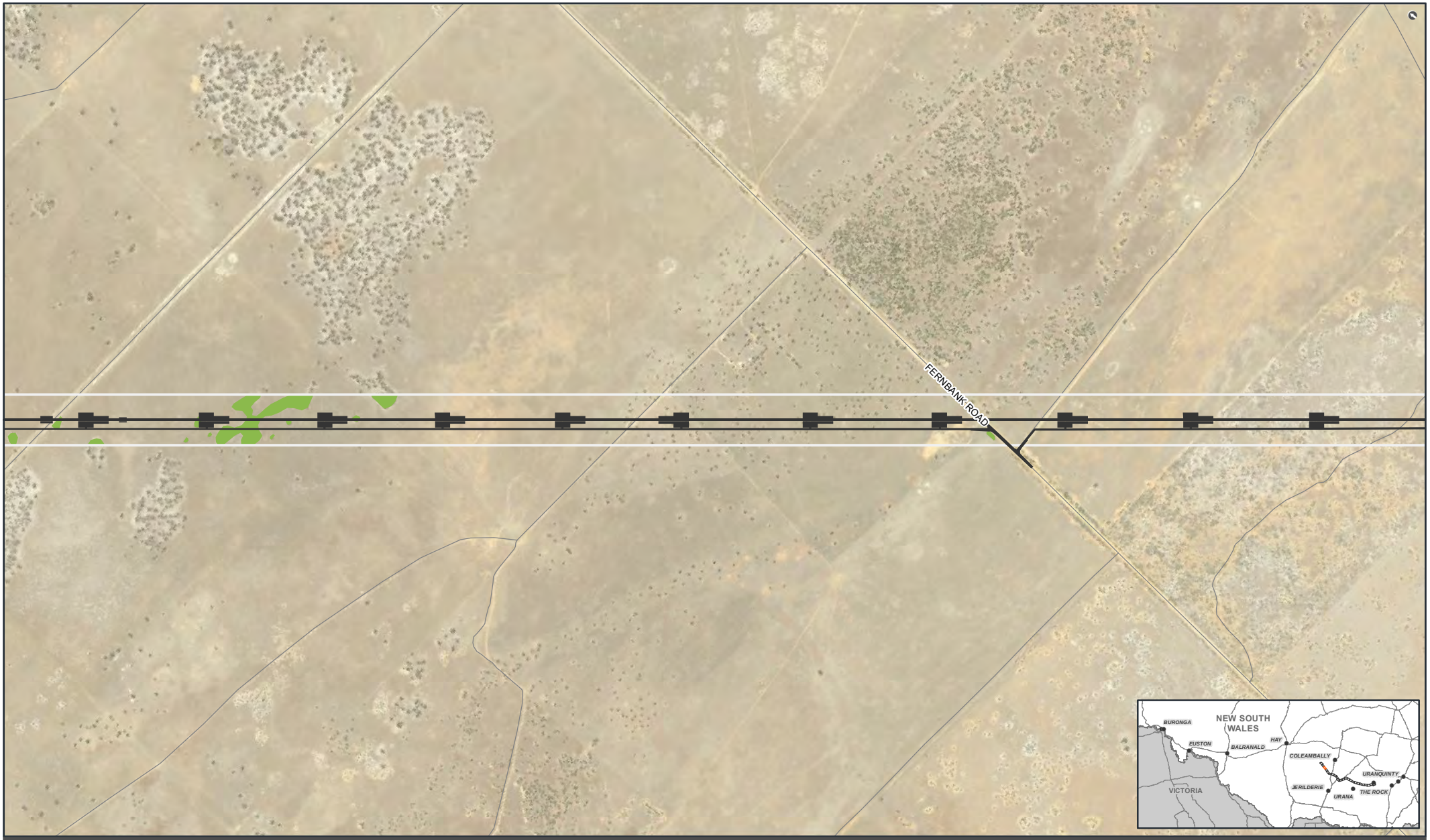
Indirect Impacts on Regent Parrot

Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- PCT13 - Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure E-3-3c

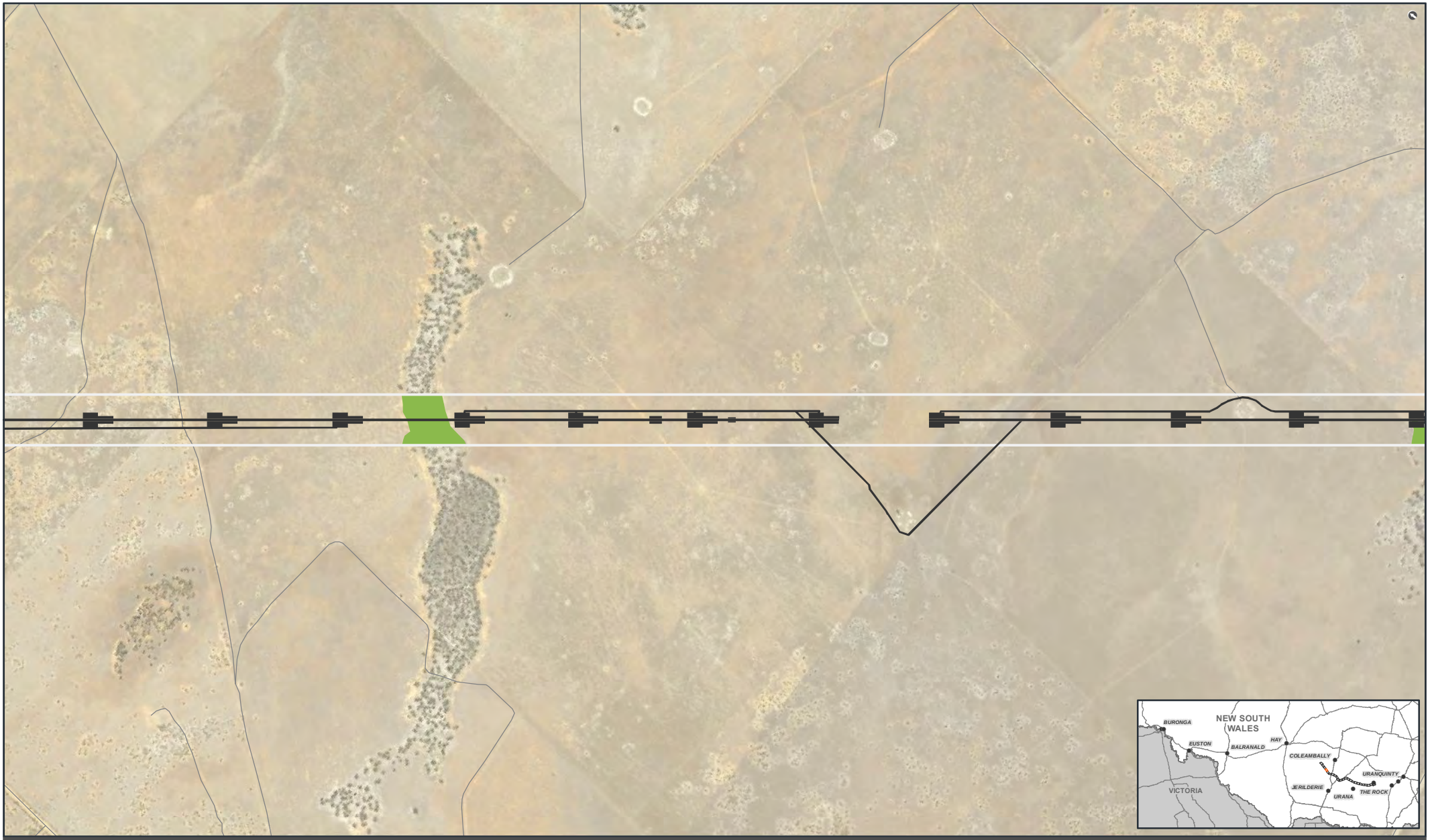
Indirect Impacts on Regent Parrot

Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- PCT13 - Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure E-3-3d

Indirect Impacts on Regent Parrot

Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- PCT13 - Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure E-3-3e

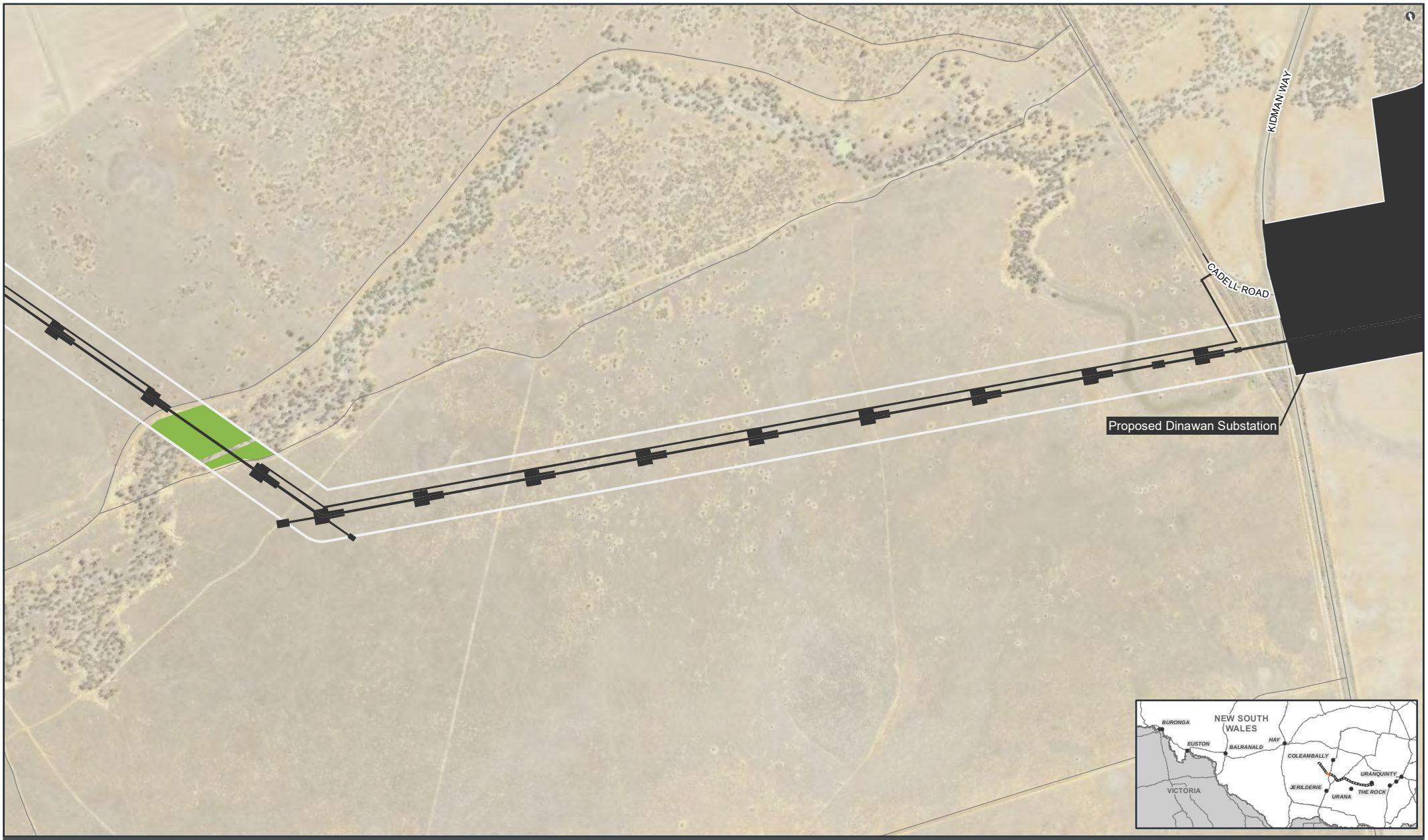
Indirect Impacts on Regent Parrot

Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- PCT13 - Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure E-3-3f

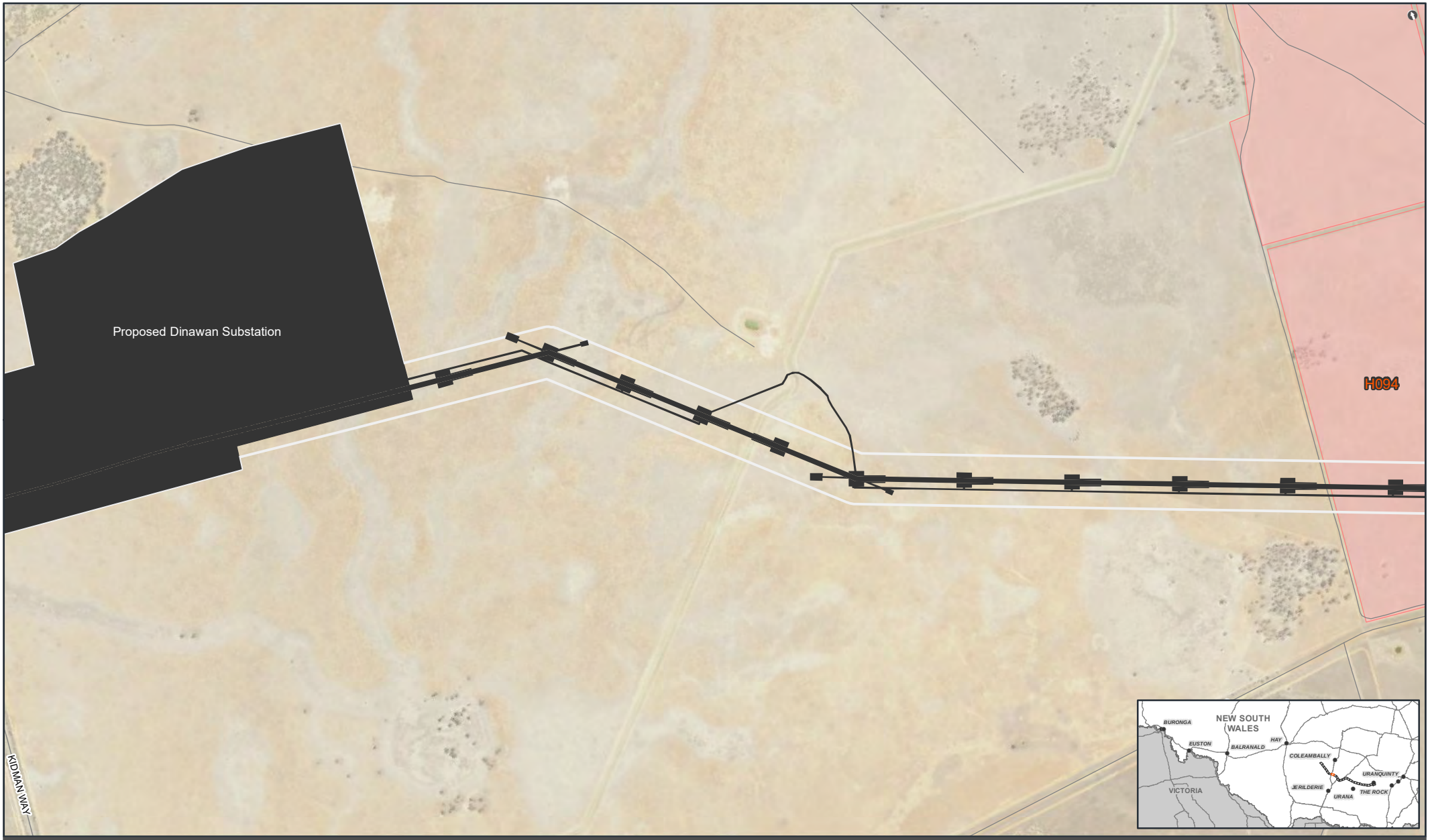
Indirect Impacts on Regent Parrot

Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- PCT13 - Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Waterbody
- Holdings - No Access
- Biodiversity Study Area

BDAR - Figure E-3-3g

Indirect Impacts on Regent Parrot

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure E-3-3h

Indirect Impacts on Regent Parrot

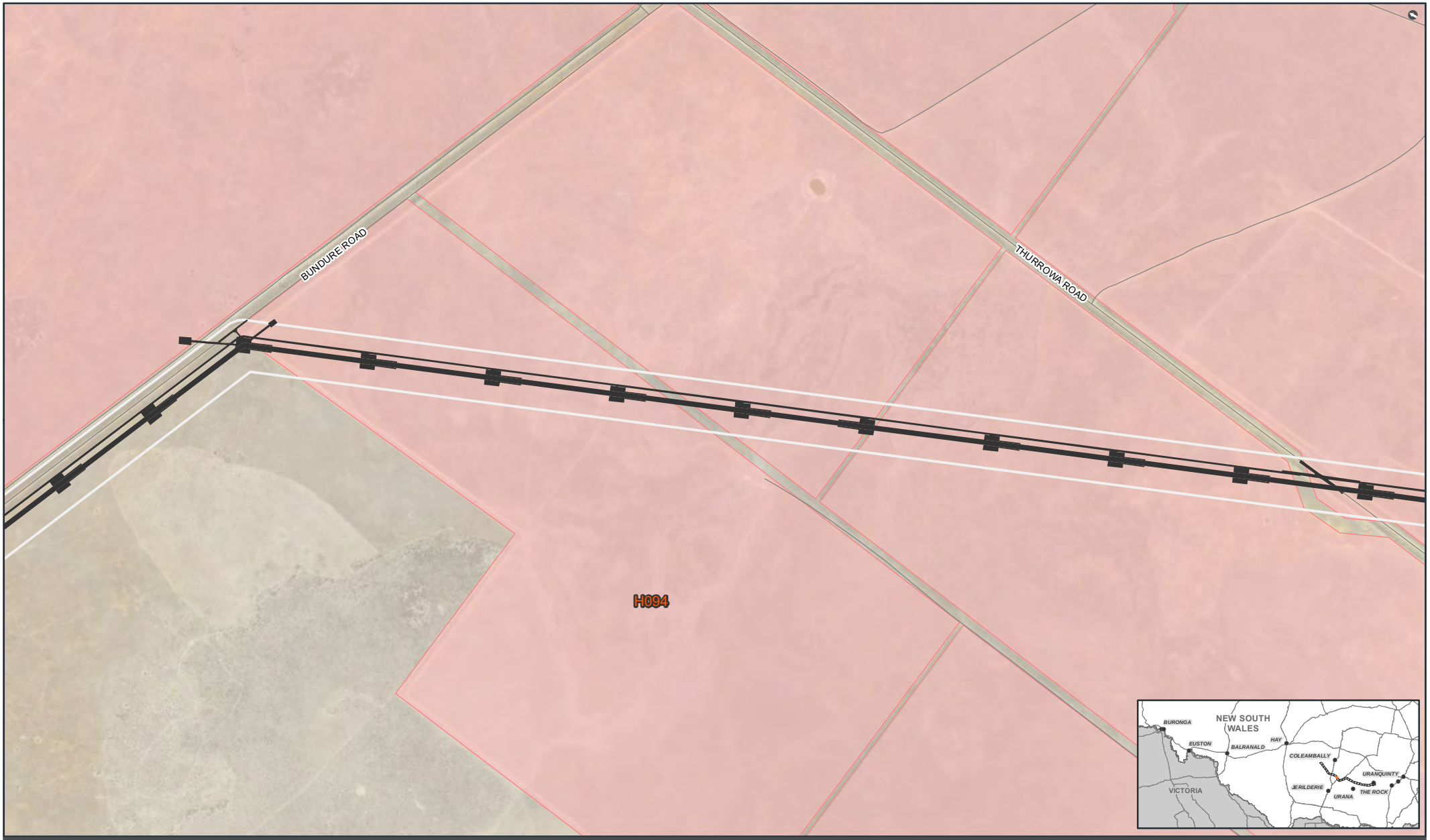
Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Waterbody
- Holdings - No Access
- Biodiversity Study Area

PCT15 - Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Waterbody
- Holdings - No Access
- Biodiversity Study Area

BDAR - Figure E-3-3i

Indirect Impacts on Regent Parrot

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure E-3-3j

Indirect Impacts on Regent Parrot

Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Waterbody
- Holdings - No Access
- Biodiversity Study Area
- PCT11 - River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure E-3-3k

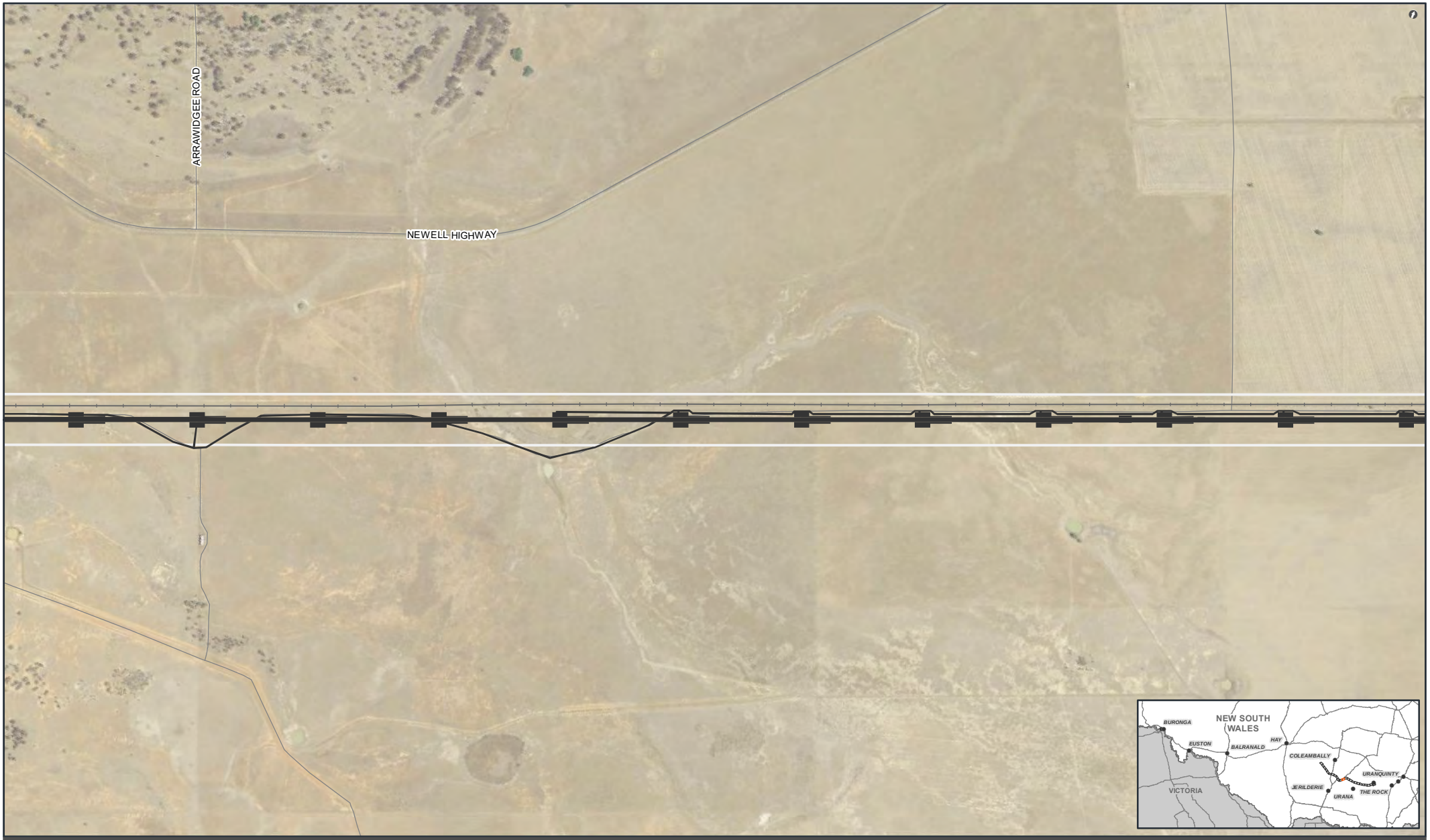
Indirect Impacts on Regent Parrot

Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure E-3-3l

Indirect Impacts on Regent Parrot

Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure E-3-3m

Indirect Impacts on Regent Parrot

Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure E-3-3n

Indirect Impacts on Regent Parrot

Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure E-3-3o

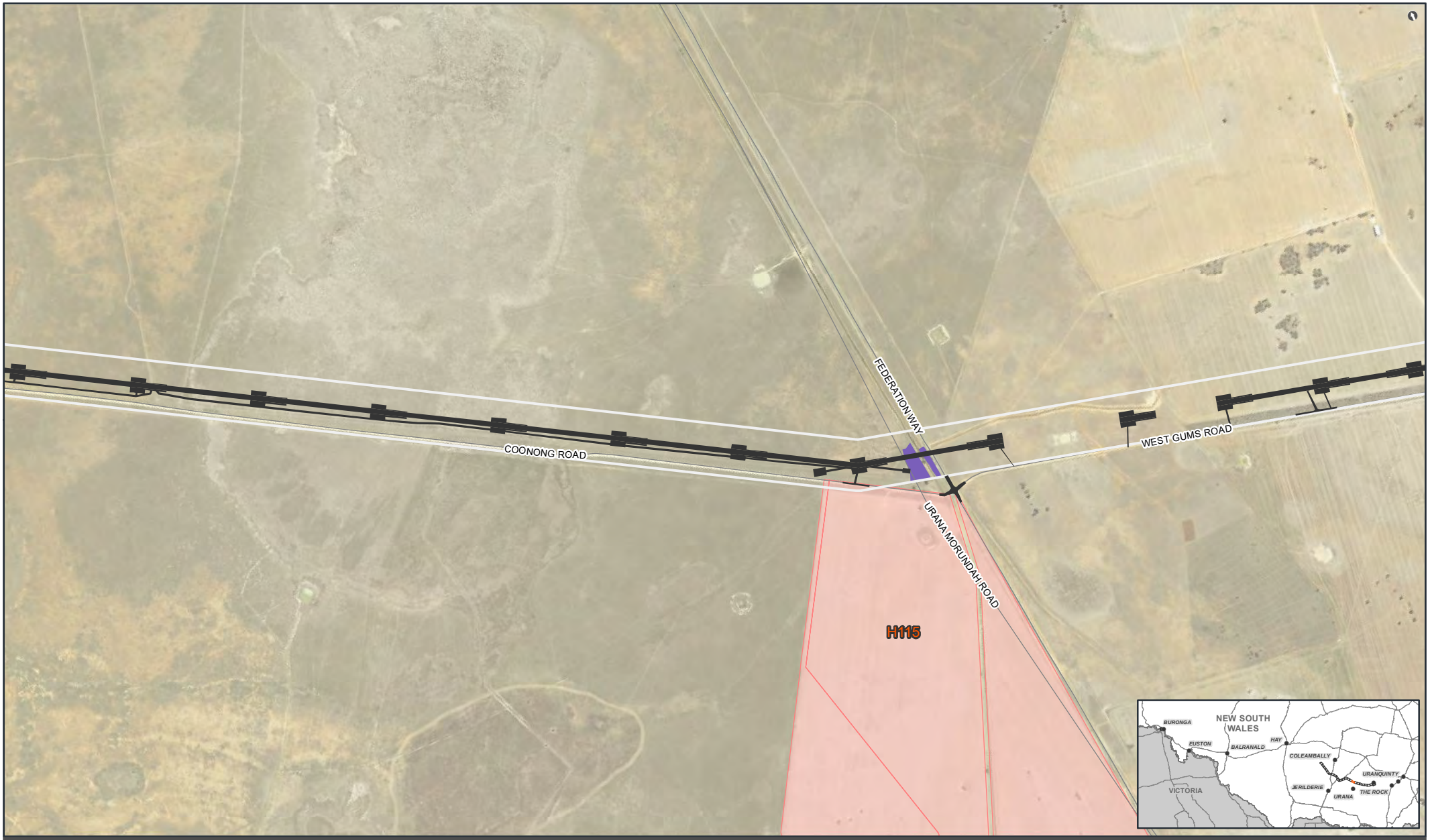
Indirect Impacts on Regent Parrot

Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure E-3-3p

Indirect Impacts on Regent Parrot

Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Waterbody
- Holdings - No Access
- Biodiversity Study Area
- PCT11 - River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area

BDAR - Figure E-3-3q

Indirect Impacts on Regent Parrot

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure E-3-3r

Indirect Impacts on Regent Parrot

Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure E-3-3s

Indirect Impacts on Regent Parrot

Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area

BDAR - Figure E-3-3t

Indirect Impacts on Regent Parrot

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area

BDAR - Figure E-3-3u

Indirect Impacts on Regent Parrot

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Source: NSWSS, ESRI, Transgrid, WSP



Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Waterbody
- Holdings - No Access
- Biodiversity Study Area

BDAR - Figure E-3-3v

Indirect Impacts on Regent Parrot

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure E-3-3w

Indirect Impacts on Regent Parrot

Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

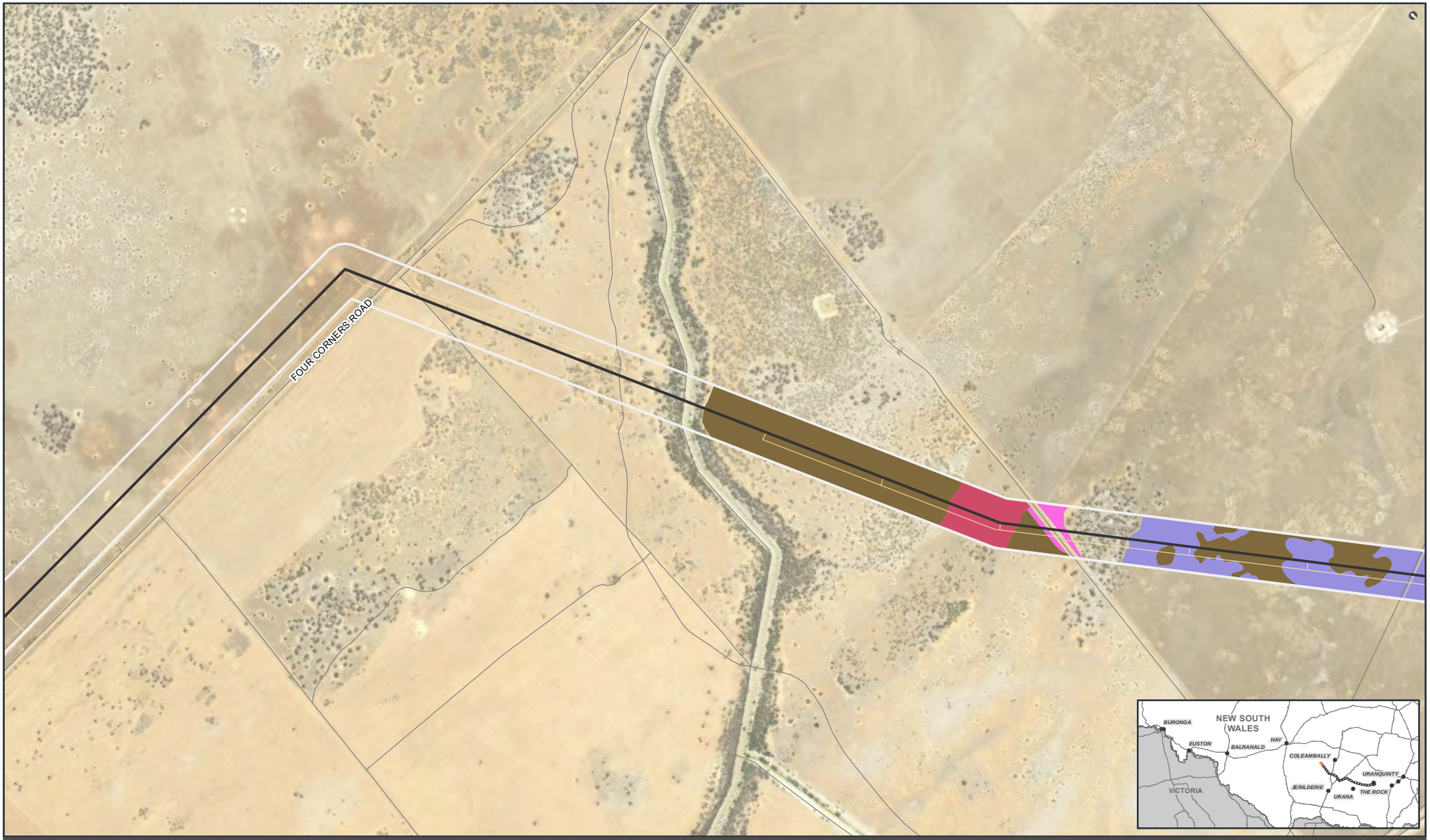
- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area

BDAR - Figure E-3-3x

Indirect Impacts on Regent Parrot

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure E-3-4a

Indirect Impacts on Superb Parrot

Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Derived
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Mod-good
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Moderate
- PCT28 - White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone | Mod-good

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure E-3-4b

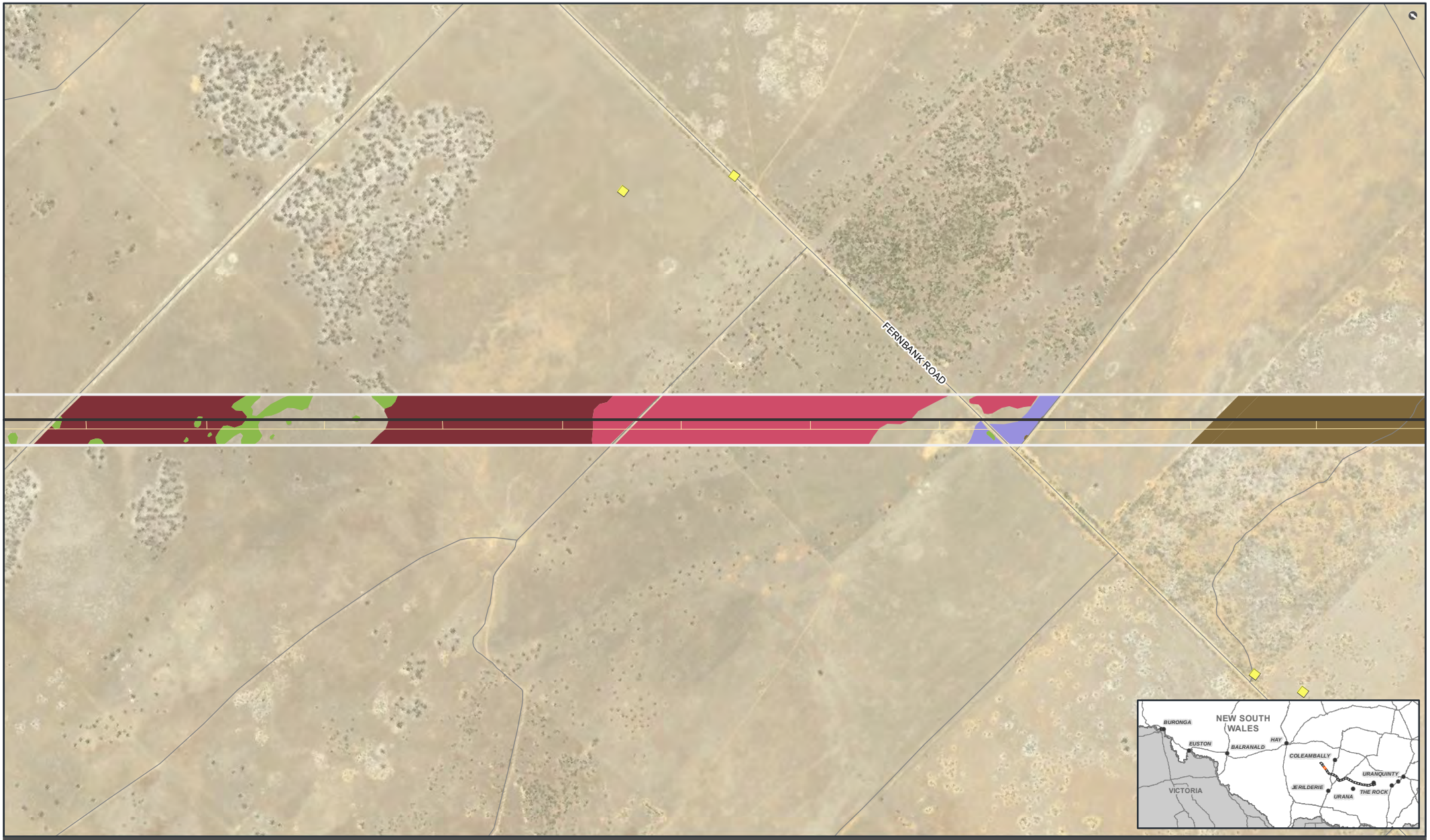
Indirect Impacts on Superb Parrot

Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- PCT13 - Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Derived
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Mod-good
- PCT46 - Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion | Mod-good

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure E-3-4c

Indirect Impacts on Superb Parrot

Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area

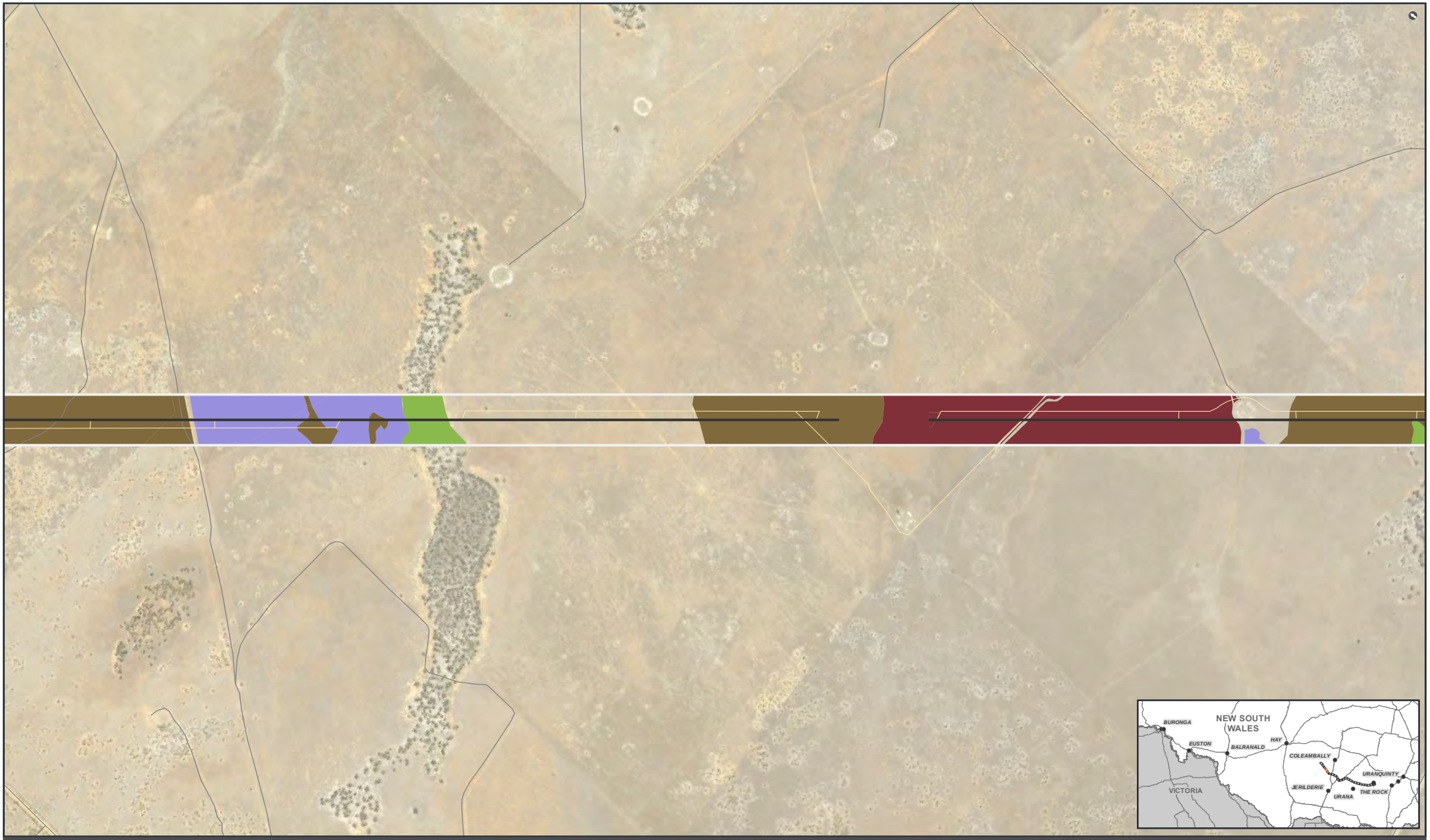
Threatened Fauna Species

- Superb Parrot - Polytelis swainsonii

- PCT13 - Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Derived
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Mod-good
- PCT28 - White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone | Mod-good
- PCT46 - Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion | Mod-good

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure E-3-4d

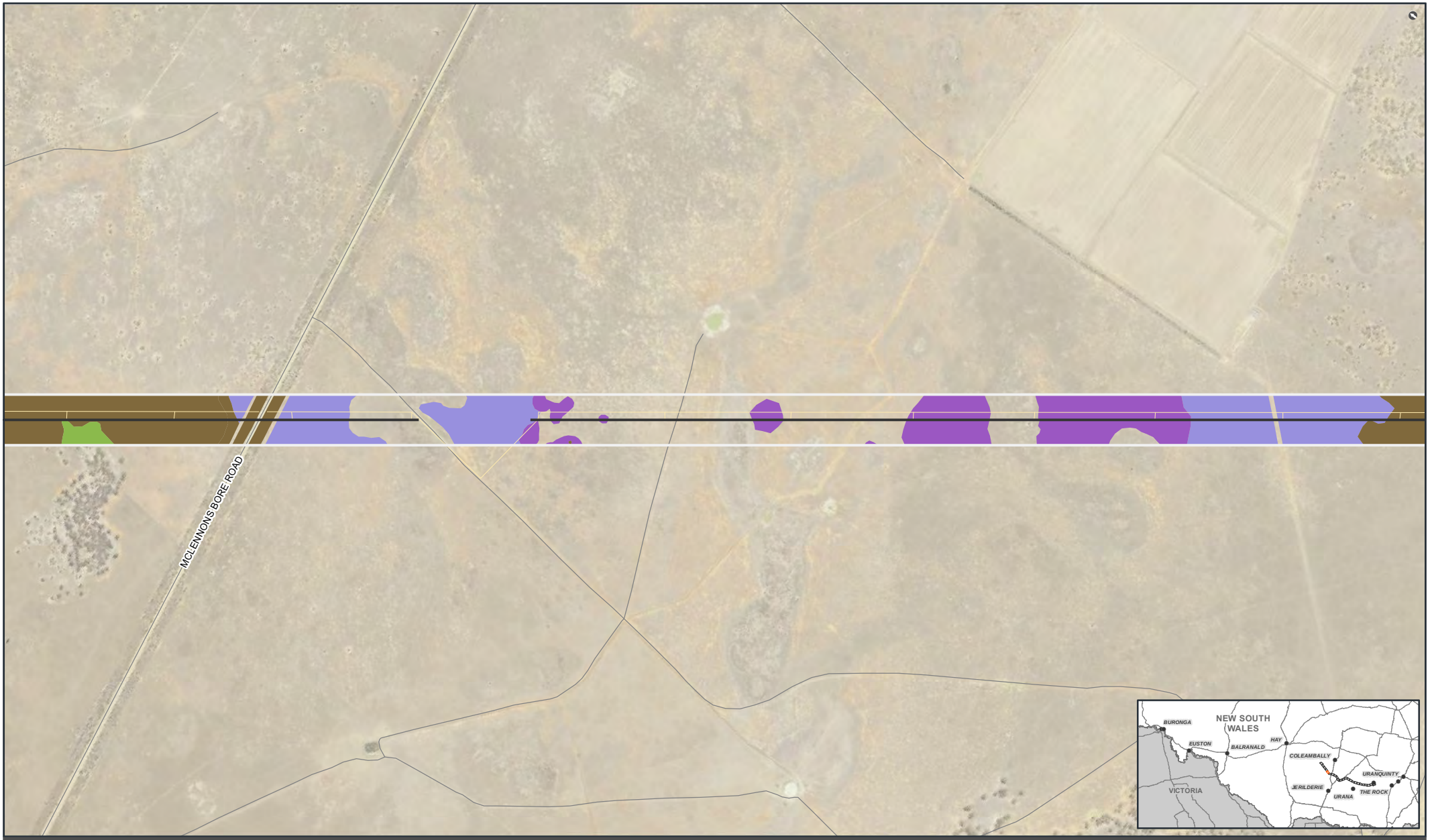
Indirect Impacts on Superb Parrot

Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- PCT13 - Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Derived
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Mod-good
- PCT46 - Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion | Mod-good

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure E-3-4e

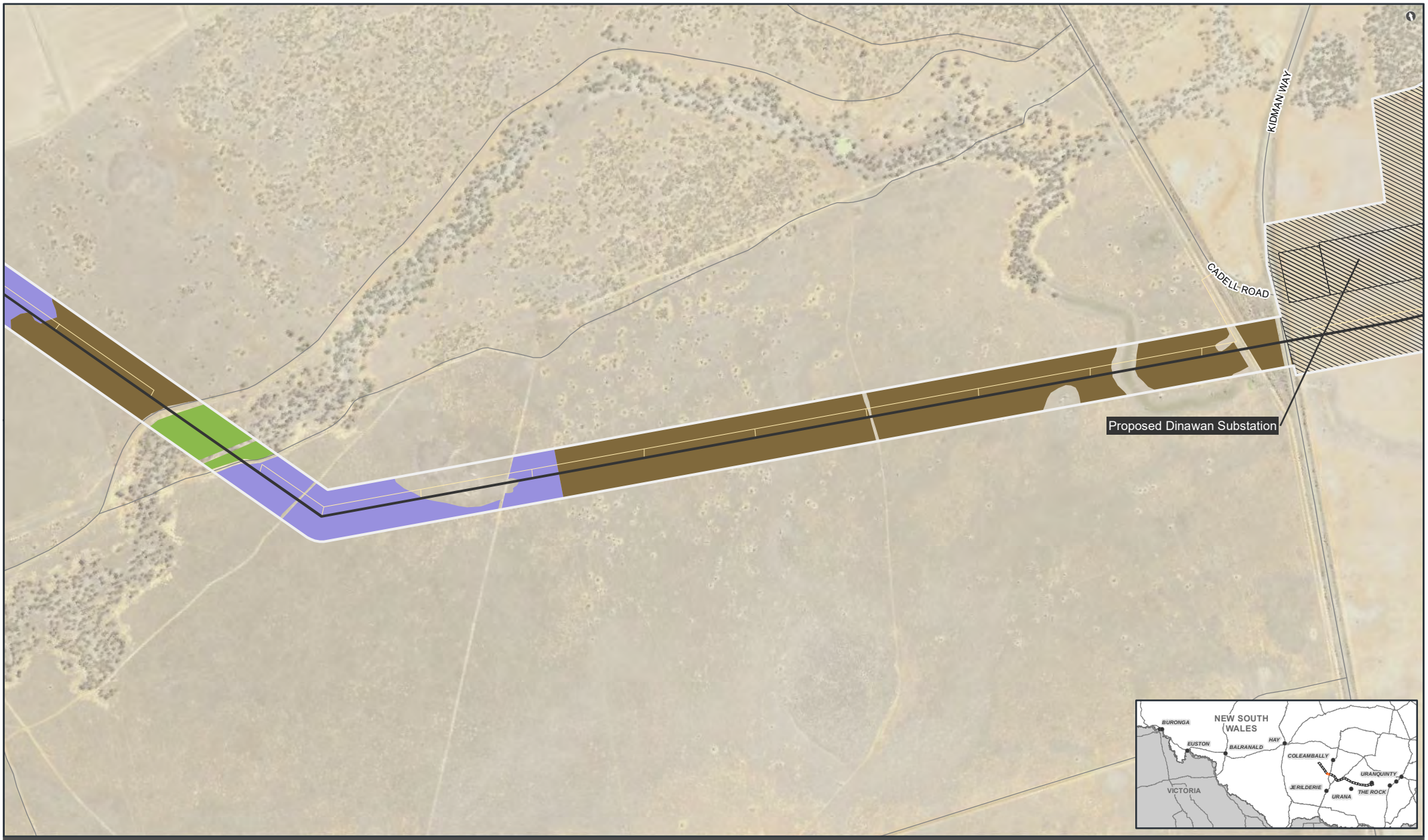
Indirect Impacts on Superb Parrot

Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- PCT13 - Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Derived
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Mod-good
- PCT45 - Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion | Mod-good

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure E-3-4f

Indirect Impacts on Superb Parrot

Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- PCT13 - Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Derived
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Mod-good

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure E-3-4g

Indirect Impacts on Superb Parrot

Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Waterbody
- Holdings - No Access
- Biodiversity Study Area
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Derived
- PCT45 - Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion | SVM_Bench

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure E-3-4h

Indirect Impacts on Superb Parrot

Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Waterbody
- Holdings - No Access
- Biodiversity Study Area
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Derived
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Moderate

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure E-3-4i

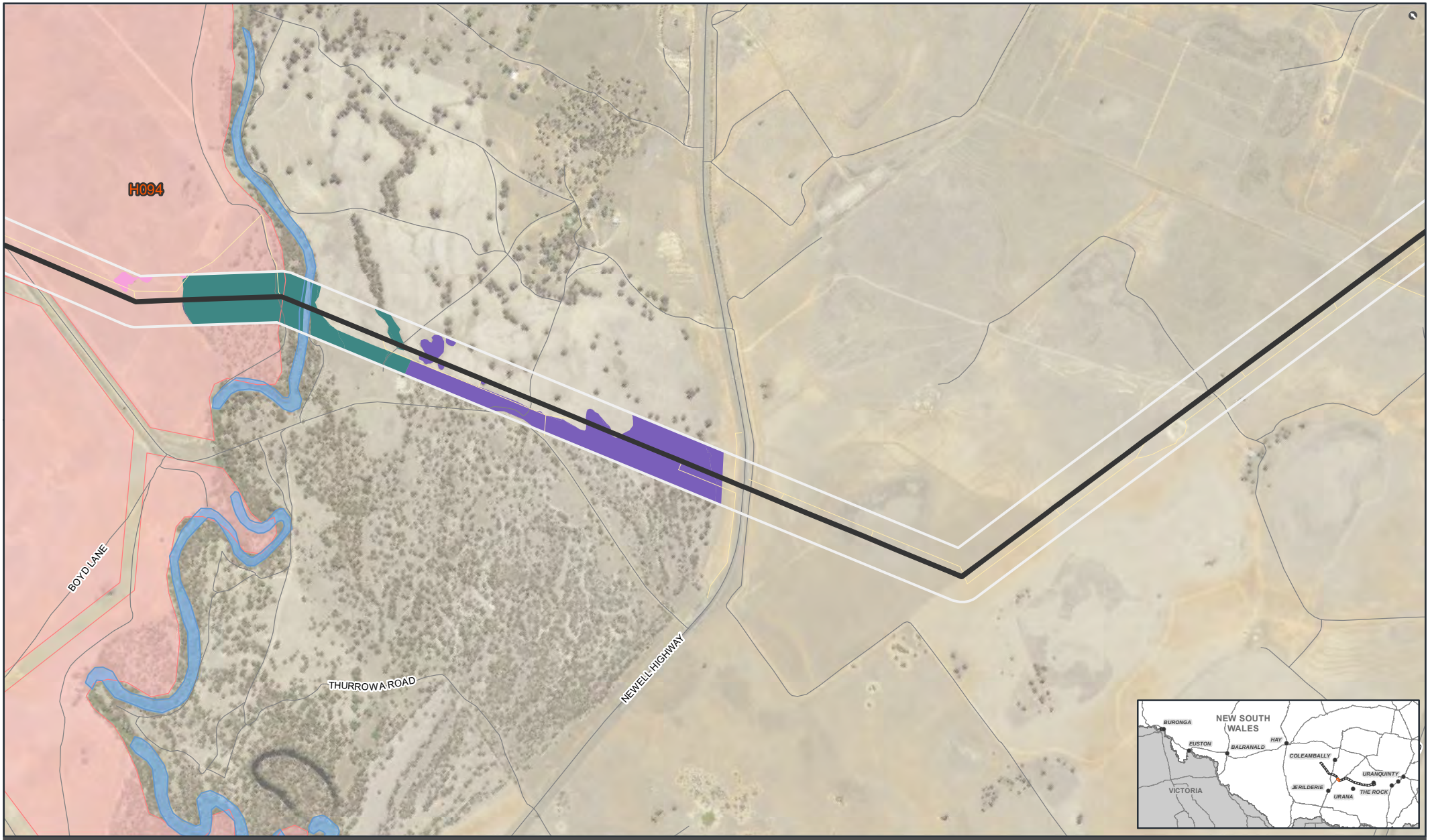
Indirect Impacts on Superb Parrot

Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Waterbody
- Holdings - No Access
- Biodiversity Study Area
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Derived
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Moderate
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | SVM_Bench
- PCT45 - Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion | SVM_Bench

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure E-3-4j

Indirect Impacts on Superb Parrot

Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Waterbody
- Holdings - No Access
- Biodiversity Study Area
- PCT 7 - River Red Gum – Warrego Grass – herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion | SVM_Bench
- PCT11 - River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | SVM_Bench
- PCT5 - River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion. | Mod-good

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure E-3-4k

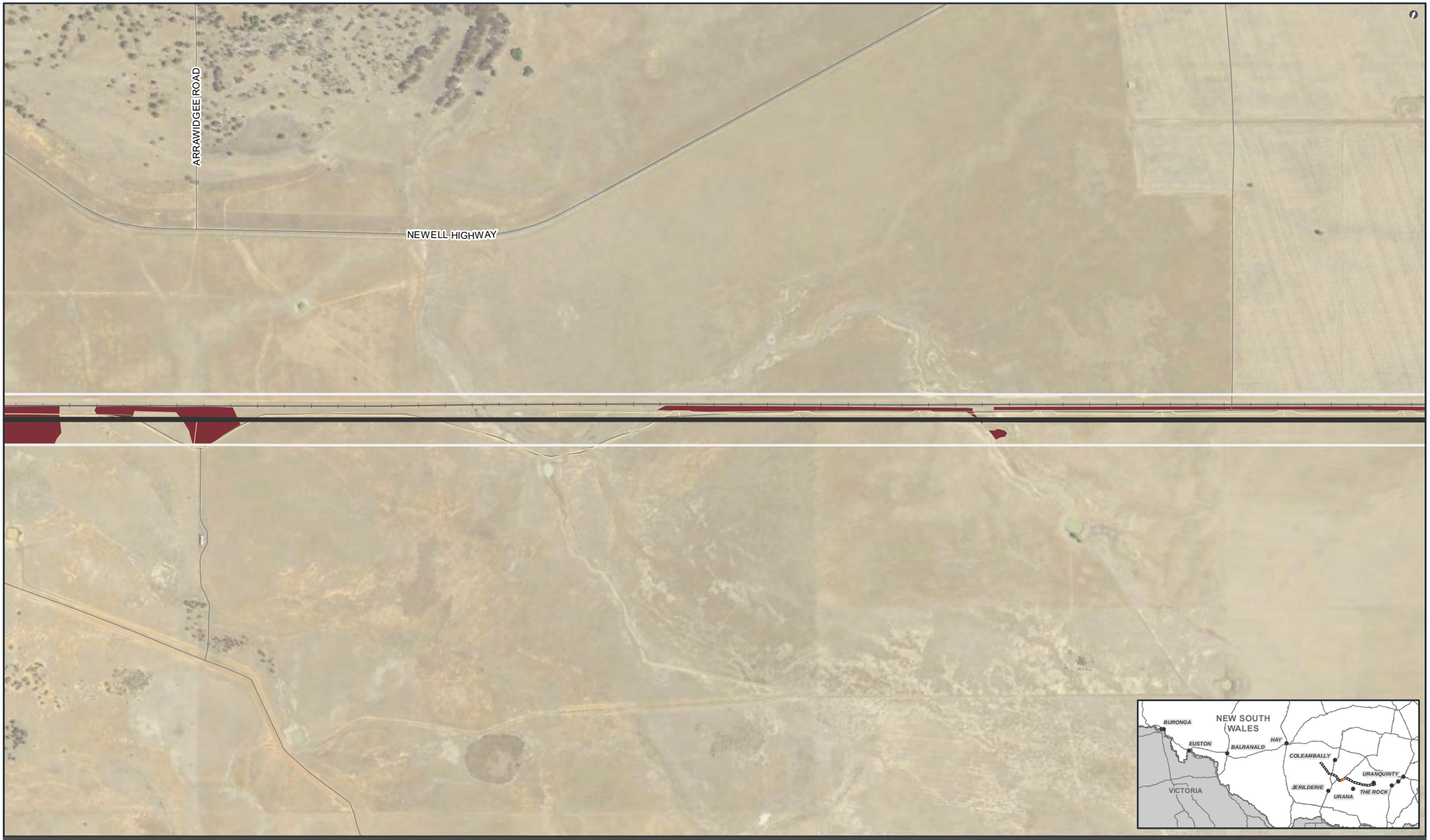
Indirect Impacts on Superb Parrot

Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | SVM_Bench
- PCT46 - Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion | Mod-good
- PCT5 - River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion. | Mod-good

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure E-3-4|

Indirect Impacts on Superb Parrot

Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- PCT46 - Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion | Mod-good

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure E-3-4m

Indirect Impacts on Superb Parrot

Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- PCT26 - Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | Moderate
- PCT45 - Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion | Mod-good
- PCT46 - Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion | Mod-good

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure E-3-4n

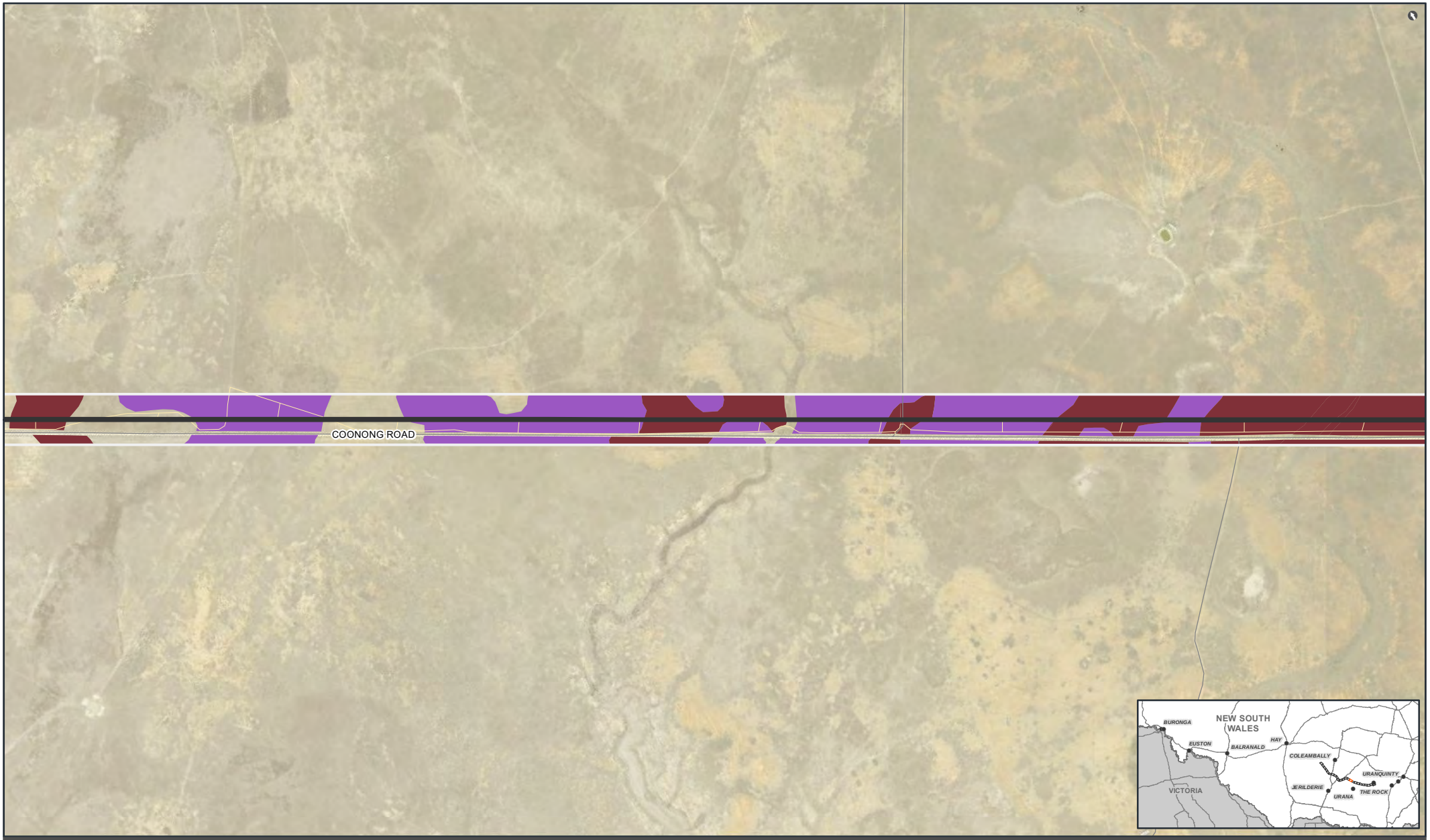
Indirect Impacts on Superb Parrot

Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- PCT 7 - River Red Gum – Warrego Grass – herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion | Mod-good
- PCT45 - Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion | Mod-good
- PCT46 - Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion | Mod-good

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure E-3-4o

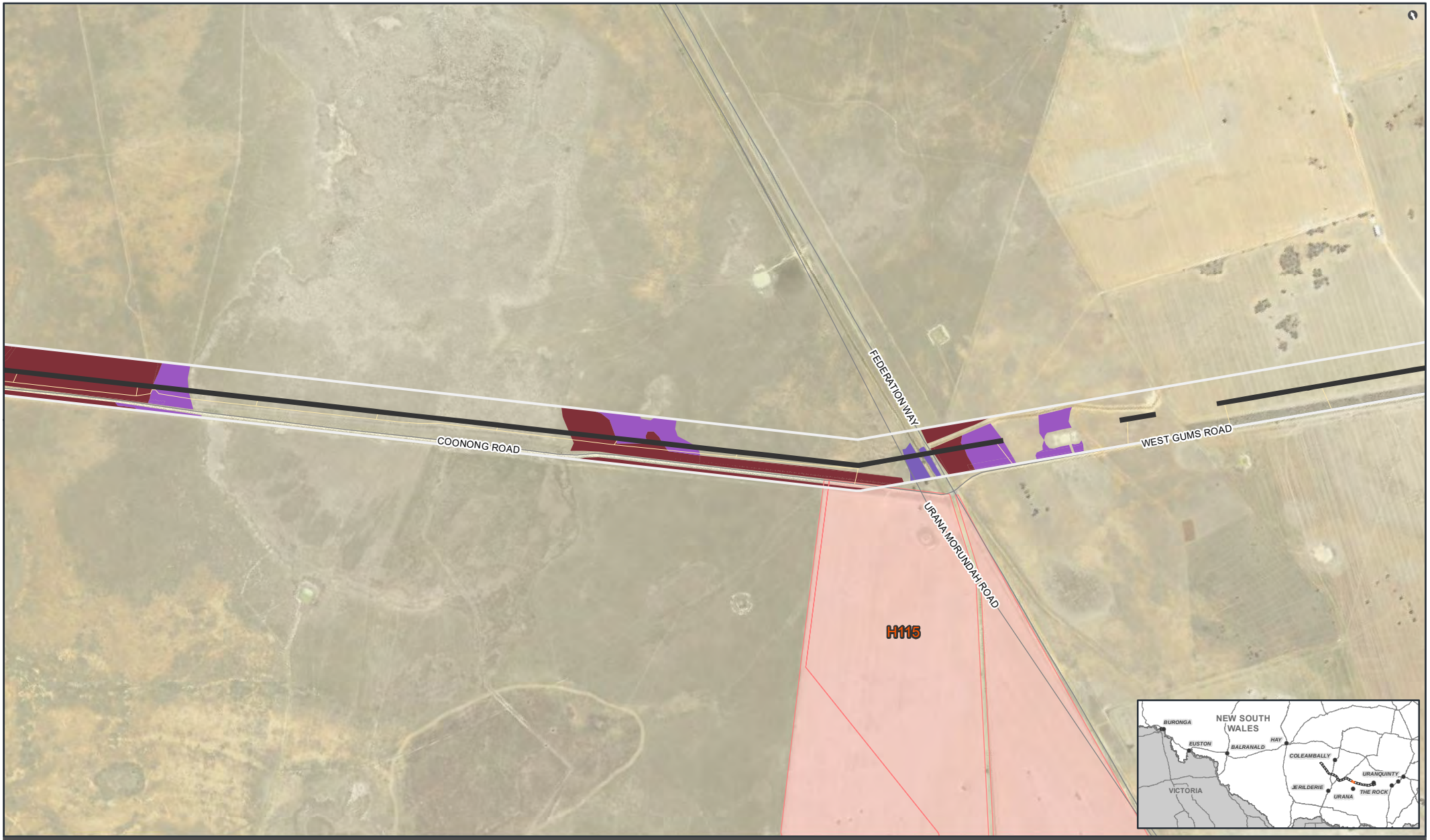
Indirect Impacts on Superb Parrot

Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- PCT45 - Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion | Mod-good
- PCT46 - Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion | Mod-good

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure E-3-4p

Indirect Impacts on Superb Parrot

Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Waterbody
- Holdings - No Access
- Biodiversity Study Area
- PCT11 - River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion) | Mod-good
- PCT45 - Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion | Mod-good
- PCT46 - Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion | Mod-good

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Source: NSWSS, ESRI, Transgrid, WSP



0 0.25 0.5 KM

BDAR - Figure E-3-4q

Indirect Impacts on Superb Parrot

Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- PCT45 - Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion | Mod-good
- PCT75 - Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion | Mod-good

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure E-3-4r

Indirect Impacts on Superb Parrot

Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area

- PCT75 - Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion | Mod-good
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | Mod-good
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | Moderate
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | SVM_Bench

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure E-3-4s

Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area

- PCT249 - River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW | Moderate
- PCT28 - White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone | SVM_Bench
- PCT75 - Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion | Mod-good
- PCT75 - Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion | SVM_Bench
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | Derived
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | Moderate

Indirect Impacts on Superb Parrot

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure E-3-4t

Indirect Impacts on Superb Parrot

Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- PCT249 - River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW | Derived
- PCT249 - River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW | Moderate
- PCT249 - River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW | Poor

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Source: NSWSS, ESRI, Transgrid, WSP



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Project Components

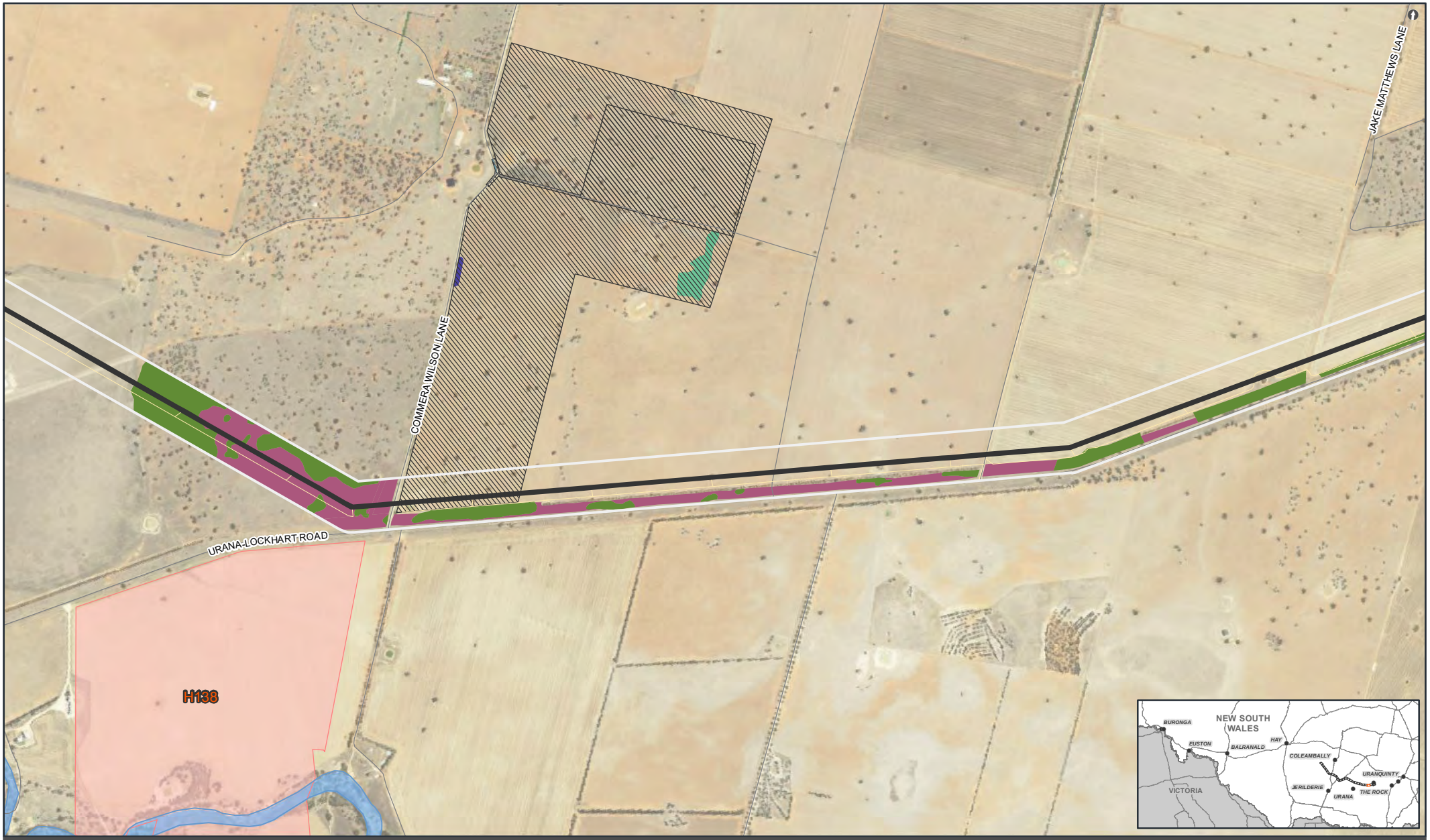
- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area

BDAR - Figure E-3-4u

Indirect Impacts on Superb Parrot

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure E-3-4v

Project Components

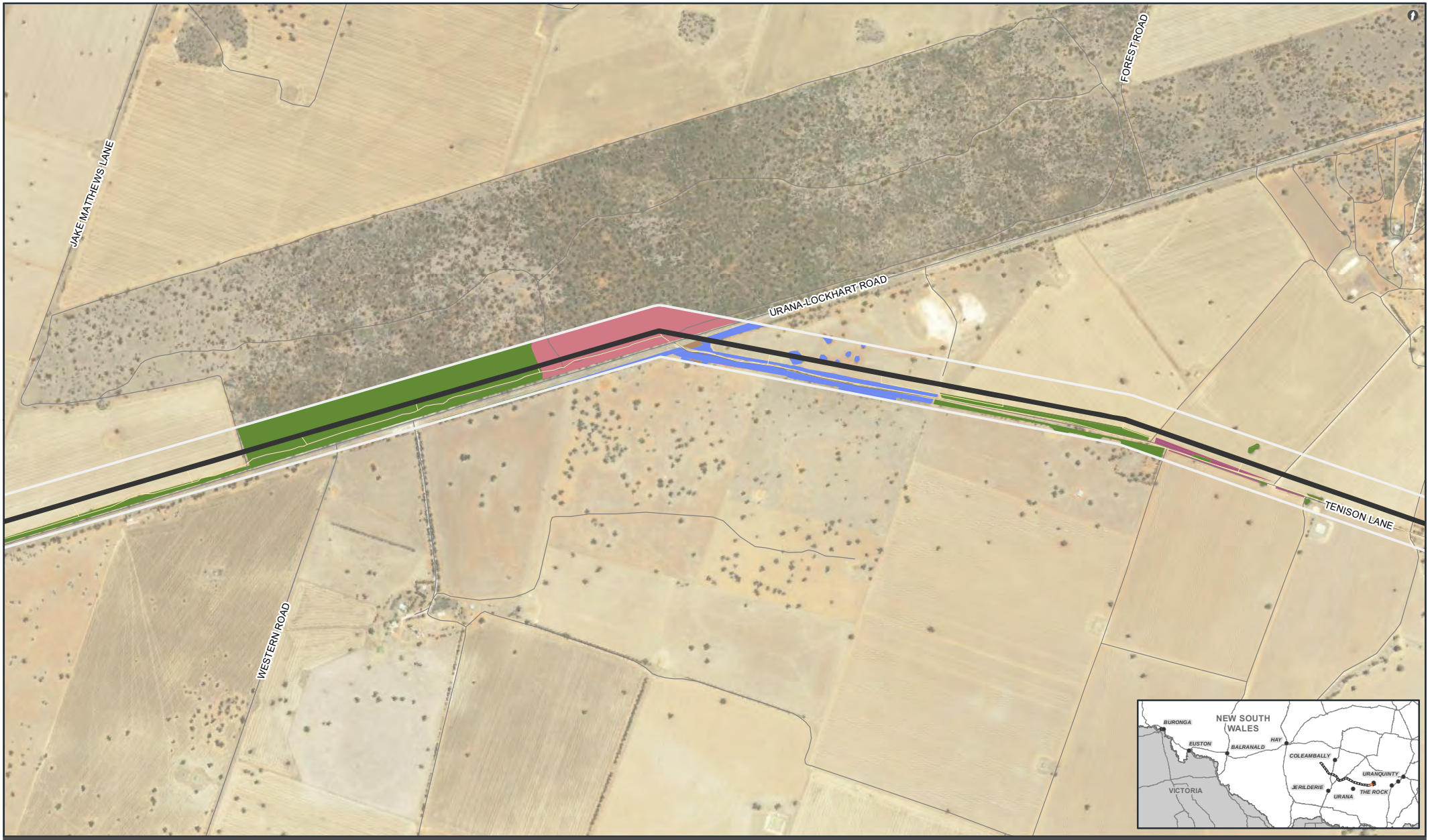
- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Waterbody
- Holdings - No Access
- Biodiversity Study Area

- PCT28 - White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone | SVM_Bench
- PCT75 - Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion | Derived
- PCT75 - Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion | Mod-good
- PCT75 - Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion | SVM_Bench
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | SVM_Bench

Indirect Impacts on Superb Parrot

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure E-3-4w

Indirect Impacts on Superb Parrot

Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- PCT75 - Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion | Derived
- PCT75 - Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion | Mod-good
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | Derived
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | Mod-good
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | Moderate

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Source: NSWSS, ESRI, Transgrid, WSP



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BDAR - Figure E-3-4x

Indirect Impacts on Superb Parrot

Project Components

- Indirect Impact Area
- Access Tracks
- Main Construction Compounds and Accomodation
- Water Supply Point
- Existing Substation
- Waterbody
- Biodiversity Study Area
- PCT74 - Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion | Mod-good
- PCT75 - Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion | Derived
- PCT75 - Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion | Mod-good
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | Derived
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | Mod-good
- PCT80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion | Moderate

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Source: NSWSS, ESRI, Transgrid, WSP

Appendix F

Biodiversity credit report



APPENDIX F-1
BAM credit report – South Olary Plain IBRA subregion

BAM Credit Summary Report

Proposal Details

Assessment Id
00026601/BAAS17020/21/00026602

Proposal Name
EnergyConnect East - South Olary Plain

BAM data last updated *
24/11/2021

Assessor Name
Alexander Cockerill

Report Created
12/01/2022

BAM Data version *
50

Assessor Number
BAAS17020

BAM Case Status
Finalised

Date Finalised
12/01/2022

Assessment Revision
0

Assessment Type
Major Projects

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Ecosystem credits for plant communities types (PCT), ecological communities & threatened species habitat

Zone	Vegetation zone name	TEC name	Current Vegetation integrity score	Change in Vegetation integrity (loss / gain)	Area (ha)	Sensitivity to loss (Justification)	Species sensitivity to gain class	BC Act Listing status	EPBC Act listing status	Biodiversity risk weighting	Potential SAII	Ecosystem credits

Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)												
1	15_Mod-good	Not a TEC	56.1	36.2	5.8		High Sensitivity to Potential Gain			1.75		91
											Subtotal	**91**
Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion												
4	58_Mod-good	Not a TEC	95	61.4	67.3		High Sensitivity to Potential Gain			1.75		1810
14	58_SVM_Bench	Not a TEC	100	67.0	8.2		High Sensitivity to Potential Gain			1.75		240
											Subtotal	**2050**
Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones												
7	170_Mod-good_bull	Not a TEC	75	52.1	57.3		High Sensitivity to Potential Gain			1.50		1120
8	170_Mod-good_whipstick	Not a TEC	69.7	49.5	221.7		High Sensitivity to Potential Gain			1.50		4117
12	170_Derived	Not a TEC	4.3	4.3	5.2		High Sensitivity to Potential Gain			1.50		0

15	170_SVM_Bench	Not a TEC	100	77.6	8.8		High Sensitivity to Potential Gain			1.50		257
											Subtotal	**5494**
Deep sand mallee of irregular dunefields of the semi-arid (warm) zone												
10	172_Mod-good_whipstick	Not a TEC	71.4	53.8	45.3		High Sensitivity to Potential Gain			1.50		915
											Subtotal	**915**
Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones												
6	163_Mod-good	Not a TEC	68.2	68.2	8.2		High Sensitivity to Potential Gain			1.50		209
											Subtotal	**209**
Hooked Needlewood - Needlewood - Mulga - Turpentine Bush open shrubland of the semi-arid and arid plains												
11	199_Mod-good	Not a TEC	77.8	48.5	1.3		High Sensitivity to Potential Gain			1.50		24
											Subtotal	**24**

Narrow-leaved Hopbush - Scrub Turpentine - Senna shrubland on semi-arid and arid sandplains and dunes.											
5	143_Mod-good	Not a TEC	92.2	92.2	2.2		High Sensitivity to Potential Gain			1.50	76
										Subtotal	**76**
Semi-arid shrubby Buloke - Slender Cypress Pine woodland, far south-western NSW											
2	22_Mod-good	Not a TEC	60.8	43.7	2.9		High Sensitivity to Potential Gain			2.00	64
										Subtotal	**64**
Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion											
9	171_Mod-good_whipstick	Not a TEC	85.1	63.6	43.8		High Sensitivity to Potential Gain			1.50	1046
13	171_Derived	Not a TEC	42.8	42.8	0.63		High Sensitivity to Potential Gain			1.50	10
										Subtotal	**1056**

Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones											
3	23_Mod-good	Acacia melvillei Shrubland in the Riverina and Murray-Darling Depression bioregions	77.4	55.8	5.1		High Sensitivity to Potential Gain	Endangered Ecological Community	Not Listed	2.00	141
										Subtotal	**141**
										Total	**10120**

Species credits for threatened species

Vegetation zone name	Habitat condition (Vegetation Integrity)	Change in habitat condition	Area (ha)/Count (no. individuals)	Sensitivity to loss (Justification)	Sensitivity to gain (Justification)	BC Act Listing status	EPBC Act listing status	Potential SAII	Species credits
Lophochroa leadbeateri / Major Mitchell's Cockatoo (Fauna)									
15_Mod-good	36.2	36.2	5.8			Vulnerable	Not Listed	False	104
								Subtotal	**104**
Pimelea serpyllifolia subsp. serpyllifolia / Thyme Rice-Flower (Flora)									
172_Mod-good_whipstick	53.8	53.8	1.7			Endangered	Not Listed	True	69
								Subtotal	**69**
Polytelis anthopeplus monarchoides / Regent Parrot (eastern subspecies) (Fauna)									
15_Mod-good	36.2	36.2	5.8			Endangered	Vulnerable	False	104
								Subtotal	**104**

BAM Vegetation Zones Report

Proposal Details

Assessment Id
00026601/BAAS17020/21/00026602

Assessment name
EnergyConnect East - South Olary Plain

BAM data last updated *
24/11/2021

Assessor Name
Alexander Cockerill

Report Created
12/01/2022

BAM Data version *
50

Assessor Number
BAAS17020

Assessment Type
Major Projects

BAM Case Status
Finalised

Assessment Revision
0

Date Finalised
12/01/2022

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Vegetation Zones

#	Name	PCT	Condition	Area	Minimum number of plots	Management zones

1	15_Mod-good	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Mod-good	5.75	3	Area A (2.01 ha) Area B4 (2.09 ha) Area B10 (1.65 ha)
2	22_Mod-good	22-Semi-arid shrubby Buloke - Slender Cypress Pine woodland, far south-western NSW	Mod-good	2.93	2	Area A (1.2 ha) Area B4 (1.04 ha) Area B10 (0.69 ha)
3	23_Mod-good	23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones	Mod-good	5.07	3	Area A (2.33 ha) Area B4 (2.74 ha)
4	58_Mod-good	58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion	Mod-good	67.32	5	Area A (20.68 ha) Area B4 (26.85 ha) Area B10 (19.79 ha)
5	143_Mod-good	143-Narrow-leaved Hopbush - Scrub Turpentine - Senna shrubland on semi-arid and arid sandplains and dunes.	Mod-good	2.2	2	Area A (2.2 ha)
6	163_Mod-good	163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones	Mod-good	8.18	3	Area A (8.18 ha)
7	170_Mod-good_bull	170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones	Mod-good_bull	57.3	5	Area A (24.87 ha) Area B4 (32.43 ha)
8	170_Mod-good_whipstick	170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones	Mod-good_whipstick	221.71	6	Area A (102.39 ha) Area B4 (119.32 ha)

9	171_Mod-good_whipstick	171-Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion	Mod-good_whipstick	43.84	4	Area A (22.14 ha) Area B4 (21.7 ha)
10	172_Mod-good_whipstick	172-Deep sand mallee of irregular dunefields of the semi-arid (warm) zone	Mod-good_whipstick	45.31	4	Area A (20.88 ha) Area B4 (24.43 ha)
11	199_Mod-good	199-Hooked Needlewood - Needlewood - Mulga - Turpentine Bush open shrubland of the semi-arid and arid plains	Mod-good	1.31	1	Area A (0.72 ha) Area B4 (0.59 ha)
12	170_Derived	170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones	Derived	5.16	3	Area A (5.16 ha)
13	171_Derived	171-Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion	Derived	0.63	1	Area A (0.63 ha)
14	58_SVM_Bench	58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion	SVM_Bench	8.17	3	Area A (3.28 ha) Area B4 (2.73 ha) Area B10 (2.16 ha)
15	170_SVM_Bench	170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones	SVM_Bench	8.83	3	Area A (4.31 ha) Area B4 (4.52 ha)

BAM Predicted Species Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00026601/BAAS17020/21/00026602	EnergyConnect East - South Olary Plain	24/11/2021
Assessor Name	Report Created	BAM Data version *
Alexander Cockerill	12/01/2022	50
Assessor Number	Assessment Type	BAM Case Status
BAAS17020	Major Projects	Finalised
Assessment Revision		Date Finalised
0		12/01/2022

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Threatened species reliably predicted to utilise the site. No surveys are required for these species. Ecosystem credits apply to these species.

Common Name	Scientific Name	Vegetation Types(s)
Bardick	Echiopsis curta	171-Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion
		172-Deep sand mallee of irregular dunefields of the semi-arid (warm) zone
Barking Owl	Ninox connivens	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
Black Falcon	Falco subniger	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		143-Narrow-leaved Hopbush - Scrub Turpentine - Senna shrubland on semi-arid and arid sandplains and dunes.
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones

Black Falcon	Falco subniger	170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		171-Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion
		199-Hooked Needlewood - Needlewood - Mulga - Turpentine Bush open shrubland of the semi-arid and arid plains
Black-breasted Buzzard	Hamirostra melanosternon	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		143-Narrow-leaved Hopbush - Scrub Turpentine - Senna shrubland on semi-arid and arid sandplains and dunes.
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		171-Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion
		172-Deep sand mallee of irregular dunefields of the semi-arid (warm) zone
		199-Hooked Needlewood - Needlewood - Mulga - Turpentine Bush open shrubland of the semi-arid and arid plains
Bolam's Mouse	Pseudomys bolami	22-Semi-arid shrubby Buloke - Slender Cypress Pine woodland, far south-western NSW
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		171-Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion
		172-Deep sand mallee of irregular dunefields of the semi-arid (warm) zone

Brolga	Grus rubicunda	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
Chestnut Quail-thrush	Cinclosoma castanotum	170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		171-Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion
		172-Deep sand mallee of irregular dunefields of the semi-arid (warm) zone
Corben's Long-eared Bat	Nyctophilus corbeni	22-Semi-arid shrubby Buloke - Slender Cypress Pine woodland, far south-western NSW
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		171-Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion
		172-Deep sand mallee of irregular dunefields of the semi-arid (warm) zone
		199-Hooked Needlewood - Needlewood - Mulga - Turpentine Bush open shrubland of the semi-arid and arid plains
Diamond Firetail	Stagonopleura guttata	22-Semi-arid shrubby Buloke - Slender Cypress Pine woodland, far south-western NSW
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones

Dusky Woodswallow	Artamus cyanopterus cyanopterus	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		22-Semi-arid shrubby Buloke - Slender Cypress Pine woodland, far south-western NSW
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		143-Narrow-leaved Hopbush - Scrub Turpentine - Senna shrubland on semi-arid and arid sandplains and dunes.
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		171-Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion
		172-Deep sand mallee of irregular dunefields of the semi-arid (warm) zone
		199-Hooked Needlewood - Needlewood - Mulga - Turpentine Bush open shrubland of the semi-arid and arid plains
Gilbert's Whistler	Pachycephala inornata	22-Semi-arid shrubby Buloke - Slender Cypress Pine woodland, far south-western NSW
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		171-Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion
		172-Deep sand mallee of irregular dunefields of the semi-arid (warm) zone
Grey Falcon	Falco hypoleucos	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

Grey Falcon	Falco hypoleucos	22-Semi-arid shrubby Buloke - Slender Cypress Pine woodland, far south-western NSW
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		143-Narrow-leaved Hopbush - Scrub Turpentine - Senna shrubland on semi-arid and arid sandplains and dunes.
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		171-Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion
		172-Deep sand mallee of irregular dunefields of the semi-arid (warm) zone
		199-Hooked Needlewood - Needlewood - Mulga - Turpentine Bush open shrubland of the semi-arid and arid plains
Grey-crowned Babbler (eastern subspecies)	Pomatostomus temporalis temporalis	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		22-Semi-arid shrubby Buloke - Slender Cypress Pine woodland, far south-western NSW
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		143-Narrow-leaved Hopbush - Scrub Turpentine - Senna shrubland on semi-arid and arid sandplains and dunes.
Hooded Robin (south-eastern form)	Melanodryas cucullata cucullata	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		22-Semi-arid shrubby Buloke - Slender Cypress Pine woodland, far south-western NSW

Hooded Robin (south-eastern form)	Melanodryas cucullata cucullata	23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		143-Narrow-leaved Hopbush - Scrub Turpentine - Senna shrubland on semi-arid and arid sandplains and dunes.
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		171-Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion
		172-Deep sand mallee of irregular dunefields of the semi-arid (warm) zone
		199-Hooked Needlewood - Needlewood - Mulga - Turpentine Bush open shrubland of the semi-arid and arid plains
Inland Forest Bat	Vespadelus baverstocki	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		22-Semi-arid shrubby Buloke - Slender Cypress Pine woodland, far south-western NSW
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		143-Narrow-leaved Hopbush - Scrub Turpentine - Senna shrubland on semi-arid and arid sandplains and dunes.
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		171-Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion
		172-Deep sand mallee of irregular dunefields of the semi-arid (warm) zone
Interior Blind Snake	Ramphotyphlops endoterus	143-Narrow-leaved Hopbush - Scrub Turpentine - Senna shrubland on semi-arid and arid sandplains and dunes.
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		199-Hooked Needlewood - Needlewood - Mulga - Turpentine Bush open shrubland of the semi-arid and arid plains

Jewelled Gecko	Strophurus elderi	170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		171-Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion
		172-Deep sand mallee of irregular dunefields of the semi-arid (warm) zone
Kultarr	Antechinomys laniger	23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		143-Narrow-leaved Hopbush - Scrub Turpentine - Senna shrubland on semi-arid and arid sandplains and dunes.
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		171-Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion
		199-Hooked Needlewood - Needlewood - Mulga - Turpentine Bush open shrubland of the semi-arid and arid plains
Little Eagle	Hieraaetus morphnoides	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		22-Semi-arid shrubby Buloke - Slender Cypress Pine woodland, far south-western NSW
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		143-Narrow-leaved Hopbush - Scrub Turpentine - Senna shrubland on semi-arid and arid sandplains and dunes.
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones

Little Eagle	Hieraaetus morphnoides	171-Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion
		172-Deep sand mallee of irregular dunefields of the semi-arid (warm) zone
		199-Hooked Needlewood - Needlewood - Mulga - Turpentine Bush open shrubland of the semi-arid and arid plains
Little Pied Bat	Chalinolobus picatus	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		22-Semi-arid shrubby Buloke - Slender Cypress Pine woodland, far south-western NSW
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		143-Narrow-leaved Hopbush - Scrub Turpentine - Senna shrubland on semi-arid and arid sandplains and dunes.
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		171-Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion
		172-Deep sand mallee of irregular dunefields of the semi-arid (warm) zone
		199-Hooked Needlewood - Needlewood - Mulga - Turpentine Bush open shrubland of the semi-arid and arid plains
Major Mitchell's Cockatoo	Lophochroa leadbeateri	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		22-Semi-arid shrubby Buloke - Slender Cypress Pine woodland, far south-western NSW
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones

Major Mitchell's Cockatoo	Lophochroa leadbeateri	58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		143-Narrow-leaved Hopbush - Scrub Turpentine - Senna shrubland on semi-arid and arid sandplains and dunes.
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		171-Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion
		172-Deep sand mallee of irregular dunefields of the semi-arid (warm) zone
		199-Hooked Needlewood - Needlewood - Mulga - Turpentine Bush open shrubland of the semi-arid and arid plains
Mallee Slender Blue-tongue Lizard	Cyclodomorphus melanops elongatus	171-Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion
		172-Deep sand mallee of irregular dunefields of the semi-arid (warm) zone
Mallee Worm-lizard	Aprasia inaurita	170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		171-Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion
		172-Deep sand mallee of irregular dunefields of the semi-arid (warm) zone
Malleefowl	Leipoa ocellata	170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		171-Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion
		172-Deep sand mallee of irregular dunefields of the semi-arid (warm) zone
Marble-faced Delma	Delma australis	170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		171-Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion
		172-Deep sand mallee of irregular dunefields of the semi-arid (warm) zone

Painted Honeyeater	Grantiella picta	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		143-Narrow-leaved Hopbush - Scrub Turpentine - Senna shrubland on semi-arid and arid sandplains and dunes.
Pied Honeyeater	Certhionyx variegatus	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		22-Semi-arid shrubby Buloke - Slender Cypress Pine woodland, far south-western NSW
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		143-Narrow-leaved Hopbush - Scrub Turpentine - Senna shrubland on semi-arid and arid sandplains and dunes.
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		171-Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion
		172-Deep sand mallee of irregular dunefields of the semi-arid (warm) zone
		199-Hooked Needlewood - Needlewood - Mulga - Turpentine Bush open shrubland of the semi-arid and arid plains
Purple-crowned Lorikeet	Glossopsitta porphyrocephala	170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		171-Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion

Purple-crowned Lorikeet	Glossopsitta porphyrocephala	172-Deep sand mallee of irregular dunefields of the semi-arid (warm) zone
Purple-gaped Honeyeater	Lichenostomus cratitius	170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		171-Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion
		172-Deep sand mallee of irregular dunefields of the semi-arid (warm) zone
Redthroat	Pyrrholaemus brunneus	163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
Regent Parrot (eastern subspecies)	Polytelis anthopeplus monarchoides	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		22-Semi-arid shrubby Buloke - Slender Cypress Pine woodland, far south-western NSW
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		171-Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion
Ringed Brown Snake	Pseudonaja modesta	58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		143-Narrow-leaved Hopbush - Scrub Turpentine - Senna shrubland on semi-arid and arid sandplains and dunes.
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		171-Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion
		172-Deep sand mallee of irregular dunefields of the semi-arid (warm) zone
		199-Hooked Needlewood - Needlewood - Mulga - Turpentine Bush open shrubland of the semi-arid and arid plains
Sandy Inland Mouse	Pseudomys hermannsburgensis	23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones

Sandy Inland Mouse	Pseudomys hermannsburgensis	58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		143-Narrow-leaved Hopbush - Scrub Turpentine - Senna shrubland on semi-arid and arid sandplains and dunes.
		171-Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion
		199-Hooked Needlewood - Needlewood - Mulga - Turpentine Bush open shrubland of the semi-arid and arid plains
Scarlet-chested Parrot	Neophema splendida	170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		171-Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion
		172-Deep sand mallee of irregular dunefields of the semi-arid (warm) zone
Shy Heathwren	Hylacola cautus	170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		171-Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion
		172-Deep sand mallee of irregular dunefields of the semi-arid (warm) zone
Southern Ningaui	Ningaui yvonneae	170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		171-Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion
		172-Deep sand mallee of irregular dunefields of the semi-arid (warm) zone
Southern Scrub-robin	Drymodes brunneopygia	171-Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion
Spotted Harrier	Circus assimilis	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		22-Semi-arid shrubby Buloke - Slender Cypress Pine woodland, far south-western NSW
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones

Spotted Harrier	Circus assimilis	58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		143-Narrow-leaved Hopbush - Scrub Turpentine - Senna shrubland on semi-arid and arid sandplains and dunes.
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		171-Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion
		172-Deep sand mallee of irregular dunefields of the semi-arid (warm) zone
		199-Hooked Needlewood - Needlewood - Mulga - Turpentine Bush open shrubland of the semi-arid and arid plains
Square-tailed Kite	Lophoictinia isura	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		22-Semi-arid shrubby Buloke - Slender Cypress Pine woodland, far south-western NSW
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
Stripe-faced Dunnart	Sminthopsis macroura	58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		143-Narrow-leaved Hopbush - Scrub Turpentine - Senna shrubland on semi-arid and arid sandplains and dunes.
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		171-Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion
		172-Deep sand mallee of irregular dunefields of the semi-arid (warm) zone

Stripe-faced Dunnart	Sminthopsis macroura	199-Hooked Needlewood - Needlewood - Mulga - Turpentine Bush open shrubland of the semi-arid and arid plains
Varied Sittella	Daphoenositta chrysoptera	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		22-Semi-arid shrubby Buloke - Slender Cypress Pine woodland, far south-western NSW
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		171-Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion
		172-Deep sand mallee of irregular dunefields of the semi-arid (warm) zone
Wedgesnout Ctenotus	Ctenotus brooksi	143-Narrow-leaved Hopbush - Scrub Turpentine - Senna shrubland on semi-arid and arid sandplains and dunes.
		171-Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion
		172-Deep sand mallee of irregular dunefields of the semi-arid (warm) zone
		199-Hooked Needlewood - Needlewood - Mulga - Turpentine Bush open shrubland of the semi-arid and arid plains
Western Blue-tongued Lizard	Tiliqua occipitalis	170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		171-Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion
		172-Deep sand mallee of irregular dunefields of the semi-arid (warm) zone
Western Pygmy Possum	Cercartetus concinnus	58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones

Western Pygmy Possum	Cercartetus concinnus	171-Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion
		172-Deep sand mallee of irregular dunefields of the semi-arid (warm) zone
White-bellied Sea-Eagle	Haliaeetus leucogaster	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		143-Narrow-leaved Hopbush - Scrub Turpentine - Senna shrubland on semi-arid and arid sandplains and dunes.
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		171-Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion
White-fronted Chat	Epthianura albifrons	163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
Yellow-bellied Sheathtail-bat	Saccolaimus flaviventris	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		143-Narrow-leaved Hopbush - Scrub Turpentine - Senna shrubland on semi-arid and arid sandplains and dunes.
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
Yellow-tailed Plain Slider	Lerista xanthura	58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion

Yellow-tailed Plain Slider	Lerista xanthura	143-Narrow-leaved Hopbush - Scrub Turpentine - Senna shrubland on semi-arid and arid sandplains and dunes.
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		171-Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion
		199-Hooked Needlewood - Needlewood - Mulga - Turpentine Bush open shrubland of the semi-arid and arid plains

Threatened species Manually Added

None added

Threatened species assessed as not within the vegetation zone(s) for the PCT(s)

Refer to BAR for detailed justification

Common Name	Scientific Name	Justification in the BAM-C

BAM Candidate Species Report

Proposal Details

Assessment Id 00026601/BAAS17020/21/00026602	Proposal Name EnergyConnect East - South Olary Plain	BAM data last updated * 24/11/2021
Assessor Name Alexander Cockerill	Report Created 12/01/2022	BAM Data version * 50
Assessor Number BAAS17020	Assessment Type Major Projects	BAM Case Status Finalised
Assessment Revision 0	Date Finalised 12/01/2022	

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

List of Species Requiring Survey

Name	Presence	Survey Months
Acacia acanthoclada Harrow Wattle	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Acacia carneorum Purple-wood Wattle	No (surveyed)	☐ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Amytornis striatus Striated Grasswren	No (surveyed)	☐ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Ardeotis australis Australian Bustard	No (surveyed)	☐ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Atriplex infrequens A saltbush	No (surveyed)	☐ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Austrostipa metatoris A spear-grass	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Brachyscome papillosa Mossgiel Daisy	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Burhinus grallarius Bush Stone-curlew	No (surveyed)	☐ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Calotis moorei A burr-daisy	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Cratystylis conocephala Bluebush Daisy	No (surveyed)	☐ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Dodonaea stenozyga Desert Hopbush	No (surveyed)	☐ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Erodiophyllum elderi Koonamore Daisy	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Haliaeetus leucogaster White-bellied Sea-Eagle	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Hamirostra melanosternon Black-breasted Buzzard	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Hieraaetus morphnoides Little Eagle	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Kippistia suaedifolia Fleshy Minuria	No (surveyed)	☐ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Lasiopetalum behrii Pink Velvet Bush	No (surveyed)	☐ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Lasiorhinus latifrons Southern Hairy-nosed Wombat	No (surveyed)	☐ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Lepidium monoplocoides Winged Peppercress	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Leptorhynchos waitzia Button Immortelle	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Lophochroa leadbeateri Major Mitchell's Cockatoo	Yes (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Lophoictinia isura Square-tailed Kite	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Lucasium stenodactylum Crowned Gecko	No (surveyed)	☐ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Manorina melanotis Black-eared Miner	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Neobatrachus pictus Painted Burrowing Frog	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Ninox connivens Barking Owl	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Pachycephala rufogularis Red-lored Whistler	No (surveyed)	☐ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Pimelea serpyllifolia subsp. serpyllifolia Thyme Rice-Flower	Yes (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Polytelis anthopeplus monarchoides Regent Parrot (eastern subspecies)	Yes (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Pseudomys desertor Desert Mouse	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Pterostylis cobarensis Greenhood Orchid	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Santalum murrayanum Bitter Quandong	No (surveyed)	☐ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Solanum karsense Menindee Nightshade	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Swainsona colutoides Bladder Senna	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Swainsona pyrophila Yellow Swainson-pea	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Swainsona sericea Silky Swainson-pea	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Threatened species Manually Added

None added

BAM Biodiversity Credit Report (Like for like)

Proposal Details

Assessment Id
00026601/BAAS17020/21/00026602

Proposal Name
EnergyConnect East - South Olary Plain

BAM data last updated *
24/11/2021

Assessor Name
Alexander Cockerill

Assessor Number
BAAS17020

BAM Data version *
50

Proponent Names

Report Created
12/01/2022

BAM Case Status
Finalised

Assessment Revision
0

Assessment Type
Major Projects

Date Finalised
12/01/2022

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Potential Serious and Irreversible Impacts

Name of threatened ecological community	Listing status	Name of Plant Community Type/ID
Nil		

Species
Pimelea serpyllifolia subsp. serpyllifolia / Thyme Rice-Flower

Additional Information for Approval

PCT Outside Ibra Added

None added

PCTs With Customized Benchmarks

PCT
No Changes

Predicted Threatened Species Not On Site

Name
No Changes

Ecosystem Credit Summary (Number and class of biodiversity credits to be retired)

Name of Plant Community Type/ID	Name of threatened ecological community	Area of impact	HBT Cr	No HBT Cr	Total credits to be retired
15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Not a TEC	5.8	91	0	91
22-Semi-arid shrubby Buloke - Slender Cypress Pine woodland, far south-western NSW	Not a TEC	2.9	0	64	64
23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones	Acacia melvillei Shrubland in the Riverina and Murray-Darling Depression bioregions	5.1	0	141	141

58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion	Not a TEC	75.5	2050	0	2050
143-Narrow-leaved Hopbush - Scrub Turpentine - Senna shrubland on semi-arid and arid sandplains and dunes.	Not a TEC	2.2	0	76	76
163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones	Not a TEC	8.2	0	209	209
170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones	Not a TEC	293.0	5494	0	5494
171-Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion	Not a TEC	44.5	1046	10	1056
172-Deep sand mallee of irregular dunefields of the semi-arid (warm) zone	Not a TEC	45.3	0	915	915
199-Hooked Needlewood - Needlewood - Mulga - Turpentine Bush open shrubland of the semi-arid and arid plains	Not a TEC	1.3	0	24	24

15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

Like-for-like credit retirement options

Class	Trading group	Zone	HBT	Credits	IBRA region

	Inland Floodplain Woodlands This includes PCT's: 13, 15, 16, 83, 438, 454, 630	Inland Floodplain Woodlands >=50% and <70%	15_Mod-good	Yes	91	South Olary Plain, Barrier Range Outwash, Darling Depression, Great Darling Anabranch, Lachlan, Menindee, Murray Fans, Murray Scroll Belt, Murrumbidgee, Pooncarie-Darling and Robinvale Plains. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
22-Semi-arid shrubby Buloke - Slender Cypress Pine woodland, far south-western NSW	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Riverine Sandhill Woodlands This includes PCT's: 19, 20, 21, 22, 23, 28, 48, 75, 86	Riverine Sandhill Woodlands >=70% and <90%	22_Mod-good	No	64	South Olary Plain, Barrier Range Outwash, Darling Depression, Great Darling Anabranch, Lachlan, Menindee, Murray Fans, Murray Scroll Belt, Murrumbidgee, Pooncarie-Darling and Robinvale Plains. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

22-Semi-arid shrubby Buloke - Slender Cypress Pine woodland, far south-western NSW

23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones

Like-for-like credit retirement options

Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region
Acacia melvillei Shrubland in the Riverina and Murray-Darling Depression bioregions This includes PCT's: 23, 28, 58, 128, 170, 173	-	23_Mod-good	No	141	South Olary Plain, Barrier Range Outwash, Darling Depression, Great Darling Anabranch, Lachlan, Menindee, Murray Fans, Murray Scroll Belt, Murrumbidgee, Pooncarie-Darling and Robinvale Plains. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion

Like-for-like credit retirement options

Class	Trading group	Zone	HBT	Credits	IBRA region

	Semi-arid Sand Plain Woodlands This includes PCT's: 58, 252	Semi-arid Sand Plain Woodlands >=50% and <70%	58_Mod-good	Yes	1810	South Olary Plain, Barrier Range Outwash, Darling Depression, Great Darling Anabranch, Lachlan, Menindee, Murray Fans, Murray Scroll Belt, Murrumbidgee, Pooncarie-Darling and Robinvale Plains. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Semi-arid Sand Plain Woodlands This includes PCT's: 58, 252	Semi-arid Sand Plain Woodlands >=50% and <70%	58_SVM_Bench	Yes	240	South Olary Plain, Barrier Range Outwash, Darling Depression, Great Darling Anabranch, Lachlan, Menindee, Murray Fans, Murray Scroll Belt, Murrumbidgee, Pooncarie-Darling and Robinvale Plains. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

143-Narrow-leaved Hopbush - Scrub Turpentine - Senna shrubland on semi-arid and arid sandplains and dunes.

Like-for-like credit retirement options

Class	Trading group	Zone	HBT	Credits	IBRA region
Sand Plain Mulga Shrublands This includes PCT's: 69, 119, 124, 128, 129, 139, 140, 143, 199, 215, 220, 232	Sand Plain Mulga Shrublands <50%	143_Mod-good	No	76	South Olary Plain, Barrier Range Outwash, Darling Depression, Great Darling Anabranch, Lachlan, Menindee, Murray Fans, Murray Scroll Belt, Murrumbidgee, Pooncarie-Darling and Robinvale Plains. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones

Like-for-like credit retirement options

Class	Trading group	Zone	HBT	Credits	IBRA region

	Riverine Chenopod Shrublands This includes PCT's: 157, 158, 159, 163, 164, 168, 195, 196, 211, 212, 216, 236, 254, 377, 466	Riverine Chenopod Shrublands <50%	163_Mod-good	No	209	South Olary Plain, Barrier Range Outwash, Darling Depression, Great Darling Anabranch, Lachlan, Menindee, Murray Fans, Murray Scroll Belt, Murrumbidgee, Pooncarie-Darling and Robinvale Plains. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Sand Plain Mallee Woodlands This includes PCT's: 142, 170, 173, 174, 190, 193, 355, 474	Sand Plain Mallee Woodlands <50%	170_Mod-good_bull	Yes	1120	South Olary Plain, Barrier Range Outwash, Darling Depression, Great Darling Anabranch, Lachlan, Menindee, Murray Fans, Murray Scroll Belt, Murrumbidgee, Pooncarie-Darling and Robinvale Plains. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	Sand Plain Mallee Woodlands This includes PCT's: 142, 170, 173, 174, 190, 193, 355, 474	Sand Plain Mallee Woodlands <50%	170_Mod-good_whipstick	Yes	4117	South Olary Plain, Barrier Range Outwash, Darling Depression, Great Darling Anabranch, Lachlan, Menindee, Murray Fans, Murray Scroll Belt, Murrumbidgee, Pooncarie-Darling and Robinvale Plains. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Sand Plain Mallee Woodlands This includes PCT's: 142, 170, 173, 174, 190, 193, 355, 474	Sand Plain Mallee Woodlands <50%	170_Derived	No	0	South Olary Plain, Barrier Range Outwash, Darling Depression, Great Darling Anabranch, Lachlan, Menindee, Murray Fans, Murray Scroll Belt, Murrumbidgee, Pooncarie-Darling and Robinvale Plains. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	Sand Plain Mallee Woodlands This includes PCT's: 142, 170, 173, 174, 190, 193, 355, 474	Sand Plain Mallee Woodlands <50%	170_SVM_Bench	Yes	257	South Olary Plain, Barrier Range Outwash, Darling Depression, Great Darling Anabranch, Lachlan, Menindee, Murray Fans, Murray Scroll Belt, Murrumbidgee, Pooncarie-Darling and Robinvale Plains. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

171-Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Dune Mallee Woodlands This includes PCT's: 171, 172, 191	Dune Mallee Woodlands <50%	171_Mod-good_whipstick	Yes	1046	South Olary Plain, Barrier Range Outwash, Darling Depression, Great Darling Anabranch, Lachlan, Menindee, Murray Fans, Murray Scroll Belt, Murrumbidgee, Pooncarie-Darling and Robinvale Plains. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	Dune Mallee Woodlands This includes PCT's: 171, 172, 191	Dune Mallee Woodlands <50%	171_Derived	No	10	South Olary Plain, Barrier Range Outwash, Darling Depression, Great Darling Anabranch, Lachlan, Menindee, Murray Fans, Murray Scroll Belt, Murrumbidgee, Pooncarie-Darling and Robinvale Plains. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
172-Deep sand mallee of irregular dunefields of the semi-arid (warm) zone	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Dune Mallee Woodlands This includes PCT's: 171, 172, 191	Dune Mallee Woodlands <50%	172_Mod-good_whipstick	No	915	South Olary Plain, Barrier Range Outwash, Darling Depression, Great Darling Anabranch, Lachlan, Menindee, Murray Fans, Murray Scroll Belt, Murrumbidgee, Pooncarie-Darling and Robinvale Plains. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

172-Deep sand mallee of irregular dunefields of the semi-arid (warm) zone	
199-Hooked Needlewood - Needlewood - Mulga - Turpentine Bush open shrubland of the semi-arid and arid plains	**Like-for-like credit retirement options**

Class	Trading group	Zone	HBT	Credits	IBRA region
Sand Plain Mulga Shrublands This includes PCT's: 69, 119, 124, 128, 129, 139, 140, 143, 199, 215, 220, 232	Sand Plain Mulga Shrublands <50%	199_Mod-good	No	24	South Olary Plain, Barrier Range Outwash, Darling Depression, Great Darling Anabranch, Lachlan, Menindee, Murray Fans, Murray Scroll Belt, Murrumbidgee, Pooncarie-Darling and Robinvale Plains. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

Species Credit Summary

Species	Vegetation Zone/s	Area / Count	Credits
Lophochroa leadbeateri / Major Mitchell's Cockatoo	**15_Mod-good**	5.8	104.00
Pimelea serpyllifolia subsp. serpyllifolia / Thyme Rice-Flower	**172_Mod-good_whipstick**	1.7	69.00

Polytelis anthopeplus monarchoides / Regent Parrot (eastern subspecies)	**15_Mod-good**	5.8	104.00

Credit Retirement Options

Like-for-like credit retirement options

Lophochroa leadbeateri / Major Mitchell's Cockatoo	Spp	IBRA subregion
	Lophochroa leadbeateri / Major Mitchell's Cockatoo	Any in NSW
Pimelea serpyllifolia subsp. serpyllifolia / Thyme Rice-Flower	Spp	IBRA subregion
	Pimelea serpyllifolia subsp. serpyllifolia / Thyme Rice-Flower	Any in NSW
Polytelis anthopeplus monarchoides / Regent Parrot (eastern subspecies)	Spp	IBRA subregion
	Polytelis anthopeplus monarchoides / Regent Parrot (eastern subspecies)	Any in NSW

APPENDIX F-2
BAM credit report – Lachlan IBRA subregion

BAM Credit Summary Report

Proposal Details

Assessment Id
00026657/BAAS17020/21/00026658

Proposal Name
EnergyConnect East - Lachlan

BAM data last updated *
24/11/2021

Assessor Name
Alexander Cockerill

Report Created
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BAM Data version *
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Assessor Number
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BAM Case Status
Finalised

Date Finalised
12/01/2022

Assessment Revision
0

Assessment Type
Major Projects

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Ecosystem credits for plant communities types (PCT), ecological communities & threatened species habitat

Zone	Vegetation zone name	TEC name	Current Vegetation integrity score	Change in Vegetation integrity (loss / gain)	Area (ha)	Sensitivity to loss (Justification)	Species sensitivity to gain class	BC Act Listing status	EPBC Act listing status	Biodiversity risk weighting	Potential SAII	Ecosystem credits
Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)												
1	15_Mod-good	Not a TEC	82.6	76.3	0.07		High Sensitivity to Potential Gain			1.75		2

7	15_Derived	Not a TEC	3.9	3.9	0.91		High Sensitivity to Potential Gain			1.75		0
											Subtotal	**2**
Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion												
4	58_Mod-good	Not a TEC	46.4	29.5	3.7		High Sensitivity to Potential Gain			1.75		48
											Subtotal	**48**
Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains												
3	24_Mod-good	Not a TEC	64.3	64.3	0.37		High Sensitivity to Potential Gain			1.50		9
											Subtotal	**9**
Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones												
6	170_Mod-good_bull	Not a TEC	41.2	33.5	6.4		High Sensitivity to Potential Gain			1.50		80
											Subtotal	**80**

Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones												
5	163_Mod-good	Not a TEC	97.8	97.8	5.7		High Sensitivity to Potential Gain			1.50		208
											Subtotal	**208**
Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones												
2	23_Mod-good	Acacia melvillei Shrubland in the Riverina and Murray-Darling Depression bioregions	52.6	29.5	0.11		High Sensitivity to Potential Gain	Endangered Ecological Community	Not Listed	2.00		2
											Subtotal	**2**
											Total	**349**

Species credits for threatened species

Vegetation zone name	Habitat condition (Vegetation Integrity)	Change in habitat condition	Area (ha)/Count (no. individuals)	Sensitivity to loss (Justification)	Sensitivity to gain (Justification)	BC Act Listing status	EPBC Act listing status	Potential SAII	Species credits
Lophochroa leadbeateri / Major Mitchell's Cockatoo (Fauna)									
15_Mod-good	76.3	76.3	0.07			Vulnerable	Not Listed	False	3
								Subtotal	**3**

Polytelis anthopeplus monarchoides / Regent Parrot (eastern subspecies) (Fauna)									
15_Mod-good	76.3	76.3	0.07			Endangered	Vulnerable	False	3
								Subtotal	**3**

BAM Vegetation Zones Report

Proposal Details

Assessment Id
00026657/BAAS17020/21/00026658

Assessment name
EnergyConnect East - Lachlan

BAM data last updated *
24/11/2021

Assessor Name
Alexander Cockerill

Report Created
12/01/2022

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Assessor Number
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Assessment Type
Major Projects

BAM Case Status
Finalised

Assessment Revision
0

Date Finalised
12/01/2022

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Vegetation Zones

#	Name	PCT	Condition	Area	Minimum number of plots	Management zones

1	15_Mod-good	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Mod-good	0.07	1	Area A (0.06 ha) Area B10 (0.01 ha)
2	23_Mod-good	23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones	Mod-good	0.11	1	Area A (0.04 ha) Area B4 (0.07 ha)
3	24_Mod-good	24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains	Mod-good	0.37	1	Area A (0.37 ha)
4	58_Mod-good	58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion	Mod-good	3.69	2	Area A (1.11 ha) Area B4 (1.43 ha) Area B10 (1.15 ha)
5	163_Mod-good	163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones	Mod-good	5.66	3	Area A (5.66 ha)
6	170_Mod-good_bull	170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones	Mod-good_bull	6.36	3	Area A (3.1 ha) Area B4 (3.26 ha)
7	15_Derived	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Derived	0.91	1	Area A (0.91 ha)

BAM Predicted Species Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00026657/BAAS17020/21/00026658	EnergyConnect East - Lachlan	24/11/2021
Assessor Name	Report Created	BAM Data version *
Alexander Cockerill	12/01/2022	50
Assessor Number	Assessment Type	BAM Case Status
BAAS17020	Major Projects	Finalised
Assessment Revision		Date Finalised
0		12/01/2022

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Threatened species reliably predicted to utilise the site. No surveys are required for these species. Ecosystem credits apply to these species.

Common Name	Scientific Name	Vegetation Types(s)
Australasian Bittern	Botaurus poiciloptilus	24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
Australian Painted Snipe	Rostratula australis	24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
Barking Owl	Ninox connivens	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
Black Falcon	Falco subniger	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones

Black Falcon	Falco subniger	170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
Black-breasted Buzzard	Hamirostra melanosternon	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
Blue-billed Duck	Oxyura australis	24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
Brolga	Grus rubicunda	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
Chestnut Quail-thrush	Cinclosoma castanotum	170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
Corben's Long-eared Bat	Nyctophilus corbeni	23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
Curlew Sandpiper	Calidris ferruginea	24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
Diamond Firetail	Stagonopleura guttata	23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones

Diamond Firetail	Stagonopleura guttata	58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
Dusky Woodswallow	Artamus cyanopterus cyanopterus	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
Freckled Duck	Stictonetta naevosa	24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
Gilbert's Whistler	Pachycephala inornata	58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
Grey Falcon	Falco hypoleucos	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones

Grey Falcon	Falco hypoleucos	170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
Grey-crowned Babbler (eastern subspecies)	Pomatostomus temporalis temporalis	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
Hooded Robin (south-eastern form)	Melanodryas cucullata cucullata	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
Little Eagle	Hieraaetus morphnoides	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
Little Pied Bat	Chalinolobus picatus	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

Little Pied Bat	Chalinolobus picatus	23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
Magpie Goose	Anseranas semipalmata	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
Major Mitchell's Cockatoo	Lophochroa leadbeateri	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
Malleefowl	Leipoa ocellata	170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
Masked Owl	Tyto novaehollandiae	24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
Painted Honeyeater	Grantiella picta	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

Painted Honeyeater	Grantiella picta	23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
Pied Honeyeater	Certhionyx variegatus	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
Redthroat	Pyrrholaemus brunneus	24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
Regent Parrot (eastern subspecies)	Polytelis anthopeplus monarchoides	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
Spotted Harrier	Circus assimilis	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains

Spotted Harrier	Circus assimilis	58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
Square-tailed Kite	Lophoictinia isura	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
Superb Parrot	Polytelis swainsonii	23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
Varied Sittella	Daphoenositta chrysoptera	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
Western Blue-tongued Lizard	Tiliqua occipitalis	170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
White-bellied Sea-Eagle	Haliaeetus leucogaster	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains

White-bellied Sea-Eagle	Haliaeetus leucogaster	58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
White-fronted Chat	Epthianura albifrons	24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
White-throated Needletail	Hirundapus caudacutus	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
Yellow-bellied Sheathtail-bat	Saccolaimus flaviventris	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones

Threatened species Manually Added

None added

Threatened species assessed as not within the vegetation zone(s) for the PCT(s)

Refer to BAR for detailed justification

Common Name	Scientific Name	Justification in the BAM-C

BAM Candidate Species Report

Proposal Details

Assessment Id 00026657/BAAS17020/21/00026658	Proposal Name EnergyConnect East - Lachlan	BAM data last updated * 24/11/2021
Assessor Name Alexander Cockerill	Report Created 12/01/2022	BAM Data version * 50
Assessor Number BAAS17020	Assessment Type Major Projects	BAM Case Status Finalised
Assessment Revision 0	Date Finalised 12/01/2022	

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List of Species Requiring Survey

Name	Presence	Survey Months
Ardeotis australis Australian Bustard	No (surveyed)	☐ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Brachyscome papillosa Mossgiel Daisy	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Burhinus grallarius Bush Stone-curlew	No (surveyed)	☐ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Calidris ferruginea Curlew Sandpiper	No (surveyed) *Survey months are outside of the months specified in Bionet.	☐ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☑ Survey month outside the specified months?
Climacteris affinis - endangered population White-browed Treecreeper population in Carrathool local government area south of the Lachlan River and Griffith local government area	No (surveyed)	☐ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Dodonaea sinuolata subsp. acrodentata A Hopbush	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Eleocharis obicis Spike-Rush	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Haliaeetus leucogaster White-bellied Sea-Eagle	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Hamirostra melanosternon Black-breasted Buzzard	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Hieraaetus morphnoides Little Eagle	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Lepidium monoplocoides Winged Peppercress	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Leptorhynchos orientalis Lanky Buttons	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Litoria raniformis Southern Bell Frog	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Lophochroa leadbeateri Major Mitchell's Cockatoo	Yes (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Lophoictinia isura Square-tailed Kite	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Ninox connivens Barking Owl	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Polytelis anthopeplus monarchoides Regent Parrot (eastern subspecies)	Yes (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Polytelis swainsonii Superb Parrot	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Solanum karsense Menindee Nightshade	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Swainsona murrayana Slender Darling Pea	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Tyto novaehollandiae Masked Owl	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

BAM Candidate Species Report

Threatened species Manually Added

None added

BAM Biodiversity Credit Report (Like for like)

Proposal Details

Assessment Id
00026657/BAAS17020/21/00026658

Proposal Name
EnergyConnect East - Lachlan

BAM data last updated *
24/11/2021

Assessor Name
Alexander Cockerill

Assessor Number
BAAS17020

BAM Data version *
50

Proponent Names

Report Created
12/01/2022

BAM Case Status
Finalised

Assessment Revision
0

Assessment Type
Major Projects

Date Finalised
12/01/2022

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Potential Serious and Irreversible Impacts

Name of threatened ecological community	Listing status	Name of Plant Community Type/ID
Nil		

Species
Nil

Additional Information for Approval

PCT Outside Ibra Added

None added

PCTs With Customized Benchmarks

PCT
No Changes

Predicted Threatened Species Not On Site

Name
No Changes

Ecosystem Credit Summary (Number and class of biodiversity credits to be retired)

BAM Biodiversity Credit Report (Like for like)

Name of Plant Community Type/ID	Name of threatened ecological community	Area of impact	HBT Cr	No HBT Cr	Total credits to be retired
15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Not a TEC	1.0	2	0	2
23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones	Acacia melvillei Shrubland in the Riverina and Murray-Darling Depression bioregions	0.1	0	2	2
24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains	Not a TEC	0.4	0	9	9
58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion	Not a TEC	3.7	48	0	48
163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones	Not a TEC	5.7	0	208	208
170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones	Not a TEC	6.4	80	0	80

15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

Like-for-like credit retirement options

Class	Trading group	Zone	HBT	Credits	IBRA region
Inland Floodplain Woodlands This includes PCT's: 13, 15, 16, 83, 438, 454, 630	Inland Floodplain Woodlands >=50% and <70%	15_Mod-good	Yes	2	Lachlan, Darling Depression, Lachlan Plains, Murrumbidgee and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Inland Floodplain Woodlands This includes PCT's: 13, 15, 16, 83, 438, 454, 630	Inland Floodplain Woodlands >=50% and <70%	15_Derived	No	0	Lachlan, Darling Depression, Lachlan Plains, Murrumbidgee and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones

Like-for-like credit retirement options

Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region

	Acacia melvillei Shrubland in the Riverina and Murray-Darling Depression bioregions This includes PCT's: 23, 28, 58, 128, 170, 173	-	23_Mod-good	No	2	Lachlan, Darling Depression, Lachlan Plains, Murrumbidgee and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Inland Floodplain Shrublands This includes PCT's: 17, 24, 25, 115, 160, 161, 240, 241, 247, 261, 271, 375	Inland Floodplain Shrublands <50%	24_Mod-good	No	9	Lachlan, Darling Depression, Lachlan Plains, Murrumbidgee and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion

Like-for-like credit retirement options

Class	Trading group	Zone	HBT	Credits	IBRA region
Semi-arid Sand Plain Woodlands This includes PCT's: 58, 252	Semi-arid Sand Plain Woodlands >=50% and <70%	58_Mod-good	Yes	48	Lachlan, Darling Depression, Lachlan Plains, Murrumbidgee and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones

Like-for-like credit retirement options

Class	Trading group	Zone	HBT	Credits	IBRA region
Riverine Chenopod Shrublands This includes PCT's: 157, 158, 159, 163, 164, 168, 195, 196, 211, 212, 216, 236, 254, 377, 466	Riverine Chenopod Shrublands <50%	163_Mod-good	No	208	Lachlan, Darling Depression, Lachlan Plains, Murrumbidgee and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

BAM Biodiversity Credit Report (Like for like)

170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones

Like-for-like credit retirement options

Class	Trading group	Zone	HBT	Credits	IBRA region
Sand Plain Mallee Woodlands This includes PCT's: 142, 170, 173, 174, 190, 193, 355, 474	Sand Plain Mallee Woodlands <50%	170_Mod-good_bull	Yes	80	Lachlan, Darling Depression, Lachlan Plains, Murrumbidgee and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

Species Credit Summary

Species	Vegetation Zone/s	Area / Count	Credits
Lophochroa leadbeateri / Major Mitchell's Cockatoo	**15_Mod-good**	0.1	3.00
Polytelis anthopeplus monarchoides / Regent Parrot (eastern subspecies)	**15_Mod-good**	0.1	3.00

Credit Retirement Options

Like-for-like credit retirement options

Lophochroa leadbeateri / Major Mitchell's Cockatoo	Spp	IBRA subregion
	Lophochroa leadbeateri / Major Mitchell's Cockatoo	Any in NSW
Polytelis anthopeplus monarchoides / Regent Parrot (eastern subspecies)	Spp	IBRA subregion
	Polytelis anthopeplus monarchoides / Regent Parrot (eastern subspecies)	Any in NSW

APPENDIX F-3
BAM credit report – Murrumbidgee IBRA subregion

BAM Credit Summary Report

Proposal Details

Assessment Id
00026670/BAAS17020/21/00026671

Proposal Name
EnergyConnect East - Murrumbidgee

BAM data last updated *
24/11/2021

Assessor Name
Alexander Cockerill

Report Created
12/01/2022

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Assessor Number
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BAM Case Status
Finalised

Date Finalised
12/01/2022

Assessment Revision
0

Assessment Type
Major Projects

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Ecosystem credits for plant communities types (PCT), ecological communities & threatened species habitat

Zone	Vegetation zone name	TEC name	Current Vegetation integrity score	Change in Vegetation integrity (loss / gain)	Area (ha)	Sensitivity to loss (Justification)	Species sensitivity to gain class	BC Act Listing status	EPBC Act listing status	Biodiversity risk weighting	Potential SAII	Ecosystem credits
Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)												
5	13_Mod-good	Not a TEC	96.7	75.8	9.8	PCT Cleared - 57%	High Sensitivity to Potential Gain			1.75		324

47	13_SVM_Bench	Not a TEC	100	91.3	0.24	PCT Cleared - 57%	High Sensitivity to Potential Gain			1.75		10
											Subtotal	**334**
Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)												
6	15_Mod-good	Not a TEC	84	54.9	14.5	PCT Cleared - 50%	High Sensitivity to Potential Gain			1.75		348
7	15_Derived	Not a TEC	38	38.0	1.9	PCT Cleared - 50%	High Sensitivity to Potential Gain			1.75		31
34	15_SVM_Bench	Not a TEC	100	48.9	0.14	PCT Cleared - 50%	High Sensitivity to Potential Gain			1.75		3
											Subtotal	**382**
Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion												
21	58_Mod-good	Not a TEC	76.7	45.3	36.1	PCT Cleared - 50%	High Sensitivity to Potential Gain			1.75		714
22	58_Derived	Not a TEC	14.4	14.4	4.8	PCT Cleared - 50%	High Sensitivity to Potential Gain			1.75		0

27	58_Moderate	Not a TEC	52.6	26.7	0.3	PCT Cleared - 50%	High Sensitivity to Potential Gain			1.75		4
											Subtotal	**718**
Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion												
29	216_Mod-good	Not a TEC	81.3	81.3	15	PCT Cleared - 0%	High Sensitivity to Potential Gain			1.50		456
											Subtotal	**456**
Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion												
23	157_Mod-good	Not a TEC	81.9	81.9	35.8	PCT Cleared - 60%	High Sensitivity to Potential Gain			1.75		1282
43	157_SVM_Bench	Not a TEC	100	100.0	11.8	PCT Cleared - 60%	High Sensitivity to Potential Gain			1.75		516
											Subtotal	**1798**
Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains												
11	24_Mod-good	Not a TEC	88.9	88.9	11.8	PCT Cleared - 20%	High Sensitivity to Potential Gain			1.50		395

36	24_SVM_Bench	Not a TEC	100	100.0	0.01	PCT Cleared - 20%	High Sensitivity to Potential Gain			1.50		1
											Subtotal	**396**
Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones												
31	170_Mod-good_whip	Not a TEC	74	40.3	0.21	PCT Cleared - 41%	High Sensitivity to Potential Gain			1.50		3
											Subtotal	**3**
Cotton Bush open shrubland of the semi-arid (warm) zone												
26	164_Mod-good	Not a TEC	98.2	98.2	89.2	PCT Cleared - 8%	High Sensitivity to Potential Gain			1.50		3287
45	164_SVM_Bench	Not a TEC	100	100.0	43.1	PCT Cleared - 8%	High Sensitivity to Potential Gain			1.50		1617
											Subtotal	**4904**
Cumbungi rushland wetland of shallow semi-permanent water bodies and inland watercourses												
30	182_Mod-good	Not a TEC	100	100.0	0.07	PCT Cleared - 25%	High Sensitivity to Potential Gain			1.50		3
											Subtotal	**3**

Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion												
18	46_Mod-good	Not a TEC	96.5	96.5	45.2	PCT Cleared - 20%	High Sensitivity to Potential Gain			1.50		1635
41	46_SVM_Bench	Not a TEC	100	100.0	23.1	PCT Cleared - 20%	High Sensitivity to Potential Gain			1.50		866
											Subtotal	**2501**
Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones												
25	163_Mod-good	Not a TEC	98.4	98.4	87.8	PCT Cleared - 26%	High Sensitivity to Potential Gain			1.50		3239
48	163_SVM_Bench	Not a TEC	100	100.0	7.7	PCT Cleared - 26%	High Sensitivity to Potential Gain			1.50		290
											Subtotal	**3529**
Disturbed annual saltbush forbland on clay plains and inundation zones mainly of south-western NSW												
46	166_SVM_Bench	Not a TEC	100	100.0	0.95	PCT Cleared - 34%	High Sensitivity to Potential Gain			1.50		36
											Subtotal	**36**
Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion												
16	44_Mod-good	Not a TEC	88.6	88.6	36.8	PCT Cleared - 73%	High Sensitivity to Potential Gain			2.00		1629

39	44_SVM_Bench	Not a TEC	100	100.0	8.4	PCT Cleared - 73%	High Sensitivity to Potential Gain			2.00		420
											Subtotal	**2049**
Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)												
8	17_Mod-good	Not a TEC	97.7	97.7	13.1	PCT Cleared - 63%	High Sensitivity to Potential Gain			1.75		560
35	17_SVM_Bench	Not a TEC	100	100.0	4.1	PCT Cleared - 63%	High Sensitivity to Potential Gain			1.75		179
											Subtotal	**739**
Narrow-leaved Hopbush - Scrub Turpentine - Senna shrubland on semi-arid and arid sandplains and dunes.												
28	143_Mod-good	Not a TEC	52.9	52.9	0.05	PCT Cleared - 30%	High Sensitivity to Potential Gain			1.50		1
											Subtotal	**1**
Nitre Goosefoot shrubland wetland on clays of the inland floodplains												
24	160_Mod-good	Not a TEC	97.7	97.7	27.2	PCT Cleared - 28%	High Sensitivity to Potential Gain			1.50		998

44	160_SVM_Bench	Not a TEC	100	100.0	1.2	PCT Cleared - 28%	High Sensitivity to Potential Gain			1.50		44
											Subtotal	**1042**
Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion												
17	45_Mod-good	Not a TEC	88.1	88.1	27.2	PCT Cleared - 60%	High Sensitivity to Potential Gain			1.75		1051
40	45_SVM_Bench	Not a TEC	100	100.0	10	PCT Cleared - 60%	High Sensitivity to Potential Gain			1.75		438
											Subtotal	**1489**
River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)												
4	11_Mod-good	Not a TEC	82.2	58.4	13.9	PCT Cleared - 42%	High Sensitivity to Potential Gain			1.50		303
											Subtotal	**303**

River Red Gum - Warrego Grass - Couch Grass riparian tall woodland wetland of the semi-arid (warm) climate zone (Riverina Bioregion and Murray Darling Depression Bioregion)												
3	8_Mod-good	Not a TEC	61.8	53.2	4.8	PCT Cleared - 17%	High Sensitivity to Potential Gain			1.50		95
											Subtotal	**95**
River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion												
2	7_Mod-good	Not a TEC	59.4	44.3	0.77	PCT Cleared - 15%	High Sensitivity to Potential Gain			1.50		13
33	7_SVM_Bench	Not a TEC	100	100.0	0.01	PCT Cleared - 15%	High Sensitivity to Potential Gain			1.50		1
											Subtotal	**14**
River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.												
1	5_Mod-good	Not a TEC	64	54.9	4.9	PCT Cleared - 40%	High Sensitivity to Potential Gain			1.50		100
											Subtotal	**100**

Shallow freshwater wetland sedgeland in depressions on floodplains on inland alluvial plains and floodplains												
20	53_Mod-good	Not a TEC	100	100.0	1.7	PCT Cleared - 67%	High Sensitivity to Potential Gain			1.75		76
											Subtotal	**76**
Swamp grassland wetland of the Riverine Plain												
19	47_Mod-good	Not a TEC	82.5	82.5	2.1	PCT Cleared - 50%	High Sensitivity to Potential Gain			1.75		77
42	47_SVM_Bench	Not a TEC	100	100.0	0.88	PCT Cleared - 50%	High Sensitivity to Potential Gain			1.75		39
											Subtotal	**116**

Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion												
12	26_Mod-good	Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions	93.1	63.8	63.4	PCT Cleared - 90%	High Sensitivity to Potential Gain	Endangered Ecological Community	Endangered	2.00		2023
13	26_Moderate	Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions	64.5	50.0	37.7	PCT Cleared - 90%	High Sensitivity to Potential Gain	Endangered Ecological Community	Endangered	2.00		943

14	26_Derived	Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions	40.2	40.2	212.3	PCT Cleared - 90%	High Sensitivity to Potential Gain	Endangered Ecological Community	Endangered	2.00		4269
37	26_SVM_Bench	Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions	100	86.1	0.09	PCT Cleared - 90%	High Sensitivity to Potential Gain	Endangered Ecological Community	Endangered	2.00		4
											Subtotal	**7239**

White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone												
15	28_Mod-good	Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions	57.2	36.2	19.8	PCT Cleared - 73%	High Sensitivity to Potential Gain	Endangered Ecological Community	Not Listed	2.00		358
38	28_SVM_Bench	Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions	100	83.0	9.4	PCT Cleared - 73%	High Sensitivity to Potential Gain	Endangered Ecological Community	Not Listed	2.00		390
											Subtotal	**748**
Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones												
9	23_Mod-good	Acacia melvillei Shrubland in the Riverina and Murray-Darling Depression bioregions	72.5	52.3	5.6	PCT Cleared - 71%	High Sensitivity to Potential Gain	Endangered Ecological Community	Not Listed	2.00		147

10	23_Derived	Acacia melvillei Shrubland in the Riverina and Murray-Darling Depression bioregions	42.2	42.2	7.7	PCT Cleared - 71%	High Sensitivity to Potential Gain	Endangered Ecological Community	Not Listed	2.00		163
											Subtotal	**310**

Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion												
32	75_Mod-good	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	80.7	53.6	0.21	PCT Cleared - 92%	High Sensitivity to Potential Gain	Critically Endangered Ecological Community	Critically Endangered	2.50	TRUE	7
											Subtotal	**7**
											Total	**29388**

Species credits for threatened species

Vegetation zone name	Habitat condition (Vegetation Integrity)	Change in habitat condition	Area (ha)/Count (no. individuals)	Sensitivity to loss (Justification)	Sensitivity to gain (Justification)	BC Act Listing status	EPBC Act listing status	Potential SAII	Species credits
Brachyscome papillosa / Mossgiel Daisy (Flora)									
17_Mod-good	97.7	97.7	3.7			Vulnerable	Vulnerable	False	183

24_Mod-good	88.9	88.9	1.5			Vulnerable	Vulnerable	False	67
160_Mod-good	97.7	97.7	6.3			Vulnerable	Vulnerable	False	309
163_Mod-good	98.4	98.4	8.8			Vulnerable	Vulnerable	False	432
164_Mod-good	98.2	98.2	2.4			Vulnerable	Vulnerable	False	118
17_SVM_Bench	100.0	100.0	4.1			Vulnerable	Vulnerable	False	205
24_SVM_Bench	100.0	100.0	0.01			Vulnerable	Vulnerable	False	1
160_SVM_Bench	100.0	100.0	1.2			Vulnerable	Vulnerable	False	59
164_SVM_Bench	100.0	100.0	43.1			Vulnerable	Vulnerable	False	2156
								Subtotal	**3530**
Cullen parvum / Small Scurf-pea (Flora)									
5_Mod-good	54.9	54.9	1.6			Endangered	Not Listed	False	45
7_Mod-good	44.3	44.3	0.25			Endangered	Not Listed	False	6
44_Mod-good	88.6	88.6	36.6			Endangered	Not Listed	False	1623
45_Mod-good	88.1	88.1	0.01			Endangered	Not Listed	False	1
46_Mod-good	96.5	96.5	0.01			Endangered	Not Listed	False	1
160_Mod-good	97.7	97.7	0.25			Endangered	Not Listed	False	12
164_Mod-good	98.2	98.2	0.01			Endangered	Not Listed	False	1
182_Mod-good	100.0	100.0	0.01			Endangered	Not Listed	False	1
7_SVM_Bench	100.0	100.0	0.01			Endangered	Not Listed	False	1
44_SVM_Bench	100.0	100.0	6.4			Endangered	Not Listed	False	319
								Subtotal	**2010**
Hieraaetus morphnoides / Little Eagle (Fauna)									
5_Mod-good	54.9	54.9	0.16			Vulnerable	Not Listed	False	3
7_Mod-good	44.3	44.3	0.02			Vulnerable	Not Listed	False	1

11_Mod-good	58.4	58.4	0.24			Vulnerable	Not Listed	False	5
13_Mod-good	75.8	75.8	0.09			Vulnerable	Not Listed	False	3
15_Mod-good	54.9	54.9	0.08			Vulnerable	Not Listed	False	2
17_Mod-good	97.7	97.7	0.16			Vulnerable	Not Listed	False	6
26_Mod-good	63.8	63.8	2.7			Vulnerable	Not Listed	False	65
26_Moderate	50.0	50.0	0.11			Vulnerable	Not Listed	False	2
26_Derived	40.2	40.2	4.7			Vulnerable	Not Listed	False	70
46_Mod-good	96.5	96.5	2.5			Vulnerable	Not Listed	False	89
216_Mod-good	81.3	81.3	0.52			Vulnerable	Not Listed	False	16
75_Mod-good	53.6	53.6	0.01			Vulnerable	Not Listed	False	1
17_SVM_Bench	100.0	100.0	0.06			Vulnerable	Not Listed	False	2
26_SVM_Bench	86.1	86.1	0.01			Vulnerable	Not Listed	False	1
								Subtotal	**266**
Lepidium monoplocoides / Winged Peppercress (Flora)									
44_Mod-good	88.6	88.6	0.2			Endangered	Endangered	False	9
160_Mod-good	97.7	97.7	0.25			Endangered	Endangered	False	12
44_SVM_Bench	100.0	100.0	6.6			Endangered	Endangered	False	328
								Subtotal	**349**
Leptorhynchos orientalis / Lanky Buttons (Flora)									
44_Mod-good	88.6	88.6	8.7			Endangered	Not Listed	False	385
160_Mod-good	97.7	97.7	0.25			Endangered	Not Listed	False	12
44_SVM_Bench	100.0	100.0	6.4			Endangered	Not Listed	False	319
								Subtotal	**716**

Lophochroa leadbeateri / Major Mitchell's Cockatoo (Fauna)									
7_Mod-good	44.3	44.3	0.02			Vulnerable	Not Listed	False	1
8_Mod-good	53.2	53.2	4.8			Vulnerable	Not Listed	False	127
11_Mod-good	58.4	58.4	8.2			Vulnerable	Not Listed	False	238
13_Mod-good	75.8	75.8	1.4			Vulnerable	Not Listed	False	55
15_Mod-good	54.9	54.9	12.4			Vulnerable	Not Listed	False	341
26_Mod-good	63.8	63.8	2.7			Vulnerable	Not Listed	False	87
26_Moderate	50.0	50.0	0.11			Vulnerable	Not Listed	False	3
26_Derived	40.2	40.2	4.7			Vulnerable	Not Listed	False	94
28_Mod-good	36.2	36.2	0.4			Vulnerable	Not Listed	False	7
15_SVM_Bench	48.9	48.9	0.14			Vulnerable	Not Listed	False	3
26_SVM_Bench	86.1	86.1	0.01			Vulnerable	Not Listed	False	1
								Subtotal	**957**
Maireana cheelii / Chariot Wheels (Flora)									
17_Mod-good	97.7	97.7	2.2			Vulnerable	Vulnerable	False	107
44_Mod-good	88.6	88.6	8.2			Vulnerable	Vulnerable	False	363
46_Mod-good	96.5	96.5	5			Vulnerable	Vulnerable	False	244
58_Mod-good	45.3	45.3	0.01			Vulnerable	Vulnerable	False	1
157_Mod-good	81.9	81.9	6.1			Vulnerable	Vulnerable	False	251
163_Mod-good	98.4	98.4	4.9			Vulnerable	Vulnerable	False	241
164_Mod-good	98.2	98.2	1.3			Vulnerable	Vulnerable	False	66
216_Mod-good	81.3	81.3	0.17			Vulnerable	Vulnerable	False	7
17_SVM_Bench	100.0	100.0	3.5			Vulnerable	Vulnerable	False	174
28_SVM_Bench	83.0	83.0	1.3			Vulnerable	Vulnerable	False	54

46_SVM_Bench	100.0	100.0	23.1			Vulnerable	Vulnerable	False	1154
157_SVM_Bench	100.0	100.0	10.7			Vulnerable	Vulnerable	False	535
164_SVM_Bench	100.0	100.0	43.1			Vulnerable	Vulnerable	False	2156
								Subtotal	**5353**
Myotis macropus / Southern Myotis (Fauna)									
8_Mod-good	53.2	53.2	4.8			Vulnerable	Not Listed	False	127
								Subtotal	**127**
Pedionomus torquatus / Plains-wanderer (Fauna)									
17_Mod-good	97.7	97.7	0.01			Endangered	Critically Endangered	True	1
44_Mod-good	88.6	88.6	0.09			Endangered	Critically Endangered	True	6
46_Mod-good	96.5	96.5	0.21			Endangered	Critically Endangered	True	15
46_SVM_Bench	100.0	100.0	0.03			Endangered	Critically Endangered	True	2
164_SVM_Bench	100.0	100.0	0.07			Endangered	Critically Endangered	True	5
								Subtotal	**29**
Pilularia novae-hollandiae / Austral Pillwort (Flora)									
17_Mod-good	97.7	97.7	2.4			Endangered	Not Listed	True	173
160_Mod-good	97.7	97.7	0.98			Endangered	Not Listed	True	72
17_SVM_Bench	100.0	100.0	4.1			Endangered	Not Listed	True	308
44_SVM_Bench	100.0	100.0	0.01			Endangered	Not Listed	True	1
160_SVM_Bench	100.0	100.0	1.2			Endangered	Not Listed	True	88

								Subtotal	**642**
Polytelis anthopeplus monarchoides / Regent Parrot (eastern subspecies) (Fauna)									
8_Mod-good	53.2	53.2	4.8			Endangered	Vulnerable	False	127
11_Mod-good	58.4	58.4	8.2			Endangered	Vulnerable	False	238
13_Mod-good	75.8	75.8	1.4			Endangered	Vulnerable	False	55
15_Mod-good	54.9	54.9	12.4			Endangered	Vulnerable	False	341
15_SVM_Bench	48.9	48.9	0.14			Endangered	Vulnerable	False	3
								Subtotal	**764**
Polytelis swainsonii / Superb Parrot (Fauna)									
5_Mod-good	54.9	54.9	4.9			Vulnerable	Vulnerable	False	134
7_Mod-good	44.3	44.3	0.77			Vulnerable	Vulnerable	False	17
11_Mod-good	58.4	58.4	6.2			Vulnerable	Vulnerable	False	181
13_Mod-good	75.8	75.8	9.8			Vulnerable	Vulnerable	False	370
15_Mod-good	54.9	54.9	2.9			Vulnerable	Vulnerable	False	78
26_Mod-good	63.8	63.8	2.7			Vulnerable	Vulnerable	False	87
26_Moderate	50.0	50.0	0.11			Vulnerable	Vulnerable	False	3
26_Derived	40.2	40.2	4.7			Vulnerable	Vulnerable	False	94
28_Mod-good	36.2	36.2	0.4			Vulnerable	Vulnerable	False	7
45_Mod-good	88.1	88.1	2.7			Vulnerable	Vulnerable	False	120
46_Mod-good	96.5	96.5	2.5			Vulnerable	Vulnerable	False	119
75_Mod-good	53.6	53.6	0.01			Vulnerable	Vulnerable	False	1
26_SVM_Bench	86.1	86.1	0.01			Vulnerable	Vulnerable	False	1
45_SVM_Bench	100.0	100.0	1			Vulnerable	Vulnerable	False	51
								Subtotal	**1263**

Swainsona murrayana / Slender Darling Pea (Flora)									
17_Mod-good	97.7	97.7	5			Vulnerable	Vulnerable	False	242
24_Mod-good	88.9	88.9	3.3			Vulnerable	Vulnerable	False	148
26_Mod-good	63.8	63.8	2.9			Vulnerable	Vulnerable	False	92
26_Moderate	50.0	50.0	18.9			Vulnerable	Vulnerable	False	473
26_Derived	40.2	40.2	23.7			Vulnerable	Vulnerable	False	477
44_Mod-good	88.6	88.6	16.7			Vulnerable	Vulnerable	False	741
45_Mod-good	88.1	88.1	13.1			Vulnerable	Vulnerable	False	576
46_Mod-good	96.5	96.5	25.9			Vulnerable	Vulnerable	False	1251
47_Mod-good	82.5	82.5	0.17			Vulnerable	Vulnerable	False	7
53_Mod-good	100.0	100.0	1.7			Vulnerable	Vulnerable	False	87
157_Mod-good	81.9	81.9	5.8			Vulnerable	Vulnerable	False	237
160_Mod-good	97.7	97.7	1.4			Vulnerable	Vulnerable	False	68
163_Mod-good	98.4	98.4	11			Vulnerable	Vulnerable	False	540
164_Mod-good	98.2	98.2	3.3			Vulnerable	Vulnerable	False	161
216_Mod-good	81.3	81.3	0.01			Vulnerable	Vulnerable	False	1
17_SVM_Bench	100.0	100.0	4.1			Vulnerable	Vulnerable	False	205
24_SVM_Bench	100.0	100.0	0.01			Vulnerable	Vulnerable	False	1
26_SVM_Bench	86.1	86.1	0.04			Vulnerable	Vulnerable	False	2
44_SVM_Bench	100.0	100.0	6.4			Vulnerable	Vulnerable	False	319
45_SVM_Bench	100.0	100.0	10			Vulnerable	Vulnerable	False	501
46_SVM_Bench	100.0	100.0	23.1			Vulnerable	Vulnerable	False	1154
47_SVM_Bench	100.0	100.0	0.88			Vulnerable	Vulnerable	False	44
157_SVM_Bench	100.0	100.0	10.7			Vulnerable	Vulnerable	False	535

160_SVM_Bench	100.0	100.0	1.2			Vulnerable	Vulnerable	False	59
164_SVM_Bench	100.0	100.0	43.1			Vulnerable	Vulnerable	False	2156
								Subtotal	**10077**
Swainsona sericea / Silky Swainson-pea (Flora)									
44_Mod-good	88.6	88.6	13.2			Vulnerable	Not Listed	False	585
45_Mod-good	88.1	88.1	3.9			Vulnerable	Not Listed	False	174
46_Mod-good	96.5	96.5	5.9			Vulnerable	Not Listed	False	287
47_Mod-good	82.5	82.5	0.17			Vulnerable	Not Listed	False	7
160_Mod-good	97.7	97.7	0.01			Vulnerable	Not Listed	False	1
164_Mod-good	98.2	98.2	0.04			Vulnerable	Not Listed	False	2
44_SVM_Bench	100.0	100.0	6.4			Vulnerable	Not Listed	False	320
45_SVM_Bench	100.0	100.0	10			Vulnerable	Not Listed	False	501
46_SVM_Bench	100.0	100.0	23.1			Vulnerable	Not Listed	False	1154
47_SVM_Bench	100.0	100.0	0.88			Vulnerable	Not Listed	False	44
160_SVM_Bench	100.0	100.0	1.2			Vulnerable	Not Listed	False	59
164_SVM_Bench	100.0	100.0	43.1			Vulnerable	Not Listed	False	2156
								Subtotal	**5290**

BAM Vegetation Zones Report

Proposal Details

Assessment Id
00026670/BAAS17020/21/00026671

Assessment name
EnergyConnect East - Murrumbidgee

BAM data last updated *
24/11/2021

Assessor Name
Alexander Cockerill

Report Created
03/12/2021

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50

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0

Date Finalised
To be finalised

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Vegetation Zones

#	Name	PCT	Condition	Area	Minimum number of plots	Management zones

1	5_Mod-good	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.	Mod-good	4.88	2	Area A (1.64 ha) Area B4 (1.95 ha) Area B10 (1.29 ha)
2	7_Mod-good	7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion	Mod-good	0.77	1	Area A (0.25 ha) Area B4 (0.36 ha) Area B10 (0.16 ha)
3	8_Mod-good	8-River Red Gum - Warrego Grass - Couch Grass riparian tall woodland wetland of the semi-arid (warm) climate zone (Riverina Bioregion and Murray Darling Depression Bioregion)	Mod-good	4.77	2	Area A (1.7 ha) Area B4 (1.73 ha) Area B10 (1.34 ha)
4	11_Mod-good	11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Mod-good	13.86	3	Area A (5 ha) Area B4 (5.33 ha) Area B10 (3.53 ha)
5	13_Mod-good	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Mod-good	9.76	3	Area A (5.76 ha) Area B4 (2.33 ha) Area B10 (1.67 ha)

6	15_Mod-good	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Mod-good	14.49	3	Area A (5.3 ha) Area B4 (5.31 ha) Area B10 (3.88 ha)
7	15_Derived	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Derived	1.89	1	Area A (1.89 ha)
8	17_Mod-good	17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Mod-good	13.1	3	Area A (13.1 ha)
9	23_Mod-good	23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones	Mod-good	5.62	3	Area A (2.51 ha) Area B4 (3.11 ha)
10	23_Derived	23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones	Derived	7.71	3	Area A (7.71 ha)
11	24_Mod-good	24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains	Mod-good	11.85	3	Area A (11.85 ha)
12	26_Mod-good	26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion	Mod-good	63.42	5	Area A (32.57 ha) Area B4 (30.85 ha)

13	26_Moderate	26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion	Moderate	37.7	4	Area A (19.69 ha) Area B4 (18.01 ha)
14	26_Derived	26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion	Derived	212.33	6	Area A (212.33 ha)
15	28_Mod-good	28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone	Mod-good	19.76	3	Area A (6.99 ha) Area B4 (7.56 ha) Area B10 (5.21 ha)
16	44_Mod-good	44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion	Mod-good	36.75	4	Area A (36.75 ha)
17	45_Mod-good	45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion	Mod-good	27.25	4	Area A (27.25 ha)
18	46_Mod-good	46-Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion	Mod-good	45.18	4	Area A (45.18 ha)
19	47_Mod-good	47-Swamp grassland wetland of the Riverine Plain	Mod-good	2.13	2	Area A (2.13 ha)
20	53_Mod-good	53-Shallow freshwater wetland sedgeland in depressions on floodplains on inland alluvial plains and floodplains	Mod-good	1.73	1	Area A (1.73 ha)

21	58_Mod-good	58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion	Mod-good	36.06	4	Area A (11.99 ha) Area B4 (13.92 ha) Area B10 (10.15 ha)
22	58_Derived	58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion	Derived	4.81	2	Area A (4.81 ha)
23	157_Mod-good	157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion	Mod-good	35.8	4	Area A (35.8 ha)
24	160_Mod-good	160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains	Mod-good	27.24	4	Area A (27.24 ha)
25	163_Mod-good	163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones	Mod-good	87.79	5	Area A (87.79 ha)
26	164_Mod-good	164-Cotton Bush open shrubland of the semi-arid (warm) zone	Mod-good	89.23	5	Area A (89.23 ha)
27	58_Moderate	58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion	Moderate	0.3	1	Area A (0.09 ha) Area B4 (0.14 ha) Area B10 (0.07 ha)
28	143_Mod-good	143-Narrow-leaved Hopbush - Scrub Turpentine - Senna shrubland on semi-arid and arid sandplains and dunes.	Mod-good	0.05	1	Area A (0.05 ha)
29	216_Mod-good	216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion	Mod-good	14.96	3	Area A (14.96 ha)

30	182_Mod-good	182-Cumbungi rushland wetland of shallow semi-permanent water bodies and inland watercourses	Mod-good	0.07	1	Area A (0.07 ha)
31	170_Mod-good_whip	170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones	Mod-good_whip	0.21	1	Area A (0.06 ha) Area B4 (0.15 ha)
32	75_Mod-good	75-Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion	Mod-good	0.21	1	Area A (0.06 ha) Area B4 (0.1 ha) Area B10 (0.05 ha)
33	7_SVM_Bench	7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion	SVM_Bench	0.01	1	Area A (0.01 ha)
34	15_SVM_Bench	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	SVM_Bench	0.14	1	Area A (0.01 ha) Area B4 (0.04 ha) Area B10 (0.09 ha)
35	17_SVM_Bench	17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	SVM_Bench	4.1	2	Area A (4.1 ha)
36	24_SVM_Bench	24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains	SVM_Bench	0.01	1	Area A (0.01 ha)

37	26_SVM_Bench	26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion	SVM_Bench	0.09	1	Area A (0.07 ha) Area B4 (0.02 ha)
38	28_SVM_Bench	28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone	SVM_Bench	9.39	3	Area A (6.84 ha) Area B4 (1.49 ha) Area B10 (1.06 ha)
39	44_SVM_Bench	44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion	SVM_Bench	8.4	3	Area A (8.4 ha)
40	45_SVM_Bench	45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion	SVM_Bench	10.01	3	Area A (10.01 ha)
41	46_SVM_Bench	46-Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion	SVM_Bench	23.08	4	Area A (23.08 ha)
42	47_SVM_Bench	47-Swamp grassland wetland of the Riverine Plain	SVM_Bench	0.88	1	Area A (0.88 ha)
43	157_SVM_Bench	157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion	SVM_Bench	11.8	3	Area A (11.8 ha)
44	160_SVM_Bench	160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains	SVM_Bench	1.17	1	Area A (1.17 ha)

45	164_SVM_Bench	164-Cotton Bush open shrubland of the semi-arid (warm) zone	SVM_Bench	43.12	4	Area A (43.12 ha)
46	166_SVM_Bench	166-Disturbed annual saltbush forbland on clay plains and inundation zones mainly of south-western NSW	SVM_Bench	0.95	1	Area A (0.95 ha)
47	13_SVM_Bench	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	SVM_Bench	0.24	1	Area A (0.2 ha) Area B4 (0.04 ha)
48	163_SVM_Bench	163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones	SVM_Bench	7.73	3	Area A (7.73 ha)

BAM Predicted Species Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00026670/BAAS17020/21/00026671	EnergyConnect East - Murrumbidgee	24/11/2021
Assessor Name	Report Created	BAM Data version *
Alexander Cockerill	12/01/2022	50
Assessor Number	Assessment Type	BAM Case Status
BAAS17020	Major Projects	Finalised
Assessment Revision		Date Finalised
0		12/01/2022

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Threatened species reliably predicted to utilise the site. No surveys are required for these species. Ecosystem credits apply to these species.

Common Name	Scientific Name	Vegetation Types(s)
Australasian Bittern	Botaurus poiciloptilus	8-River Red Gum - Warrego Grass - Couch Grass riparian tall woodland wetland of the semi-arid (warm) climate zone (Riverina Bioregion and Murray Darling Depression Bioregion)
		11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		53-Shallow freshwater wetland sedgeland in depressions on floodplains on inland alluvial plains and floodplains
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
		182-Cumbungi rushland wetland of shallow semi-permanent water bodies and inland watercourses

Australian Painted Snipe	Rostratula australis	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
		7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion
		8-River Red Gum - Warrego Grass - Couch Grass riparian tall woodland wetland of the semi-arid (warm) climate zone (Riverina Bioregion and Murray Darling Depression Bioregion)
		11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		47-Swamp grassland wetland of the Riverine Plain
		53-Shallow freshwater wetland sedgeland in depressions on floodplains on inland alluvial plains and floodplains
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
		182-Cumbungi rushland wetland of shallow semi-permanent water bodies and inland watercourses
Barking Owl	Ninox connivens	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
		7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion
		8-River Red Gum - Warrego Grass - Couch Grass riparian tall woodland wetland of the semi-arid (warm) climate zone (Riverina Bioregion and Murray Darling Depression Bioregion)
		11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

Barking Owl	Ninox connivens	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		53-Shallow freshwater wetland sedgeland in depressions on floodplains on inland alluvial plains and floodplains
		75-Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion
Black Falcon	Falco subniger	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
		7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion
		8-River Red Gum - Warrego Grass - Couch Grass riparian tall woodland wetland of the semi-arid (warm) climate zone (Riverina Bioregion and Murray Darling Depression Bioregion)
		11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion

Black Falcon	Falco subniger	28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion
		45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion
		46-Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion
		47-Swamp grassland wetland of the Riverine Plain
		53-Shallow freshwater wetland sedgeland in depressions on floodplains on inland alluvial plains and floodplains
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		164-Cotton Bush open shrubland of the semi-arid (warm) zone
		143-Narrow-leaved Hopbush - Scrub Turpentine - Senna shrubland on semi-arid and arid sandplains and dunes.
		216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion
		182-Cumbungi rushland wetland of shallow semi-permanent water bodies and inland watercourses
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		75-Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion
		166-Disturbed annual saltbush forbland on clay plains and inundation zones mainly of south-western NSW

Black-chinned Honeyeater (eastern subspecies)	Melithreptus gularis gularis	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
		7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion
		8-River Red Gum - Warrego Grass - Couch Grass riparian tall woodland wetland of the semi-arid (warm) climate zone (Riverina Bioregion and Murray Darling Depression Bioregion)
		11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
Black-tailed Godwit	Limosa limosa	53-Shallow freshwater wetland sedgeland in depressions on floodplains on inland alluvial plains and floodplains
		166-Disturbed annual saltbush forbland on clay plains and inundation zones mainly of south-western NSW
Blue-billed Duck	Oxyura australis	17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		53-Shallow freshwater wetland sedgeland in depressions on floodplains on inland alluvial plains and floodplains
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
		182-Cumbungi rushland wetland of shallow semi-permanent water bodies and inland watercourses
Brolga	Grus rubicunda	7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion
		8-River Red Gum - Warrego Grass - Couch Grass riparian tall woodland wetland of the semi-arid (warm) climate zone (Riverina Bioregion and Murray Darling Depression Bioregion)
		11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

Brolga	Grus rubicunda	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion
		47-Swamp grassland wetland of the Riverine Plain
		53-Shallow freshwater wetland sedgeland in depressions on floodplains on inland alluvial plains and floodplains
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		182-Cumbungi rushland wetland of shallow semi-permanent water bodies and inland watercourses
		166-Disturbed annual saltbush forbland on clay plains and inundation zones mainly of south-western NSW
Curlew Sandpiper	Calidris ferruginea	24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		47-Swamp grassland wetland of the Riverine Plain
		53-Shallow freshwater wetland sedgeland in depressions on floodplains on inland alluvial plains and floodplains
Diamond Firetail	Stagonopleura guttata	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
		7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion
		8-River Red Gum - Warrego Grass - Couch Grass riparian tall woodland wetland of the semi-arid (warm) climate zone (Riverina Bioregion and Murray Darling Depression Bioregion)

Diamond Firetail	Stagonopleura guttata	11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion
		45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion
		46-Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		75-Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion
Dusky Woodswallow	Artamus cyanopterus cyanopterus	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
		7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion
		8-River Red Gum - Warrego Grass - Couch Grass riparian tall woodland wetland of the semi-arid (warm) climate zone (Riverina Bioregion and Murray Darling Depression Bioregion)

Dusky Woodswallow	Artamus cyanopterus cyanopterus	11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion
		45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion
		46-Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion
		47-Swamp grassland wetland of the Riverine Plain
		53-Shallow freshwater wetland sedgeland in depressions on floodplains on inland alluvial plains and floodplains
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains

Dusky Woodswallow	Artamus cyanopterus cyanopterus	163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		164-Cotton Bush open shrubland of the semi-arid (warm) zone
		143-Narrow-leaved Hopbush - Scrub Turpentine - Senna shrubland on semi-arid and arid sandplains and dunes.
		216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion
		182-Cumbungi rushland wetland of shallow semi-permanent water bodies and inland watercourses
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		75-Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion
		166-Disturbed annual saltbush forbland on clay plains and inundation zones mainly of south-western NSW
Flame Robin	Petroica phoenicea	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
		7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion
Freckled Duck	Stictonetta naevosa	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
		7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion
		8-River Red Gum - Warrego Grass - Couch Grass riparian tall woodland wetland of the semi-arid (warm) climate zone (Riverina Bioregion and Murray Darling Depression Bioregion)
		11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

Freckled Duck	Stictonetta naevosa	17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		53-Shallow freshwater wetland sedgeland in depressions on floodplains on inland alluvial plains and floodplains
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
		182-Cumbungi rushland wetland of shallow semi-permanent water bodies and inland watercourses
Gilbert's Whistler	Pachycephala inornata	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
		11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
Grey Falcon	Falco hypoleucos	8-River Red Gum - Warrego Grass - Couch Grass riparian tall woodland wetland of the semi-arid (warm) climate zone (Riverina Bioregion and Murray Darling Depression Bioregion)
		11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

Grey Falcon	Falco hypoleucos	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion
		45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion
		46-Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion
		47-Swamp grassland wetland of the Riverine Plain
		53-Shallow freshwater wetland sedgeland in depressions on floodplains on inland alluvial plains and floodplains
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		164-Cotton Bush open shrubland of the semi-arid (warm) zone

Grey Falcon	Falco hypoleucos	143-Narrow-leaved Hopbush - Scrub Turpentine - Senna shrubland on semi-arid and arid sandplains and dunes.
		216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion
		182-Cumbungi rushland wetland of shallow semi-permanent water bodies and inland watercourses
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		166-Disturbed annual saltbush forbland on clay plains and inundation zones mainly of south-western NSW
Grey-crowned Babbler (eastern subspecies)	Pomatostomus temporalis temporalis	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		143-Narrow-leaved Hopbush - Scrub Turpentine - Senna shrubland on semi-arid and arid sandplains and dunes.
		75-Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion
Hooded Robin (south-eastern form)	Melanodryas cucullata cucullata	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
		7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion
		8-River Red Gum - Warrego Grass - Couch Grass riparian tall woodland wetland of the semi-arid (warm) climate zone (Riverina Bioregion and Murray Darling Depression Bioregion)

Hooded Robin (south-eastern form)	Melanodryas cucullata cucullata	11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		143-Narrow-leaved Hopbush - Scrub Turpentine - Senna shrubland on semi-arid and arid sandplains and dunes.
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		75-Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion
Inland Forest Bat	Vespadelus baverstocki	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion

Inland Forest Bat	Vespadelus baverstocki	143-Narrow-leaved Hopbush - Scrub Turpentine - Senna shrubland on semi-arid and arid sandplains and dunes.
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
Koala	Phascolarctos cinereus	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
		7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion
		8-River Red Gum - Warrego Grass - Couch Grass riparian tall woodland wetland of the semi-arid (warm) climate zone (Riverina Bioregion and Murray Darling Depression Bioregion)
		11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		75-Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion
Little Eagle	Hieraaetus morphnoides	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
		7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion
		8-River Red Gum - Warrego Grass - Couch Grass riparian tall woodland wetland of the semi-arid (warm) climate zone (Riverina Bioregion and Murray Darling Depression Bioregion)
		11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

Little Eagle	Hieraaetus morphnoides	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion
		45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion
		46-Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion
		47-Swamp grassland wetland of the Riverine Plain
		53-Shallow freshwater wetland sedgeland in depressions on floodplains on inland alluvial plains and floodplains
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		164-Cotton Bush open shrubland of the semi-arid (warm) zone

Little Eagle	Hieraaetus morphnoides	143-Narrow-leaved Hopbush - Scrub Turpentine - Senna shrubland on semi-arid and arid sandplains and dunes.
		216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion
		182-Cumbungi rushland wetland of shallow semi-permanent water bodies and inland watercourses
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		75-Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion
		166-Disturbed annual saltbush forbland on clay plains and inundation zones mainly of south-western NSW
Little Pied Bat	Chalinolobus picatus	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
		7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion
		8-River Red Gum - Warrego Grass - Couch Grass riparian tall woodland wetland of the semi-arid (warm) climate zone (Riverina Bioregion and Murray Darling Depression Bioregion)
		11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains

Little Pied Bat	Chalinolobus picatus	26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		53-Shallow freshwater wetland sedgeland in depressions on floodplains on inland alluvial plains and floodplains
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		164-Cotton Bush open shrubland of the semi-arid (warm) zone
		143-Narrow-leaved Hopbush - Scrub Turpentine - Senna shrubland on semi-arid and arid sandplains and dunes.
		216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion
		182-Cumbungi rushland wetland of shallow semi-permanent water bodies and inland watercourses
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		166-Disturbed annual saltbush forbland on clay plains and inundation zones mainly of south-western NSW
Magpie Goose	Anseranas semipalmata	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion
		47-Swamp grassland wetland of the Riverine Plain
		53-Shallow freshwater wetland sedgeland in depressions on floodplains on inland alluvial plains and floodplains

Magpie Goose	Anseranas semipalmata	160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		182-Cumbungi rushland wetland of shallow semi-permanent water bodies and inland watercourses
Major Mitchell's Cockatoo	Lophochroa leadbeateri	7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion
		8-River Red Gum - Warrego Grass - Couch Grass riparian tall woodland wetland of the semi-arid (warm) climate zone (Riverina Bioregion and Murray Darling Depression Bioregion)
		11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		143-Narrow-leaved Hopbush - Scrub Turpentine - Senna shrubland on semi-arid and arid sandplains and dunes.
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones

Major Mitchell's Cockatoo	Lophochroa leadbeateri	166-Disturbed annual saltbush forbland on clay plains and inundation zones mainly of south-western NSW
Masked Owl	Tyto novaehollandiae	7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion
		11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		53-Shallow freshwater wetland sedgeland in depressions on floodplains on inland alluvial plains and floodplains
Painted Honeyeater	Grantiella picta	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
		7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion
		8-River Red Gum - Warrego Grass - Couch Grass riparian tall woodland wetland of the semi-arid (warm) climate zone (Riverina Bioregion and Murray Darling Depression Bioregion)
		11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion

Painted Honeyeater	Grantiella picta	28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		143-Narrow-leaved Hopbush - Scrub Turpentine - Senna shrubland on semi-arid and arid sandplains and dunes.
		75-Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion
Pied Honeyeater	Certhionyx variegatus	8-River Red Gum - Warrego Grass - Couch Grass riparian tall woodland wetland of the semi-arid (warm) climate zone (Riverina Bioregion and Murray Darling Depression Bioregion)
		11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		143-Narrow-leaved Hopbush - Scrub Turpentine - Senna shrubland on semi-arid and arid sandplains and dunes.

Pied Honeyeater	Certhionyx variegatus	170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
Plains-wanderer	Pedionomus torquatus	44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion
		46-Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion
Redthroat	Pyrrholaemus brunneus	17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
Regent Honeyeater	Anthochaera phrygia	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
		7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion
		75-Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion
Regent Parrot (eastern subspecies)	Polytelis anthopeplus monarchoides	8-River Red Gum - Warrego Grass - Couch Grass riparian tall woodland wetland of the semi-arid (warm) climate zone (Riverina Bioregion and Murray Darling Depression Bioregion)
		11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion

Regent Parrot (eastern subspecies)	Polytelis anthopeplus monarchoides	170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
Scarlet Robin	Petroica boodang	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
		7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion
		11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		75-Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion
Speckled Warbler	Chthonicola sagittata	75-Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion
Spotted Harrier	Circus assimilis	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
		7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion
		8-River Red Gum - Warrego Grass - Couch Grass riparian tall woodland wetland of the semi-arid (warm) climate zone (Riverina Bioregion and Murray Darling Depression Bioregion)
		11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

Spotted Harrier	Circus assimilis	15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion
		45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion
		46-Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion
		47-Swamp grassland wetland of the Riverine Plain
		53-Shallow freshwater wetland sedgeland in depressions on floodplains on inland alluvial plains and floodplains
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		164-Cotton Bush open shrubland of the semi-arid (warm) zone
		143-Narrow-leaved Hopbush - Scrub Turpentine - Senna shrubland on semi-arid and arid sandplains and dunes.

Spotted Harrier	Circus assimilis	216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion
		182-Cumbungi rushland wetland of shallow semi-permanent water bodies and inland watercourses
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		75-Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion
		166-Disturbed annual saltbush forbland on clay plains and inundation zones mainly of south-western NSW
Square-tailed Kite	Lophoictinia isura	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
		7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion
		8-River Red Gum - Warrego Grass - Couch Grass riparian tall woodland wetland of the semi-arid (warm) climate zone (Riverina Bioregion and Murray Darling Depression Bioregion)
		11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion

Square-tailed Kite	Lophoictinia isura	58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
Superb Parrot	Polytelis swainsonii	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
		7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion
		11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion
		46-Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion
		75-Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion
Swift Parrot	Lathamus discolor	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
		7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion
		8-River Red Gum - Warrego Grass - Couch Grass riparian tall woodland wetland of the semi-arid (warm) climate zone (Riverina Bioregion and Murray Darling Depression Bioregion)

Swift Parrot	Lathamus discolor	11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		75-Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion
Turquoise Parrot	Neophema pulchella	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
		75-Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion
Varied Sittella	Daphoenositta chrysoptera	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
		7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion
		8-River Red Gum - Warrego Grass - Couch Grass riparian tall woodland wetland of the semi-arid (warm) climate zone (Riverina Bioregion and Murray Darling Depression Bioregion)
		11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone

Varied Sittella	Daphoenositta chrysoptera	58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		75-Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion
Western Blue-tongued Lizard	Tiliqua occipitalis	170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
White-bellied Sea-Eagle	Haliaeetus leucogaster	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
		7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion
		8-River Red Gum - Warrego Grass - Couch Grass riparian tall woodland wetland of the semi-arid (warm) climate zone (Riverina Bioregion and Murray Darling Depression Bioregion)
		11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion

White-bellied Sea-Eagle	Haliaeetus leucogaster	28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion
		45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion
		46-Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion
		47-Swamp grassland wetland of the Riverine Plain
		53-Shallow freshwater wetland sedgeland in depressions on floodplains on inland alluivial plains and floodplains
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		164-Cotton Bush open shrubland of the semi-arid (warm) zone
		143-Narrow-leaved Hopbush - Scrub Turpentine - Senna shrubland on semi-arid and arid sandplains and dunes.
		216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion
		182-Cumbungi rushland wetland of shallow semi-permanent water bodies and inland watercourses
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones
		75-Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion
		166-Disturbed annual saltbush forbland on clay plains and inundation zones mainly of south-western NSW
White-fronted Chat	Epthianura albifrons	17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

White-fronted Chat	Epthianura albifrons	24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion
		45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion
		46-Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion
		47-Swamp grassland wetland of the Riverine Plain
		53-Shallow freshwater wetland sedgeland in depressions on floodplains on inland alluivial plains and floodplains
		157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
		163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
		164-Cotton Bush open shrubland of the semi-arid (warm) zone
		216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion
		182-Cumbungi rushland wetland of shallow semi-permanent water bodies and inland watercourses
		166-Disturbed annual saltbush forbland on clay plains and inundation zones mainly of south-western NSW
White-throated Needletail	Hirundapus caudacutus	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
		7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion
		8-River Red Gum - Warrego Grass - Couch Grass riparian tall woodland wetland of the semi-arid (warm) climate zone (Riverina Bioregion and Murray Darling Depression Bioregion)
		11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

White-throated Needletail	Hirundapus caudacutus	13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion
		45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion
		46-Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion
		47-Swamp grassland wetland of the Riverine Plain
		53-Shallow freshwater wetland sedgeland in depressions on floodplains on inland alluvial plains and floodplains
		157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
		216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion
		182-Cumbungi rushland wetland of shallow semi-permanent water bodies and inland watercourses
Yellow-bellied Sheathtail-bat	Saccolaimus flaviventris	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
		7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion

Yellow-bellied Sheathtail-bat	Saccolaimus flaviventris	8-River Red Gum - Warrego Grass - Couch Grass riparian tall woodland wetland of the semi-arid (warm) climate zone (Riverina Bioregion and Murray Darling Depression Bioregion)
		11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
		23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones
		24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains
		26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion
		53-Shallow freshwater wetland sedgeland in depressions on floodplains on inland alluvial plains and floodplains
		58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion
		160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains
		143-Narrow-leaved Hopbush - Scrub Turpentine - Senna shrubland on semi-arid and arid sandplains and dunes.
		182-Cumbungi rushland wetland of shallow semi-permanent water bodies and inland watercourses
		170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones

Yellow-bellied Sheathtail-bat	Saccolaimus flaviventris	75-Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion

Threatened species Manually Added

None added

Threatened species assessed as not within the vegetation zone(s) for the PCT(s)

Common Name	Scientific Name	Plant Community Type(s)
Koala	Phascolarctos cinereus	26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion

Threatened species assessed as not within the vegetation zone(s) for the PCT(s)

Refer to BAR for detailed justification

Common Name	Scientific Name	Justification in the BAM-C

BAM Candidate Species Report

Proposal Details

Assessment Id 00026670/BAAS17020/21/00026671	Proposal Name EnergyConnect East - Murrumbidgee	BAM data last updated * 24/11/2021
Assessor Name Alexander Cockerill	Report Created 12/01/2022	BAM Data version * 50
Assessor Number BAAS17020	Assessment Type Major Projects	BAM Case Status Finalised
Assessment Revision 0	Date Finalised 12/01/2022	

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

List of Species Requiring Survey

Name	Presence	Survey Months
Ardeotis australis Australian Bustard	No (surveyed)	☐ Jan ☐ Feb ☑ Mar ☑ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Austrostipa wakoolica A spear-grass	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Brachyscome muelleroides Claypan Daisy	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Brachyscome papillosa Mossgiel Daisy	Yes (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Burhinus grallarius Bush Stone-curlew	No (surveyed)	☐ Jan ☐ Feb ☑ Mar ☑ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Caladenia arenaria Sand-hill Spider Orchid	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Calidris ferruginea Curlew Sandpiper	No (surveyed) *Survey months are outside of the months specified in Bionet.	☐ Jan ☐ Feb ☑ Mar ☑ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☑ Survey month outside the specified months?
Calotis moorei A burr-daisy	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Calyptorhynchus lathami - endangered population Glossy Black-Cockatoo, Riverina population	No (surveyed)	☐ Jan ☐ Feb ☑ Mar ☑ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Climacteris affinis - endangered population White-browed Treecreeper population in Carrathool local government area south of the Lachlan River and Griffith local government area	No (surveyed)	☐ Jan ☐ Feb ☑ Mar ☑ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Convolvulus tedmoorei Bindweed	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Crinia sloanei Sloane's Froglet	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☑ Jul ☑ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Cullen parvum Small Scurf-pea	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Diuris tricolor Pine Donkey Orchid	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Eucalyptus leucoxylon subsp. pruinosa Yellow Gum	No (surveyed)	☐ Jan ☐ Feb ☑ Mar ☑ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Haliaeetus leucogaster White-bellied Sea-Eagle	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Hieraaetus morphnoides Little Eagle	Yes (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Lathamus discolor Swift Parrot	No (surveyed) *Survey months are outside of the months specified in Bionet.	☐ Jan ☐ Feb ☑ Mar ☑ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☑ Survey month outside the specified months?
Lepidium monoplocoides Winged Peppercress	Yes (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☑ Nov ☐ Dec ☐ Survey month outside the specified months?
Leptorhynchos orientalis Lanky Buttons	Yes (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Limosa limosa Black-tailed Godwit	No (surveyed) *Survey months are outside of the months specified in Bionet.	☐ Jan ☐ Feb ☑ Mar ☑ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☑ Survey month outside the specified months?

Litoria raniformis Southern Bell Frog	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Lophochroa leadbeateri Major Mitchell's Cockatoo	Yes (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Lophoictinia isura Square-tailed Kite	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Maireana cheelii Chariot Wheels	Yes (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Myotis macropus Southern Myotis	Yes (surveyed)	☐ Jan ☑ Feb ☑ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Ninox connivens Barking Owl	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Pedionomus torquatus Plains-wanderer	Yes (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Phascolarctos cinereus Koala	No (surveyed)	☐ Jan ☑ Feb ☑ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Pilularia novae-hollandiae Austral Pillwort	Yes (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Polytelis anthopeplus monarchoides Regent Parrot (eastern subspecies)	Yes (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Polytelis swainsonii Superb Parrot	Yes (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Sclerolaena napiformis Turnip Copperburr	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Solanum karsense Menindee Nightshade	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Swainsona murrayana Slender Darling Pea	Yes (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Swainsona plagiotropis Red Darling Pea	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Swainsona sericea Silky Swainson-pea	Yes (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Tyto novaehollandiae Masked Owl	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Threatened species Manually Added

None added

Threatened species assessed as not on site

Refer to BAR for detailed justification

BAM Candidate Species Report

Common name	Scientific name	Justification in the BAM-C
Oaklands Diuris	Diuris sp. (Oaklands, D.L. Jones 5380)	Refer to BAR
Regent Honeyeater	Anthochaera phrygia	Habitat constraints

BAM Biodiversity Credit Report (Like for like)

Proposal Details

Assessment Id
00026670/BAAS17020/21/00026671

Proposal Name
EnergyConnect East - Murrumbidgee

BAM data last updated *
24/11/2021

Assessor Name
Alexander Cockerill

Assessor Number
BAAS17020

BAM Data version *
50

Proponent Names

Report Created
12/01/2022

BAM Case Status
Finalised

Assessment Revision
0

Assessment Type
Major Projects

Date Finalised
12/01/2022

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Potential Serious and Irreversible Impacts

Name of threatened ecological community	Listing status	Name of Plant Community Type/ID
White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	Critically Endangered Ecological Community	75-Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion

Species
Pedionomus torquatus / Plains-wanderer
Pilularia novae-hollandiae / Austral Pillwort

Additional Information for Approval

PCT Outside Ibra Added

None added

PCTs With Customized Benchmarks

PCT
No Changes

Predicted Threatened Species Not On Site

Name
No Changes

Ecosystem Credit Summary (Number and class of biodiversity credits to be retired)

BAM Biodiversity Credit Report (Like for like)

Name of Plant Community Type/ID	Name of threatened ecological community	Area of impact	HBT Cr	No HBT Cr	Total credits to be retired
5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.	Not a TEC	4.9	100	0	100
7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion	Not a TEC	0.8	1	13	14
8-River Red Gum - Warrego Grass - Couch Grass riparian tall woodland wetland of the semi-arid (warm) climate zone (Riverina Bioregion and Murray Darling Depression Bioregion)	Not a TEC	4.8	95	0	95
11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Not a TEC	13.9	303	0	303
13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Not a TEC	10.0	334	0	334
15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Not a TEC	16.5	351	31	382

17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Not a TEC	17.2	0	739	739
23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones	Acacia melvillei Shrubland in the Riverina and Murray-Darling Depression bioregions	13.3	0	310	310
24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains	Not a TEC	11.9	0	396	396
26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion	Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions	313.5	0	7239	7239
28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone	Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions	29.2	0	748	748
44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion	Not a TEC	45.2	0	2049	2049
45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion	Not a TEC	37.3	0	1489	1489
46-Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion	Not a TEC	68.3	0	2501	2501
47-Swamp grassland wetland of the Riverine Plain	Not a TEC	3.0	0	116	116

53-Shallow freshwater wetland sedgeland in depressions on floodplains on inland alluvial plains and floodplains	Not a TEC	1.7	0	76	76
58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion	Not a TEC	41.2	714	4	718
157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion	Not a TEC	47.6	0	1798	1798
160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains	Not a TEC	28.4	0	1042	1042
163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones	Not a TEC	95.5	0	3529	3529
164-Cotton Bush open shrubland of the semi-arid (warm) zone	Not a TEC	132.4	0	4904	4904
143-Narrow-leaved Hopbush - Scrub Turpentine - Senna shrubland on semi-arid and arid sandplains and dunes.	Not a TEC	0.1	0	1	1
216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion	Not a TEC	15.0	0	456	456
182-Cumbungi rushland wetland of shallow semi-permanent water bodies and inland watercourses	Not a TEC	0.1	0	3	3
170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones	Not a TEC	0.2	0	3	3

75-Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	0.2	7	0	7
166-Disturbed annual saltbush forbland on clay plains and inundation zones mainly of south-western NSW	Not a TEC	1.0	0	36	36

5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.

Like-for-like credit retirement options

Class	Trading group	Zone	HBT	Credits	IBRA region
Inland Riverine Forests This includes PCT's: 2, 5, 7, 8, 9, 10, 11, 36, 78, 79, 112, 233, 234, 249, 356, 362	Inland Riverine Forests <50%	5_Mod-good	Yes	100	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

7-River Red Gum - Warrego Grass - herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion

Like-for-like credit retirement options

Class	Trading group	Zone	HBT	Credits	IBRA region
Inland Riverine Forests This includes PCT's: 2, 5, 7, 8, 9, 10, 11, 36, 78, 79, 112, 233, 234, 249, 356, 362	Inland Riverine Forests <50%	7_Mod-good	No	13	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Inland Riverine Forests This includes PCT's: 2, 5, 7, 8, 9, 10, 11, 36, 78, 79, 112, 233, 234, 249, 356, 362	Inland Riverine Forests <50%	7_SVM_Bench	Yes	1	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

8-River Red Gum - Warrego Grass - Couch Grass riparian tall woodland wetland of the semi-arid (warm) climate zone (Riverina Bioregion and Murray Darling Depression Bioregion)	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Inland Riverine Forests This includes PCT's: 2, 5, 7, 8, 9, 10, 11, 36, 78, 79, 112, 233, 234, 249, 356, 362	Inland Riverine Forests <50%	8_Mod-good	Yes	95	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Inland Riverine Forests This includes PCT's: 2, 5, 7, 8, 9, 10, 11, 36, 78, 79, 112, 233, 234, 249, 356, 362	Inland Riverine Forests <50%	11_Mod-good	Yes	303	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

13-Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)

Like-for-like credit retirement options

Class	Trading group	Zone	HBT	Credits	IBRA region
Inland Floodplain Woodlands This includes PCT's: 13, 15, 16, 83, 438, 454, 630	Inland Floodplain Woodlands >=50% and <70%	13_Mod-good	Yes	324	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	Inland Floodplain Woodlands This includes PCT's: 13, 15, 16, 83, 438, 454, 630	Inland Floodplain Woodlands >=50% and <70%	13_SVM_Bench	Yes	10	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Inland Floodplain Woodlands This includes PCT's: 13, 15, 16, 83, 438, 454, 630	Inland Floodplain Woodlands >=50% and <70%	15_Mod-good	Yes	348	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	Inland Floodplain Woodlands This includes PCT's: 13, 15, 16, 83, 438, 454, 630	Inland Floodplain Woodlands >=50% and <70%	15_Derived	No	31	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Inland Floodplain Woodlands This includes PCT's: 13, 15, 16, 83, 438, 454, 630	Inland Floodplain Woodlands >=50% and <70%	15_SVM_Bench	Yes	3	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region

	Inland Floodplain Shrublands This includes PCT's: 17, 115, 161, 241, 247, 375	Inland Floodplain Shrublands >=50% and <70%	17_Mod-good	No	560	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Inland Floodplain Shrublands This includes PCT's: 17, 115, 161, 241, 247, 375	Inland Floodplain Shrublands >=50% and <70%	17_SVM_Bench	No	179	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
23-Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones	**Like-for-like credit retirement options**					
	Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region

	Acacia melvillei Shrubland in the Riverina and Murray-Darling Depression bioregions This includes PCT's: 23, 28, 58, 128, 170, 173	-	23_Mod-good	No	147	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Acacia melvillei Shrubland in the Riverina and Murray-Darling Depression bioregions This includes PCT's: 23, 28, 58, 128, 170, 173	-	23_Derived	No	163	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

24-Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region

	Inland Floodplain Shrublands This includes PCT's: 17, 24, 25, 115, 160, 161, 240, 241, 247, 261, 271, 375	Inland Floodplain Shrublands <50%	24_Mod-good	No	395	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Inland Floodplain Shrublands This includes PCT's: 17, 24, 25, 115, 160, 161, 240, 241, 247, 261, 271, 375	Inland Floodplain Shrublands <50%	24_SVM_Bench	No	1	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion	**Like-for-like credit retirement options**					
	Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region

	Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions This includes PCT's: 26, 27, 37, 43, 49, 55, 145, 159, 1766	-	26_Mod-good	No	2023	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions This includes PCT's: 26, 27, 37, 43, 49, 55, 145, 159, 1766	-	26_Moderate	No	943	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions This includes PCT's: 26, 27, 37, 43, 49, 55, 145, 159, 1766	-	26_Derived	No	4269	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions This includes PCT's: 26, 27, 37, 43, 49, 55, 145, 159, 1766	-	26_SVM_Bench	No	4	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone

Like-for-like credit retirement options

Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region
Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions This includes PCT's: 19, 21, 28, 48, 75	-	28_Mod-good	No	358	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions This includes PCT's: 19, 21, 28, 48, 75	-	28_SVM_Bench	No	390	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

44-Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion

Like-for-like credit retirement options

Class	Trading group	Zone	HBT	Credits	IBRA region
Riverine Plain Grasslands This includes PCT's: 44	Riverine Plain Grasslands >=70% and <90%	44_Mod-good	No	1629	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Riverine Plain Grasslands This includes PCT's: 44	Riverine Plain Grasslands >=70% and <90%	44_SVM_Bench	No	420	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion

Like-for-like credit retirement options

Class	Trading group	Zone	HBT	Credits	IBRA region
Riverine Plain Grasslands This includes PCT's: 44, 45	Riverine Plain Grasslands >=50% and <70%	45_Mod-good	No	1051	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Riverine Plain Grasslands This includes PCT's: 44, 45	Riverine Plain Grasslands >=50% and <70%	45_SVM_Bench	No	438	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

46-Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion

Like-for-like credit retirement options

Class	Trading group	Zone	HBT	Credits	IBRA region
Riverine Plain Grasslands This includes PCT's: 44, 45, 46, 165, 1203	Riverine Plain Grasslands <50%	46_Mod-good	No	1635	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Riverine Plain Grasslands This includes PCT's: 44, 45, 46, 165, 1203	Riverine Plain Grasslands <50%	46_SVM_Bench	No	866	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

47-Swamp grassland wetland of the Riverine Plain

Like-for-like credit retirement options

Class	Trading group	Zone	HBT	Credits	IBRA region

	Inland Floodplain Swamps This includes PCT's: 47, 53, 66, 204, 205, 238, 335, 336, 360, 361, 416, 447, 465, 1291	Inland Floodplain Swamps >=50% and <70%	47_Mod-good	No	77	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Inland Floodplain Swamps This includes PCT's: 47, 53, 66, 204, 205, 238, 335, 336, 360, 361, 416, 447, 465, 1291	Inland Floodplain Swamps >=50% and <70%	47_SVM_Bench	No	39	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
53-Shallow freshwater wetland sedgeland in depressions on floodplains on inland alluvial plains and floodplains	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region

	Inland Floodplain Swamps This includes PCT's: 47, 53, 66, 204, 205, 238, 335, 336, 360, 361, 416, 447, 465, 1291	Inland Floodplain Swamps >=50% and <70%	53_Mod-good	No	76	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Semi-arid Sand Plain Woodlands This includes PCT's: 58, 252	Semi-arid Sand Plain Woodlands >=50% and <70%	58_Mod-good	Yes	714	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	Semi-arid Sand Plain Woodlands This includes PCT's: 58, 252	Semi-arid Sand Plain Woodlands >=50% and <70%	58_Derived	No	0	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Semi-arid Sand Plain Woodlands This includes PCT's: 58, 252	Semi-arid Sand Plain Woodlands >=50% and <70%	58_Moderate	No	4	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
75-Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion	**Like-for-like credit retirement options**					
	Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region
	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and	-	75_Mod-good	Yes	7	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and

	Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla This includes PCT's: 74, 75, 83, 250, 266, 267, 268, 270, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 286, 298, 302, 312, 341, 342, 347, 350, 352, 356, 367, 381, 382, 395, 401, 403, 421, 433, 434, 435, 436, 437, 451, 483, 484, 488, 492, 496, 508, 509, 510, 511, 528, 538, 544, 563, 567, 571, 589, 590, 597, 599, 618, 619, 622, 633, 654, 702, 703, 704, 705, 710, 711, 796, 797, 799, 840, 847, 851, 921, 1099, 1103, 1303, 1304, 1307, 1324, 1329, 1330, 1331, 1332, 1333, 1334, 1383,					South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	1401, 1512, 1606, 1608, 1611, 1691, 1693, 1695, 1698					
143-Narrow-leaved Hopbush - Scrub Turpentine - Senna shrubland on semi-arid and arid sandplains and dunes.	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Sand Plain Mulga Shrublands This includes PCT's: 69, 119, 124, 128, 129, 139, 140, 143, 199, 215, 220, 232	Sand Plain Mulga Shrublands <50%	143_Mod-good	No	1	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
157-Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region

	Riverine Chenopod Shrublands This includes PCT's: 157, 158, 159, 195, 196, 211, 377	Riverine Chenopod Shrublands >=50% and <70%	157_Mod-good	No	1282	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Riverine Chenopod Shrublands This includes PCT's: 157, 158, 159, 195, 196, 211, 377	Riverine Chenopod Shrublands >=50% and <70%	157_SVM_Bench	No	516	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region

	Inland Floodplain Shrublands This includes PCT's: 17, 24, 25, 115, 160, 161, 240, 241, 247, 261, 271, 375	Inland Floodplain Shrublands <50%	160_Mod-good	No	998	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Inland Floodplain Shrublands This includes PCT's: 17, 24, 25, 115, 160, 161, 240, 241, 247, 261, 271, 375	Inland Floodplain Shrublands <50%	160_SVM_Bench	No	44	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
163-Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region

	Riverine Chenopod Shrublands This includes PCT's: 157, 158, 159, 163, 164, 168, 195, 196, 211, 212, 216, 236, 254, 377, 466	Riverine Chenopod Shrublands <50%	163_Mod-good	No	3239	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Riverine Chenopod Shrublands This includes PCT's: 157, 158, 159, 163, 164, 168, 195, 196, 211, 212, 216, 236, 254, 377, 466	Riverine Chenopod Shrublands <50%	163_SVM_Bench	No	290	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

164-Cotton Bush open shrubland of the semi-arid (warm) zone	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region

	Riverine Chenopod Shrublands This includes PCT's: 157, 158, 159, 163, 164, 168, 195, 196, 211, 212, 216, 236, 254, 377, 466	Riverine Chenopod Shrublands <50%	164_Mod-good	No	3287	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Riverine Chenopod Shrublands This includes PCT's: 157, 158, 159, 163, 164, 168, 195, 196, 211, 212, 216, 236, 254, 377, 466	Riverine Chenopod Shrublands <50%	164_SVM_Bench	No	1617	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
166-Disturbed annual saltbush forbland on clay plains and inundation zones mainly of south-western NSW	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region

	Inland Saline Lakes This includes PCT's: 18, 62, 63, 64, 65, 149, 162, 166, 189, 198, 253, 262, 263	Inland Saline Lakes <50%	166_SVM_Bench	No	36	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Sand Plain Mallee Woodlands This includes PCT's: 142, 170, 173, 174, 190, 193, 355, 474	Sand Plain Mallee Woodlands <50%	170_Mod-good_whip	No	3	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

182-Cumbungi rushland wetland of shallow semi-permanent water bodies and inland watercourses	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Inland Floodplain Swamps This includes PCT's: 12, 47, 53, 66, 181, 182, 204, 205, 226, 238, 335, 336, 360, 361, 364, 400, 410, 416, 447, 465, 1291	Inland Floodplain Swamps <50%	182_Mod-good	No	3	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Riverine Chenopod Shrublands This includes PCT's: 157, 158, 159, 163, 164, 168, 195, 196, 211, 212, 216, 236, 254, 377, 466	Riverine Chenopod Shrublands <50%	216_Mod-good	No	456	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

216-Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion

Species Credit Summary

Species	Vegetation Zone/s	Area / Count	Credits
Brachyscome papillosa / Mossgiel Daisy	**17_Mod-good, 24_Mod-good, 160_Mod-good, 163_Mod-good, 164_Mod-good, 17_SVM_Bench, 24_SVM_Bench, 160_SVM_Bench, 164_SVM_Bench**	71.2	3530.00
Cullen parvum / Small Scurf-pea	**5_Mod-good, 7_Mod-good, 44_Mod-good, 45_Mod-good, 46_Mod-good, 160_Mod-good, 164_Mod-good, 182_Mod-good, 7_SVM_Bench, 44_SVM_Bench**	45.2	2010.00

Hieraaetus morphnoides / Little Eagle	**5_Mod-good, 7_Mod-good, 11_Mod-good, 13_Mod-good, 15_Mod-good, 17_Mod-good, 26_Mod-good, 26_Moderate, 26_Derived, 46_Mod-good, 216_Mod-good, 75_Mod-good, 17_SVM_Bench, 26_SVM_Bench**	11.3	266.00
Lepidium monoplocoides / Winged Peppercress	**44_Mod-good, 160_Mod-good, 44_SVM_Bench**	7.0	349.00
Leptorhynchos orientalis / Lanky Buttons	**44_Mod-good, 160_Mod-good, 44_SVM_Bench**	15.3	716.00
Lophochroa leadbeateri / Major Mitchell's Cockatoo	**7_Mod-good, 8_Mod-good, 11_Mod-good, 13_Mod-good, 15_Mod-good, 26_Mod-good, 26_Moderate, 26_Derived, 28_Mod-good, 15_SVM_Bench, 26_SVM_Bench**	34.9	957.00

Maireana cheelii / Chariot Wheels	**17_Mod-good, 44_Mod-good, 46_Mod-good, 58_Mod-good, 157_Mod-good, 163_Mod-good, 164_Mod-good, 216_Mod-good, 17_SVM_Bench, 28_SVM_Bench, 46_SVM_Bench, 157_SVM_Bench, 164_SVM_Bench**	109.7	5353.00
Myotis macropus / Southern Myotis	**8_Mod-good**	4.8	127.00
Pedionomus torquatus / Plains-wanderer	**17_Mod-good, 44_Mod-good, 46_Mod-good, 46_SVM_Bench, 164_SVM_Bench**	0.4	29.00
Pilularia novae-hollandiae / Austral Pillwort	**17_Mod-good, 160_Mod-good, 17_SVM_Bench, 44_SVM_Bench, 160_SVM_Bench**	8.6	642.00
Polytelis anthopeplus monarchoides / Regent Parrot (eastern subspecies)	**8_Mod-good, 11_Mod-good, 13_Mod-good, 15_Mod-good, 15_SVM_Bench**	27.0	764.00

Polytelis swainsonii / Superb Parrot	**5_Mod-good, 7_Mod-good, 11_Mod-good, 13_Mod-good, 15_Mod-good, 26_Mod-good, 26_Moderate, 26_Derived, 28_Mod-good, 45_Mod-good, 46_Mod-good, 75_Mod-good, 26_SVM_Bench, 45_SVM_Bench**	38.6	1263.00

Swainsona murrayana / Slender Darling Pea	**17_Mod-good, 24_Mod-good, 26_Mod-good, 26_Moderate, 26_Derived, 44_Mod-good, 45_Mod-good, 46_Mod-good, 47_Mod-good, 53_Mod-good, 157_Mod-good, 160_Mod-good, 163_Mod-good, 164_Mod-good, 216_Mod-good, 17_SVM_Bench, 24_SVM_Bench, 26_SVM_Bench, 44_SVM_Bench, 45_SVM_Bench, 46_SVM_Bench, 47_SVM_Bench, 157_SVM_Bench, 160_SVM_Bench, 164_SVM_Bench**	232.4	10077.00

Swainsona sericea / Silky Swainson-pea	**44_Mod-good, 45_Mod-good, 46_Mod-good, 47_Mod-good, 160_Mod-good, 164_Mod-good, 44_SVM_Bench, 45_SVM_Bench, 46_SVM_Bench, 47_SVM_Bench, 160_SVM_Bench, 164_SVM_Bench**	108.0	5290.00

Credit Retirement Options

Like-for-like credit retirement options

Brachyscome papillosa / Mossgiel Daisy	Spp	IBRA subregion
	Brachyscome papillosa / Mossgiel Daisy	Any in NSW
Cullen parvum / Small Scurf-pea	Spp	IBRA subregion
	Cullen parvum / Small Scurf-pea	Any in NSW
Hieraaetus morphnoides / Little Eagle	Spp	IBRA subregion
	Hieraaetus morphnoides / Little Eagle	Any in NSW
Lepidium monoplocoides / Winged Peppercress	Spp	IBRA subregion

	Lepidium monoplocoides / Winged Peppercress	Any in NSW
Leptorhynchos orientalis / Lanky Buttons	Spp	IBRA subregion
	Leptorhynchos orientalis / Lanky Buttons	Any in NSW
Lophochroa leadbeateri / Major Mitchell's Cockatoo	Spp	IBRA subregion
	Lophochroa leadbeateri / Major Mitchell's Cockatoo	Any in NSW
Maireana cheelii / Chariot Wheels	Spp	IBRA subregion
	Maireana cheelii / Chariot Wheels	Any in NSW
Myotis macropus / Southern Myotis	Spp	IBRA subregion
	Myotis macropus / Southern Myotis	Any in NSW
Pedionomus torquatus / Plains-wanderer	Spp	IBRA subregion
	Pedionomus torquatus / Plains-wanderer	Any in NSW
Pilularia novae-hollandiae / Austral Pillwort	Spp	IBRA subregion
	Pilularia novae-hollandiae / Austral Pillwort	Any in NSW

Polytelis anthopeplus monarchoides / Regent Parrot (eastern subspecies)	Spp	IBRA subregion
	Polytelis anthopeplus monarchoides / Regent Parrot (eastern subspecies)	Any in NSW
Polytelis swainsonii / Superb Parrot	Spp	IBRA subregion
	Polytelis swainsonii / Superb Parrot	Any in NSW
Swainsona murrayana / Slender Darling Pea	Spp	IBRA subregion
	Swainsona murrayana / Slender Darling Pea	Any in NSW
Swainsona sericea / Silky Swainson-pea	Spp	IBRA subregion
	Swainsona sericea / Silky Swainson-pea	Any in NSW

APPENDIX F-4
BAM credit report – Lower Slopes IBRA subregion

BAM Credit Summary Report

Proposal Details

Assessment Id 00026831/BAAS17020/21/00026832	Proposal Name EnergyConnect East - Lower Slopes	BAM data last updated * 24/11/2021
Assessor Name Alexander Cockerill	Report Created 12/01/2022	BAM Data version * 50
Assessor Number BAAS17020	BAM Case Status Finalised	Date Finalised 12/01/2022
Assessment Revision 0	Assessment Type Major Projects	

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Ecosystem credits for plant communities types (PCT), ecological communities & threatened species habitat

Zone	Vegetation zone name	TEC name	Current Vegetation integrity score	Change in Vegetation integrity (loss / gain)	Area (ha)	Sensitivity to loss (Justification)	Species sensitivity to gain class	BC Act Listing status	EPBC Act listing status	Biodiversity risk weighting	Potential SAII	Ecosystem credits

River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.												
1	5_Mod-good	Not a TEC	71.7	61.1	2.7		High Sensitivity to Potential Gain			1.50		61
											Subtotal	**61**
River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW												
7	249_Moderate	Not a TEC	51.9	41.9	4		High Sensitivity to Potential Gain			1.75		74
8	249_Derived	Not a TEC	32.4	32.4	2.1		High Sensitivity to Potential Gain			1.75		30
											Subtotal	**104**
Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion												
4	80_Moderate	Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions	56	44.3	8.9		High Sensitivity to Potential Gain	Endangered Ecological Community	Endangered	2.00		198

5	80_Mod-good	Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions	87.9	69.3	11.9		High Sensitivity to Potential Gain	Endangered Ecological Community	Endangered	2.00		411
6	80_Derived	Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions	28.5	28.5	1.5		High Sensitivity to Potential Gain	Endangered Ecological Community	Endangered	2.00		21
12	80_SVM_Bench	Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions	100	80.9	0.5		High Sensitivity to Potential Gain	Endangered Ecological Community	Endangered	2.00		20
											Subtotal	**650**

Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions												
3	76_Mod-good	Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions	69.7	53.6	1.3		High Sensitivity to Potential Gain	Endangered Ecological Community	Endangered	2.00		35
15	76_SVM_Bench	Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions	100	100.0	0.03		High Sensitivity to Potential Gain	Endangered Ecological Community	Endangered	2.00		2
											Subtotal	**37**

White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone												
11	28_SVM_Bench	Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions	100	62.1	2.8		High Sensitivity to Potential Gain	Endangered Ecological Community	Not Listed	2.00		88
											Subtotal	**88**

Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion												
14	74_Mod-good	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	71.6	51.2	0.91		High Sensitivity to Potential Gain	Critically Endangered Ecological Community	Critically Endangered	2.50	TRUE	29
											Subtotal	**29**

Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion												
2	75_Mod-good	Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions	89.4	57.9	28.8		High Sensitivity to Potential Gain	Endangered Ecological Community	Not Listed	2.00		834
9	75_Poor	Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions	44.8	38.5	1.5		High Sensitivity to Potential Gain	Endangered Ecological Community	Not Listed	2.00		29
10	75_Derived	Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions	10.2	10.2	4.7		High Sensitivity to Potential Gain	Endangered Ecological Community	Not Listed	2.00		0

13	75_SVM_Bench	Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions	100	85.0	0.42		High Sensitivity to Potential Gain	Endangered Ecological Community	Not Listed	2.00		18
											Subtotal	**881**
											Total	**1850**

Species credits for threatened species

Vegetation zone name	Habitat condition (Vegetation Integrity)	Change in habitat condition	Area (ha)/Count (no. individuals)	Sensitivity to loss (Justification)	Sensitivity to gain (Justification)	BC Act Listing status	EPBC Act listing status	Potential SAII	Species credits
Cullen parvum / Small Scurf-pea (Flora)									
5_Mod-good	61.1	61.1	1			Endangered	Not Listed	False	31
249_Moderate	41.9	41.9	1.6			Endangered	Not Listed	False	33
249_Derived	32.4	32.4	0.01			Endangered	Not Listed	False	1
74_Mod-good	51.2	51.2	0.3			Endangered	Not Listed	False	8
								Subtotal	**73**
Hieraaetus morphnoides / Little Eagle (Fauna)									
75_Mod-good	57.9	57.9	1.1			Vulnerable	Not Listed	False	24
80_Moderate	44.3	44.3	0.1			Vulnerable	Not Listed	False	2

80_Mod-good	69.3	69.3	0.48			Vulnerable	Not Listed	False	12
80_Derived	28.5	28.5	0.13			Vulnerable	Not Listed	False	1
249_Moderate	41.9	41.9	0.16			Vulnerable	Not Listed	False	3
249_Derived	32.4	32.4	0.21			Vulnerable	Not Listed	False	3
75_Derived	10.2	10.2	0.47			Vulnerable	Not Listed	False	2
28_SVM_Bench	62.1	62.1	0.11			Vulnerable	Not Listed	False	3
80_SVM_Bench	80.9	80.9	0.02			Vulnerable	Not Listed	False	1
75_SVM_Bench	85.0	85.0	0.2			Vulnerable	Not Listed	False	6
								Subtotal	**57**
Lophochroa leadbeateri / Major Mitchell's Cockatoo (Fauna)									
80_Moderate	44.3	44.3	0.1			Vulnerable	Not Listed	False	2
80_Mod-good	69.3	69.3	0.48			Vulnerable	Not Listed	False	17
80_Derived	28.5	28.5	0.13			Vulnerable	Not Listed	False	2
249_Moderate	41.9	41.9	0.16			Vulnerable	Not Listed	False	3
249_Derived	32.4	32.4	0.21			Vulnerable	Not Listed	False	3
80_SVM_Bench	80.9	80.9	0.02			Vulnerable	Not Listed	False	1
								Subtotal	**28**
Petaurus norfolcensis / Squirrel Glider (Fauna)									
5_Mod-good	61.1	61.1	2.7			Vulnerable	Not Listed	False	82
75_Mod-good	57.9	57.9	28.8			Vulnerable	Not Listed	False	834
76_Mod-good	53.6	53.6	1.3			Vulnerable	Not Listed	False	35
80_Moderate	44.3	44.3	6.5			Vulnerable	Not Listed	False	143
80_Mod-good	69.3	69.3	11.8			Vulnerable	Not Listed	False	411
74_Mod-good	51.2	51.2	0.24			Vulnerable	Not Listed	False	6

								Subtotal	1511
Polytelis swainsonii / Superb Parrot (Fauna)									
5_Mod-good	61.1	61.1	2.7			Vulnerable	Vulnerable	False	82
75_Mod-good	57.9	57.9	5.2			Vulnerable	Vulnerable	False	150
80_Moderate	44.3	44.3	1.6			Vulnerable	Vulnerable	False	36
80_Mod-good	69.3	69.3	0.48			Vulnerable	Vulnerable	False	17
80_Derived	28.5	28.5	0.13			Vulnerable	Vulnerable	False	2
249_Moderate	41.9	41.9	4			Vulnerable	Vulnerable	False	84
249_Derived	32.4	32.4	0.21			Vulnerable	Vulnerable	False	3
75_Derived	10.2	10.2	0.47			Vulnerable	Vulnerable	False	2
28_SVM_Bench	62.1	62.1	0.11			Vulnerable	Vulnerable	False	3
80_SVM_Bench	80.9	80.9	0.02			Vulnerable	Vulnerable	False	1
75_SVM_Bench	85.0	85.0	0.2			Vulnerable	Vulnerable	False	8
74_Mod-good	51.2	51.2	0.01			Vulnerable	Vulnerable	False	1
								Subtotal	**389**

BAM Vegetation Zones Report

Proposal Details

Assessment Id
00026831/BAAS17020/21/00026832

Assessment name
EnergyConnect East - Lower Slopes

BAM data last updated *
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Assessor Name
Alexander Cockerill

Report Created
12/01/2022

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Assessor Number
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0

Date Finalised
12/01/2022

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Vegetation Zones

#	Name	PCT	Condition	Area	Minimum number of plots	Management zones

1	5_Mod-good	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.	Mod-good	2.68	2	Area A (1.02 ha) Area B4 (1.01 ha) Area B10 (0.65 ha)
2	75_Mod-good	75-Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion	Mod-good	28.8	4	Area A (12.01 ha) Area B4 (10.97 ha) Area B10 (5.82 ha)
3	76_Mod-good	76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions	Mod-good	1.31	1	Area A (0.54 ha) Area B4 (0.53 ha) Area B10 (0.24 ha)
4	80_Moderate	80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion	Moderate	8.93	3	Area A (3.51 ha) Area B4 (3.52 ha) Area B10 (1.9 ha)
5	80_Mod-good	80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion	Mod-good	11.86	3	Area A (4.76 ha) Area B4 (4.36 ha) Area B10 (2.74 ha)

6	80_Derived	80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion	Derived	1.51	1	Area A (1.51 ha)
7	249_Moderate	249-River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW	Moderate	4.03	2	Area a (1.56 ha) Area B4 (1.86 ha) Area B10 (0.61 ha)
8	249_Derived	249-River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW	Derived	2.1	2	Area A (2.1 ha)
9	75_Poor	75-Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion	Poor	1.5	1	Area A (1.09 ha) Area B10 (0.12 ha) Area B4 (0.29 ha)
10	75_Derived	75-Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion	Derived	4.69	2	Area A (4.69 ha)
11	28_SVM_Bench	28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone	SVM_Bench	2.84	2	Area A (1.15 ha) Area B4 (1.04 ha) Area B10 (0.65 ha)

12	80_SVM_Bench	80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion	SVM_Bench	0.5	1	Area A (0.32 ha) Area B4 (0.07 ha) Area B10 (0.11 ha)
13	75_SVM_Bench	75-Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion	SVM_Bench	0.42	1	Area A (0.32 ha) Area B4 (0.02 ha) Area B10 (0.08 ha)
14	74_Mod-good	74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion	Mod-good	0.91	1	Area A (0.3 ha) Area B4 (0.4 ha) Area B10 (0.21 ha)
15	76_SVM_Bench	76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions	SVM_Bench	0.03	1	Area A (0.03 ha)

BAM Predicted Species Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00026831/BAAS17020/21/00026832	EnergyConnect East - Lower Slopes	24/11/2021
Assessor Name	Report Created	BAM Data version *
Alexander Cockerill	12/01/2022	50
Assessor Number	Assessment Type	BAM Case Status
BAAS17020	Major Projects	Finalised
Assessment Revision		Date Finalised
0		12/01/2022

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Threatened species reliably predicted to utilise the site. No surveys are required for these species. Ecosystem credits apply to these species.

Common Name	Scientific Name	Vegetation Types(s)
Australasian Bittern	Botaurus poiciloptilus	249-River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW
Australian Painted Snipe	Rostratula australis	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
		249-River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW
Barking Owl	Ninox connivens	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
		75-Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion
		76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
		80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion

Barking Owl	Ninox connivens	249-River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW
		74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion
Black Falcon	Falco subniger	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
		75-Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion
		76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
		80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion
Black-breasted Buzzard	Hamirostra melanosternon	28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
Black-chinned Honeyeater (eastern subspecies)	Melithreptus gularis gularis	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
		76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
		80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion
		249-River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW

Black-chinned Honeyeater (eastern subspecies)	Melithreptus gularis gularis	74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion
Brolga	Grus rubicunda	249-River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW
Brown Treecreeper (eastern subspecies)	Climacteris picumnus victoriae	76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
		249-River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW
		74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion
Corben's Long-eared Bat	Nyctophilus corbeni	75-Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion
		80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion
		249-River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
Diamond Firetail	Stagonopleura guttata	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
		75-Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion
		76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
		80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion
		249-River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW

Diamond Firetail	Stagonopleura guttata	28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion
Dusky Woodswallow	Artamus cyanopterus cyanopterus	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
		75-Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion
		76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
		80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion
		249-River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion
Flame Robin	Petroica phoenicea	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
		76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
		80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion
		249-River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW

Flame Robin	Petroica phoenicea	74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion
Freckled Duck	Stictonetta naevosa	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
		249-River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW
Gang-gang Cockatoo	Callocephalon fimbriatum	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
		75-Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion
		74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion
Gilbert's Whistler	Pachycephala inornata	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
		80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
Glossy Black-Cockatoo	Calyptorhynchus lathami	75-Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion
		76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
		80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion
		74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion

Grey Falcon	Falco hypoleucos	76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
		80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion
		249-River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
Grey-crowned Babbler (eastern subspecies)	Pomatostomus temporalis temporalis	75-Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion
		76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
		80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion
		249-River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion
Grey-headed Flying-fox	Pteropus poliocephalus	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
		76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
Hooded Robin (south-eastern form)	Melanodryas cucullata cucullata	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.

Hooded Robin (south-eastern form)	Melanodryas cucullata cucullata	75-Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion
		76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
		80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion
		249-River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion
Koala	Phascolarctos cinereus	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
		75-Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion
		76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
		80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion
		249-River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW
		74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion
Little Eagle	Hieraaetus morphnoides	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.

Little Eagle	Hieraaetus morphnoides	75-Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion
		76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
		80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion
		249-River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion
Little Lorikeet	Glossopsitta pusilla	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
		75-Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion
		74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion
Little Pied Bat	Chalinolobus picatus	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
		76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
		249-River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
Magpie Goose	Anseranas semipalmata	249-River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW

Major Mitchell's Cockatoo	Lophochroa leadbeateri	76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
		80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion
		249-River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion
Masked Owl	Tyto novaehollandiae	76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
		80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion
		249-River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW
		74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion
Painted Honeyeater	Grantiella picta	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
		75-Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion
		76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
		80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion
		249-River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW

Painted Honeyeater	Grantiella picta	28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion
Pied Honeyeater	Certhionyx variegatus	80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion
		249-River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
Purple-crowned Lorikeet	Glossopsitta porphyrocephala	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
		249-River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW
		74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion
Regent Honeyeater	Anthochaera phrygia	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
		75-Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion
		74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion
Scarlet Robin	Petroica boodang	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
		75-Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion

Scarlet Robin	Petroica boodang	76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
		80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion
		249-River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW
		74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion
Speckled Warbler	Chthonicola sagittata	75-Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion
		76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
		80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion
		249-River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW
		74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion
Spotted Harrier	Circus assimilis	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
		75-Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion
		249-River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion

Spotted-tailed Quoll	Dasyurus maculatus	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
		249-River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW
Square-tailed Kite	Lophoictinia isura	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
		76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
		249-River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion
Stripe-faced Dunnart	Sminthopsis macroura	249-River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW
Superb Parrot	Polytelis swainsonii	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
		75-Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion
		76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
		80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion
		249-River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone

Superb Parrot	Polytelis swainsonii	74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion
Swift Parrot	Lathamus discolor	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
		75-Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion
		76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
		80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion
		249-River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW
		74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion
Turquoise Parrot	Neophema pulchella	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
		75-Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion
		76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
		80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion
		249-River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW
		74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion

Varied Sittella	Daphoenositta chrysoptera	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
		75-Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion
		76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
		80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion
		249-River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
		74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion
White-bellied Sea-Eagle	Haliaeetus leucogaster	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
		75-Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion
		76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
		80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion
		249-River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW
		28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone

White-bellied Sea-Eagle	Haliaeetus leucogaster	74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion
White-throated Needletail	Hirundapus caudacutus	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
		76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
		80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion
		249-River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW
		74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion
Yellow-bellied Sheathtail-bat	Saccolaimus flaviventris	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
		75-Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion
		76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
		80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion
		249-River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW
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		74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion

Threatened species Manually Added

None added

Threatened species assessed as not within the vegetation zone(s) for the PCT(s)

Refer to BAR for detailed justification

Common Name	Scientific Name	Justification in the BAM-C

BAM Candidate Species Report

Proposal Details

Assessment Id 00026831/BAAS17020/21/00026832	Proposal Name EnergyConnect East - Lower Slopes	BAM data last updated * 24/11/2021
Assessor Name Alexander Cockerill	Report Created 12/01/2022	BAM Data version * 50
Assessor Number BAAS17020	Assessment Type Major Projects	BAM Case Status Finalised
Assessment Revision 0	Date Finalised 12/01/2022	

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

List of Species Requiring Survey

Name	Presence	Survey Months
Amphibromus fluitans Floating Swamp Wallaby-grass	No (surveyed)	☐ Jan ☐ Feb ☑ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Anthochaera phrygia Regent Honeyeater	No (surveyed) *Survey months are outside of the months specified in Bionet.	☐ Jan ☐ Feb ☑ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☑ Survey month outside the specified months?
Austrostipa metatoris A spear-grass	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Austrostipa wakoolica A spear-grass	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Brachyscome papillosa Mossgiel Daisy	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Burhinus grallarius Bush Stone-curlew	No (surveyed)	☐ Jan ☐ Feb ☑ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Caladenia arenaria Sand-hill Spider Orchid	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Callocephalon fimbriatum Gang-gang Cockatoo	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Calyptorhynchus lathami Glossy Black-Cockatoo	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☑ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Calyptorhynchus lathami - endangered population Glossy Black-Cockatoo, Riverina population	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☑ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Cercartetus nanus Eastern Pygmy-possum	No (surveyed)	☐ Jan ☐ Feb ☑ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Climacteris affinis - endangered population White-browed Treecreeper population in Carrathool local government area south of the Lachlan River and Griffith local government area	No (surveyed)	☐ Jan ☐ Feb ☑ Mar ☑ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Crinia sloanei Sloane's Froglet	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Cullen parvum Small Scurf-pea	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Diuris sp. (Oaklands, D.L. Jones 5380) Oaklands Diuris	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☑ Nov ☐ Dec ☐ Survey month outside the specified months?

Diuris tricolor Pine Donkey Orchid	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Eleocharis obicis Spike-Rush	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Haliaeetus leucogaster White-bellied Sea-Eagle	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Hamirostra melanosternon Black-breasted Buzzard	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Hieraaetus morphnoides Little Eagle	Yes (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Lathamus discolor Swift Parrot	No (surveyed) *Survey months are outside of the months specified in Bionet.	☐ Jan ☐ Feb ☑ Mar ☑ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☐ Oct ☐ Nov ☐ Dec ☑ Survey month outside the specified months?

Lepidium aschersonii Spiny Peppercress	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☑ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Lepidium monoplocoides Winged Peppercress	No (surveyed) *Survey months are outside of the months specified in Bionet.	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☑ Nov ☐ Dec ☑ Survey month outside the specified months?
Litoria raniformis Southern Bell Frog	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Lophochroa leadbeateri Major Mitchell's Cockatoo	Yes (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Lophoictinia isura Square-tailed Kite	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Myotis macropus Southern Myotis	No (surveyed)	☐ Jan ☐ Feb ☑ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Ninox connivens Barking Owl	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Petaurus norfolcensis Squirrel Glider	Yes (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Petaurus norfolcensis - endangered population Squirrel Glider in the Wagga Wagga Local Government Area	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Phascolarctos cinereus Koala	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Pilularia novae-hollandiae Austral Pillwort	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Polytelis swainsonii Superb Parrot	Yes (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Pteropus poliocephalus Grey-headed Flying-fox	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Swainsona murrayana Slender Darling Pea	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Swainsona recta Small Purple-pea	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Swainsona sericea Silky Swainson-pea	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Tyto novaehollandiae Masked Owl	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Threatened species Manually Added

None added

BAM Biodiversity Credit Report (Like for like)

Proposal Details

Assessment Id
00026831/BAAS17020/21/00026832

Proposal Name
EnergyConnect East - Lower Slopes

BAM data last updated *
24/11/2021

Assessor Name
Alexander Cockerill

Assessor Number
BAAS17020

BAM Data version *
50

Proponent Names

Report Created
12/01/2022

BAM Case Status
Finalised

Assessment Revision
0

Assessment Type
Major Projects

Date Finalised
12/01/2022

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Potential Serious and Irreversible Impacts

Name of threatened ecological community	Listing status	Name of Plant Community Type/ID
White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	Critically Endangered Ecological Community	74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion
Species		

Nil

Additional Information for Approval

PCT Outside Ibra Added

None added

PCTs With Customized Benchmarks

PCT
No Changes

Predicted Threatened Species Not On Site

Name
No Changes

Ecosystem Credit Summary (Number and class of biodiversity credits to be retired)

Name of Plant Community Type/ID	Name of threatened ecological community	Area of impact	HBT Cr	No HBT Cr	Total credits to be retired
5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.	Not a TEC	2.7	61	0	61

75-Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion	Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions	35.4	881	0	881
76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions	Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions	1.3	37	0	37
80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion	Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions	22.8	629	21	650
249-River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW	Not a TEC	6.1	74	30	104
28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone	Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions	2.8	0	88	88
74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	0.9	29	0	29

5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.

Like-for-like credit retirement options

Class	Trading group	Zone	HBT	Credits	IBRA region
Inland Riverine Forests This includes PCT's: 2, 5, 7, 8, 9, 10, 11, 36, 78, 79, 112, 233, 234, 249, 356, 362	Inland Riverine Forests <50%	5_Mod-good	Yes	61	Lower Slopes, Bogan-Macquarie, Inland Slopes, Lachlan Plains, Murray Fans, Murrumbidgee and Nymagee. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone

Like-for-like credit retirement options

Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region
Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions This includes PCT's: 19, 21, 28, 48, 75	-	28_SVM_Bench	No	88	Lower Slopes, Bogan-Macquarie, Inland Slopes, Lachlan Plains, Murray Fans, Murrumbidgee and Nymagee. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

28-White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone						
74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion	**Like-for-like credit retirement options**					
	Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region
	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla This includes PCT's: 74, 75, 83, 250, 266, 267, 268, 270, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 286, 298, 302, 312, 341, 342, 347, 350, 352, 356, 367, 381, 382, 395, 401, 403, 421,	-	74_Mod-good	Yes	29	Lower Slopes, Bogan-Macquarie, Inland Slopes, Lachlan Plains, Murray Fans, Murrumbidgee and Nymagee. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	433, 434, 435, 436, 437, 451, 483, 484, 488, 492, 496, 508, 509, 510, 511, 528, 538, 544, 563, 567, 571, 589, 590, 597, 599, 618, 619, 622, 633, 654, 702, 703, 704, 705, 710, 711, 796, 797, 799, 840, 847, 851, 921, 1099, 1103, 1303, 1304, 1307, 1324, 1329, 1330, 1331, 1332, 1333, 1334, 1383, 1401, 1512, 1606, 1608, 1611, 1691, 1693, 1695, 1698					
75-Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion	**Like-for-like credit retirement options**					
	Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region
	Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions This includes PCT's: 19, 21, 28, 48, 75	-	75_Mod-good	Yes	834	Lower Slopes, Bogan-Macquarie, Inland Slopes, Lachlan Plains, Murray Fans, Murrumbidgee and Nymagee. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions This includes PCT's: 19, 21, 28, 48, 75	-	75_Poor	Yes	29	Lower Slopes, Bogan-Macquarie, Inland Slopes, Lachlan Plains, Murray Fans, Murrumbidgee and Nymagee. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions This includes PCT's: 19, 21, 28, 48, 75	-	75_Derived	No	0	Lower Slopes, Bogan-Macquarie, Inland Slopes, Lachlan Plains, Murray Fans, Murrumbidgee and Nymagee. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions This includes PCT's: 19, 21, 28, 48, 75	-	75_SVM_Bench	Yes	18	Lower Slopes, Bogan-Macquarie, Inland Slopes, Lachlan Plains, Murray Fans, Murrumbidgee and Nymagee. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions

Like-for-like credit retirement options

Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region
Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions This includes PCT's: 76, 80, 81, 82, 101, 110, 237, 248	-	76_Mod-good	Yes	35	Lower Slopes, Bogan-Macquarie, Inland Slopes, Lachlan Plains, Murray Fans, Murrumbidgee and Nymagee. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions This includes PCT's: 76, 80, 81, 82, 101, 110, 237, 248	-	76_SVM_Bench	Yes	2	Lower Slopes, Bogan-Macquarie, Inland Slopes, Lachlan Plains, Murray Fans, Murrumbidgee and Nymagee. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions

80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion

Like-for-like credit retirement options

Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region
Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions This includes PCT's: 76, 80, 81, 82, 101, 110, 237, 248	-	80_Moderate	Yes	198	Lower Slopes, Bogan-Macquarie, Inland Slopes, Lachlan Plains, Murray Fans, Murrumbidgee and Nymagee. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions This includes PCT's: 76, 80, 81, 82, 101, 110, 237, 248	-	80_Mod-good	Yes	411	Lower Slopes, Bogan-Macquarie, Inland Slopes, Lachlan Plains, Murray Fans, Murrumbidgee and Nymagee. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions This includes PCT's: 76, 80, 81, 82, 101, 110, 237, 248	-	80_Derived	No	21	Lower Slopes, Bogan-Macquarie, Inland Slopes, Lachlan Plains, Murray Fans, Murrumbidgee and Nymagee. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions This includes PCT's: 76, 80, 81, 82, 101, 110, 237, 248	-	80_SVM_Bench	Yes	20	Lower Slopes, Bogan-Macquarie, Inland Slopes, Lachlan Plains, Murray Fans, Murrumbidgee and Nymagee. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

249-River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Inland Riverine Forests This includes PCT's: 9, 36, 78, 79, 112, 249, 356, 362	Inland Riverine Forests >=50% and <70%	249_Moderate	Yes	74	Lower Slopes, Bogan-Macquarie, Inland Slopes, Lachlan Plains, Murray Fans, Murrumbidgee and Nymagee. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	Inland Riverine Forests This includes PCT's: 9, 36, 78, 79, 112, 249, 356, 362	Inland Riverine Forests >=50% and <70%	249_Derived	No	30	Lower Slopes, Bogan-Macquarie, Inland Slopes, Lachlan Plains, Murray Fans, Murrumbidgee and Nymagee. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

Species Credit Summary

Species	Vegetation Zone/s	Area / Count	Credits
Cullen parvum / Small Scurf-pea	**5_Mod-good, 249_Moderate, 249_Derived, 74_Mod-good**	2.9	73.00
Hieraaetus morphnoides / Little Eagle	**75_Mod-good, 80_Moderate, 80_Mod-good, 80_Derived, 249_Moderate, 249_Derived, 75_Derived, 28_SVM_Bench, 80_SVM_Bench, 75_SVM_Bench**	3.0	57.00
Lophochroa leadbeateri / Major Mitchell's Cockatoo	**80_Moderate, 80_Mod-good, 80_Derived, 249_Moderate, 249_Derived, 80_SVM_Bench**	1.1	28.00

Petaurus norfolcensis / Squirrel Glider	**5_Mod-good, 75_Mod-good, 76_Mod-good, 80_Moderate, 80_Mod-good, 74_Mod-good**	51.3	1511.00
Polytelis swainsonii / Superb Parrot	**5_Mod-good, 75_Mod-good, 80_Moderate, 80_Mod-good, 80_Derived, 249_Moderate, 249_Derived, 75_Derived, 28_SVM_Bench, 80_SVM_Bench, 75_SVM_Bench, 74_Mod-good**	15.2	389.00

Credit Retirement Options

Like-for-like credit retirement options

Cullen parvum / Small Scurf-pea	Spp	IBRA subregion
	Cullen parvum / Small Scurf-pea	Any in NSW
Hieraaetus morphnoides / Little Eagle	Spp	IBRA subregion
	Hieraaetus morphnoides / Little Eagle	Any in NSW
Lophochroa leadbeateri / Major Mitchell's Cockatoo	Spp	IBRA subregion
	Lophochroa leadbeateri / Major Mitchell's Cockatoo	Any in NSW

Petaurus norfolcensis / Squirrel Glider	Spp	IBRA subregion
	Petaurus norfolcensis / Squirrel Glider	Any in NSW
Polytelis swainsonii / Superb Parrot	Spp	IBRA subregion
	Polytelis swainsonii / Superb Parrot	Any in NSW

APPENDIX F-5
BAM credit report – Inland Slopes IBRA subregion

BAM Credit Summary Report

Proposal Details

Assessment Id
00026835/BAAS17020/21/00026836

Proposal Name
EnergyConnect East - Inland Slopes

BAM data last updated *
24/11/2021

Assessor Name
Alexander Cockerill

Report Created
12/01/2022

BAM Data version *
50

Assessor Number
BAAS17020

BAM Case Status
Finalised

Date Finalised
12/01/2022

Assessment Revision
0

Assessment Type
Major Projects

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Ecosystem credits for plant communities types (PCT), ecological communities & threatened species habitat

Zone	Vegetation zone name	TEC name	Current Vegetation integrity score	Change in Vegetation integrity (loss / gain)	Area (ha)	Sensitivity to loss (Justification)	Species sensitivity to gain class	BC Act Listing status	EPBC Act listing status	Biodiversity risk weighting	Potential SAII	Ecosystem credits

Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion												
4	277_Mod-good	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	79.8	65.4	2.9		High Sensitivity to Potential Gain	Critically Endangered Ecological Community	Critically Endangered	2.50	TRUE	119

7	277_Derived	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	11	11.0	0.57		High Sensitivity to Potential Gain	Critically Endangered Ecological Community	Critically Endangered	2.50	TRUE	0
											Subtotal	**119**
River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.												
9	5_Poor	Not a TEC	26.7	26.4	0.88		High Sensitivity to Potential Gain			1.50		9
											Subtotal	**9**
Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion												
5	319_Mod-good	Not a TEC	70.6	48.4	12.5		High Sensitivity to Potential Gain			1.75		265

8	319_Derived	Not a TEC	39.3	39.3	6.3		High Sensitivity to Potential Gain			1.75		108
10	319_Poor	Not a TEC	27.4	25.1	0.42		High Sensitivity to Potential Gain			1.75		5
											Subtotal	**378**
Western Grey Box - Cypress Pine shrubby woodland on stony footslopes in the NSW South Western Slopes Bioregion and Riverina Bioregion												
3	110_Mod-good	Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions	64.9	41.4	2.7		High Sensitivity to Potential Gain	Endangered Ecological Community	Endangered	2.00		55
											Subtotal	**55**

Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion												
2	80_Poor	Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions	25.9	25.9	1.6		High Sensitivity to Potential Gain	Endangered Ecological Community	Endangered	2.00		21
											Subtotal	**21**

White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion												
6	267_Mod-good	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	63.2	51.0	0.26		High Sensitivity to Potential Gain	Critically Endangered Ecological Community	Critically Endangered	2.50	TRUE	8
											Subtotal	**8**

Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion												
1	74_Mod-good	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	73.1	56.6	1.2		High Sensitivity to Potential Gain	Critically Endangered Ecological Community	Critically Endangered	2.50	TRUE	41
											Subtotal	**41**
											Total	**631**

Species credits for threatened species

Vegetation zone name	Habitat condition (Vegetation Integrity)	Change in habitat condition	Area (ha)/Count (no. individuals)	Sensitivity to loss (Justification)	Sensitivity to gain (Justification)	BC Act Listing status	EPBC Act listing status	Potential SAII	Species credits
Cullen parvum / Small Scurf-pea (Flora)									
74_Mod-good	56.6	56.6	0.65			Endangered	Not Listed	False	18

277_Mod-good	65.4	65.4	1.3			Endangered	Not Listed	False	42
5_Poor	26.4	26.4	0.29			Endangered	Not Listed	False	4
								Subtotal	**64**
Petaurus norfolcensis / Squirrel Glider (Fauna)									
74_Mod-good	56.6	56.6	1.2			Vulnerable	Not Listed	False	33
267_Mod-good	51.0	51.0	0.26			Vulnerable	Not Listed	False	7
								Subtotal	**40**

BAM Vegetation Zones Report

Proposal Details

Assessment Id
00026835/BAAS17020/21/00026836

Assessment name
EnergyConnect East - Inland Slopes

BAM data last updated *
24/11/2021

Assessor Name
Alexander Cockerill

Report Created
12/01/2022

BAM Data version *
50

Assessor Number
BAAS17020

Assessment Type
Major Projects

BAM Case Status
Finalised

Assessment Revision
0

Date Finalised
12/01/2022

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Vegetation Zones

#	Name	PCT	Condition	Area	Minimum number of plots	Management zones
1	74_Mod-good	74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion	Mod-good	1.16	1	Area A (0.53 ha) Area B4 (0.37 ha) Area B10 (0.26 ha)

2	80_Poor	80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion	Poor	1.64	1	Area A (0.8 ha) Area B4 (0.7 ha) Area B10 (0.14 ha)
3	110_Mod-good	110-Western Grey Box - Cypress Pine shrubby woodland on stony footslopes in the NSW South Western Slopes Bioregion and Riverina Bioregion	Mod-good	2.67	2	Area A (0.7 ha) Area B4 (1.27 ha) Area B10 (0.7 ha)
4	277_Mod-good	277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion	Mod-good	2.92	2	Area A (1.41 ha) Area B4 (1.04 ha) Area B10 (0.47 ha)
5	319_Mod-good	319-Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion	Mod-good	12.52	3	Area A (5.18 ha) Area B4 (5.05 ha) Area B10 (2.29 ha)
6	267_Mod-good	267-White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion	Mod-good	0.26	1	Area A (0.09 ha) Area B4 (0.13 ha) Area B10 (0.04 ha)
7	277_Derived	277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion	Derived	0.57	1	Area A (0.57 ha)
8	319_Derived	319-Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion	Derived	6.27	3	Area A (6.27 ha)

9	5_Poor	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.	Poor	0.88	1	Area A (0.29 ha) Disturb B4 (0.44 ha) Area B10 (0.15 ha)
10	319_Poor	319-Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion	Poor	0.42	1	Area A (0.18 ha) Area B4 (0.15 ha) Area B10 (0.09 ha)

BAM Predicted Species Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00026835/BAAS17020/21/00026836	EnergyConnect East - Inland Slopes	24/11/2021
Assessor Name	Report Created	BAM Data version *
Alexander Cockerill	12/01/2022	50
Assessor Number	Assessment Type	BAM Case Status
BAAS17020	Major Projects	Finalised
Assessment Revision		Date Finalised
0		12/01/2022

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Threatened species reliably predicted to utilise the site. No surveys are required for these species. Ecosystem credits apply to these species.

Common Name	Scientific Name	Vegetation Types(s)
Australian Painted Snipe	Rostratula australis	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
Barking Owl	Ninox connivens	74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion
		80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion
		110-Western Grey Box - Cypress Pine shrubby woodland on stony footslopes in the NSW South Western Slopes Bioregion and Riverina Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		319-Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion
		267-White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion

Barking Owl	Ninox connivens	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
Black Falcon	Falco subniger	74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion
		80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion
		110-Western Grey Box - Cypress Pine shrubby woodland on stony footslopes in the NSW South Western Slopes Bioregion and Riverina Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		267-White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion
		5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
Black-chinned Honeyeater (eastern subspecies)	Melithreptus gularis gularis	74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion
		80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion
		110-Western Grey Box - Cypress Pine shrubby woodland on stony footslopes in the NSW South Western Slopes Bioregion and Riverina Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		319-Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion
		267-White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion

Black-chinned Honeyeater (eastern subspecies)	Melithreptus gularis gularis	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
Brown Treecreeper (eastern subspecies)	Climacteris picumnus victoriae	74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		267-White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion
Corben's Long-eared Bat	Nyctophilus corbeni	80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion
		110-Western Grey Box - Cypress Pine shrubby woodland on stony footslopes in the NSW South Western Slopes Bioregion and Riverina Bioregion
		267-White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion
Diamond Firetail	Stagonopleura guttata	74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion
		80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion
		110-Western Grey Box - Cypress Pine shrubby woodland on stony footslopes in the NSW South Western Slopes Bioregion and Riverina Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		319-Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion
		267-White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion

Diamond Firetail	Stagonopleura guttata	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
Dusky Woodswallow	Artamus cyanopterus cyanopterus	74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion
		80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion
		110-Western Grey Box - Cypress Pine shrubby woodland on stony footslopes in the NSW South Western Slopes Bioregion and Riverina Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		319-Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion
		267-White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion
		5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
Eastern False Pipistrelle	Falsistrellus tasmaniensis	277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
Flame Robin	Petroica phoenicea	74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion
		80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion
		110-Western Grey Box - Cypress Pine shrubby woodland on stony footslopes in the NSW South Western Slopes Bioregion and Riverina Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		267-White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion

Flame Robin	Petroica phoenicea	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
Freckled Duck	Stictonetta naevosa	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
Gang-gang Cockatoo	Callocephalon fimbriatum	74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		267-White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion
		5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
Gilbert's Whistler	Pachycephala inornata	80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion
		110-Western Grey Box - Cypress Pine shrubby woodland on stony footslopes in the NSW South Western Slopes Bioregion and Riverina Bioregion
		267-White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion
		5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
Glossy Black-Cockatoo	Calyptorhynchus lathami	74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion
		80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion
		110-Western Grey Box - Cypress Pine shrubby woodland on stony footslopes in the NSW South Western Slopes Bioregion and Riverina Bioregion

Grey-crowned Babbler (eastern subspecies)	Pomatostomus temporalis temporalis	74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion
		80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion
		110-Western Grey Box - Cypress Pine shrubby woodland on stony footslopes in the NSW South Western Slopes Bioregion and Riverina Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		319-Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion
		267-White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion
Grey-headed Flying-fox	Pteropus poliocephalus	277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		267-White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion
		5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
Hooded Robin (south-eastern form)	Melanodryas cucullata cucullata	74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion
		80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion
		110-Western Grey Box - Cypress Pine shrubby woodland on stony footslopes in the NSW South Western Slopes Bioregion and Riverina Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		319-Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion

Hooded Robin (south-eastern form)	Melanodryas cucullata cucullata	267-White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion
		5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
Koala	Phascolarctos cinereus	74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion
		80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion
		110-Western Grey Box - Cypress Pine shrubby woodland on stony footslopes in the NSW South Western Slopes Bioregion and Riverina Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		267-White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion
		5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
Large Bent-winged Bat	Miniopterus orianae oceanensis	277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
Little Eagle	Hieraaetus morphnoides	74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion
		80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion
		110-Western Grey Box - Cypress Pine shrubby woodland on stony footslopes in the NSW South Western Slopes Bioregion and Riverina Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		319-Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion

Little Eagle	Hieraaetus morphnoides	267-White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion
		5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
Little Lorikeet	Glossopsitta pusilla	74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		319-Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion
		267-White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion
		5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
Little Pied Bat	Chalinolobus picatus	110-Western Grey Box - Cypress Pine shrubby woodland on stony footslopes in the NSW South Western Slopes Bioregion and Riverina Bioregion
		267-White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion
		5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
Major Mitchell's Cockatoo	Lophochroa leadbeateri	74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion
		80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion
		110-Western Grey Box - Cypress Pine shrubby woodland on stony footslopes in the NSW South Western Slopes Bioregion and Riverina Bioregion

Malleefowl	Leipoa ocellata	110-Western Grey Box - Cypress Pine shrubby woodland on stony footslopes in the NSW South Western Slopes Bioregion and Riverina Bioregion
Masked Owl	Tyto novaehollandiae	74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion
		80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion
		110-Western Grey Box - Cypress Pine shrubby woodland on stony footslopes in the NSW South Western Slopes Bioregion and Riverina Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		267-White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion
Painted Honeyeater	Grantiella picta	74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion
		80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion
		110-Western Grey Box - Cypress Pine shrubby woodland on stony footslopes in the NSW South Western Slopes Bioregion and Riverina Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		319-Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion
		267-White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion
		5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
Pied Honeyeater	Certhionyx variegatus	80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion

Powerful Owl	Ninox strenua	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
Purple-crowned Lorikeet	Glossopsitta porphyrocephala	74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion
		5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
Regent Honeyeater	Anthochaera phrygia	74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		319-Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion
		267-White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion
		5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
Scarlet Robin	Petroica boodang	74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion
		80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion
		110-Western Grey Box - Cypress Pine shrubby woodland on stony footslopes in the NSW South Western Slopes Bioregion and Riverina Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		319-Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion

Scarlet Robin	Petroica boodang	267-White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion
		5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
Speckled Warbler	Chthonicola sagittata	74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion
		80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion
		110-Western Grey Box - Cypress Pine shrubby woodland on stony footslopes in the NSW South Western Slopes Bioregion and Riverina Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		319-Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion
		267-White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion
Spotted Harrier	Circus assimilis	74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
Spotted-tailed Quoll	Dasyurus maculatus	110-Western Grey Box - Cypress Pine shrubby woodland on stony footslopes in the NSW South Western Slopes Bioregion and Riverina Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		267-White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion

Spotted-tailed Quoll	Dasyurus maculatus	5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
Square-tailed Kite	Lophoictinia isura	74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion
		110-Western Grey Box - Cypress Pine shrubby woodland on stony footslopes in the NSW South Western Slopes Bioregion and Riverina Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		267-White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion
		5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
Superb Parrot	Polytelis swainsonii	74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion
		80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion
		110-Western Grey Box - Cypress Pine shrubby woodland on stony footslopes in the NSW South Western Slopes Bioregion and Riverina Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		267-White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion
		5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
Swift Parrot	Lathamus discolor	74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion

Swift Parrot	Lathamus discolor	80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion
		110-Western Grey Box - Cypress Pine shrubby woodland on stony footslopes in the NSW South Western Slopes Bioregion and Riverina Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		267-White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion
		5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
Turquoise Parrot	Neophema pulchella	74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion
		80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion
		110-Western Grey Box - Cypress Pine shrubby woodland on stony footslopes in the NSW South Western Slopes Bioregion and Riverina Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		319-Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion
		267-White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion
		5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
Varied Sittella	Daphoenositta chrysoptera	74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion

Varied Sittella	Daphoenositta chrysoptera	80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion
		110-Western Grey Box - Cypress Pine shrubby woodland on stony footslopes in the NSW South Western Slopes Bioregion and Riverina Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		319-Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion
		267-White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion
		5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
White-bellied Sea-Eagle	Haliaeetus leucogaster	74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion
		80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion
		110-Western Grey Box - Cypress Pine shrubby woodland on stony footslopes in the NSW South Western Slopes Bioregion and Riverina Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		319-Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion
		267-White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion
		5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.

White-throated Needletail	Hirundapus caudacutus	74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion
		80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion
		110-Western Grey Box - Cypress Pine shrubby woodland on stony footslopes in the NSW South Western Slopes Bioregion and Riverina Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		319-Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion
		267-White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion
		5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.
Yellow-bellied Sheathtail-bat	Saccolaimus flaviventris	74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion
		80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion
		110-Western Grey Box - Cypress Pine shrubby woodland on stony footslopes in the NSW South Western Slopes Bioregion and Riverina Bioregion
		277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
		267-White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion
		5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.

Threatened species Manually Added

None added

Threatened species assessed as not within the vegetation zone(s) for the PCT(s)

Refer to BAR for detailed justification

Common Name	Scientific Name	Justification in the BAM-C

BAM Candidate Species Report

Proposal Details

Assessment Id 00026835/BAAS17020/21/00026836	Proposal Name EnergyConnect East - Inland Slopes	BAM data last updated * 24/11/2021
Assessor Name Alexander Cockerill	Report Created 12/01/2022	BAM Data version * 50
Assessor Number BAAS17020	Assessment Type Major Projects	BAM Case Status Finalised
Assessment Revision 0	Date Finalised 12/01/2022	

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

List of Species Requiring Survey

Name	Presence	Survey Months
Acacia ausfeldii Ausfeld's Wattle	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Ammobium craspedioides Yass Daisy	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Anthochaera phrygia Regent Honeyeater	No (surveyed) *Survey months are outside of the months specified in Bionet.	☐ Jan ☐ Feb ☑ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☐ Oct ☐ Nov ☐ Dec ☑ Survey month outside the specified months?

Aprasia parapulchella Pink-tailed Legless Lizard	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Austrostipa wakoolica A spear-grass	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Burhinus grallarius Bush Stone-curlew	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☑ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Caladenia arenaria Sand-hill Spider Orchid	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Callocephalon fimbriatum Gang-gang Cockatoo	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Calyptorhynchus lathami Glossy Black-Cockatoo	No (surveyed)	☐ Jan ☐ Feb ☑ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Cercartetus nanus Eastern Pygmy-possum	No (surveyed)	☐ Jan ☐ Feb ☑ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Chalinolobus dwyeri Large-eared Pied Bat	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☑ Nov ☐ Dec ☐ Survey month outside the specified months?
Crinia sloanei Sloane's Froglet	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Cullen parvum Small Scurf-pea	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Delma impar Striped Legless Lizard	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Diuris tricolor Pine Donkey Orchid	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Euphrasia arguta Euphrasia arguta	No (surveyed)	☐ Jan ☐ Feb ☑ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Haliaeetus leucogaster White-bellied Sea-Eagle	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Hieraaetus morphnoides Little Eagle	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Indigofera efoliata Leafless Indigo	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Lathamus discolor Swift Parrot	No (surveyed) *Survey months are outside of the months specified in Bionet.	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☑ Survey month outside the specified months?
Litoria booroolongensis Booroolong Frog	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Lophochroa leadbeateri Major Mitchell's Cockatoo	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Lophoictinia isura Square-tailed Kite	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Miniopterus orianae oceanensis Large Bent-winged Bat	No (surveyed)	☐ Jan ☑ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Myotis macropus Southern Myotis	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Ninox connivens Barking Owl	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Ninox strenua Powerful Owl	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Petaurus norfolcensis Squirrel Glider	Yes (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☑ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Petaurus norfolcensis - endangered population Squirrel Glider in the Wagga Wagga Local Government Area	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Petrogale penicillata Brush-tailed Rock-wallaby	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Phascogale tapoatafa Brush-tailed Phascogale	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☑ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Phascolarctos cinereus Koala	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☑ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☑ Dec ☐ Survey month outside the specified months?
Pilularia novae-hollandiae Austral Pillwort	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Polytelis swainsonii Superb Parrot	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Prasophyllum petilum Tarengo Leek Orchid	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Prasophyllum sp. Wybong Prasophyllum sp. Wybong	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Pteropus poliocephalus Grey-headed Flying-fox	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Swainsona recta Small Purple-pea	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Swainsona sericea Silky Swainson-pea	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☑ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Synemon plana Golden Sun Moth	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☑ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Tyto novaehollandiae Masked Owl	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☑ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Threatened species Manually Added

None added

BAM Biodiversity Credit Report (Like for like)

Proposal Details

Assessment Id
00026835/BAAS17020/21/00026836

Proposal Name
EnergyConnect East - Inland Slopes

BAM data last updated *
24/11/2021

Assessor Name
Alexander Cockerill

Assessor Number
BAAS17020

BAM Data version *
50

Proponent Names

Report Created
12/01/2022

BAM Case Status
Finalised

Assessment Revision
0

Assessment Type
Major Projects

Date Finalised
12/01/2022

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Potential Serious and Irreversible Impacts

Name of threatened ecological community	Listing status	Name of Plant Community Type/ID
White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	Critically Endangered Ecological Community	74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion

White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	Critically Endangered Ecological Community	277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	Critically Endangered Ecological Community	267-White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion

Species
Nil

Additional Information for Approval

PCT Outside Ibra Added

None added

PCTs With Customized Benchmarks

PCT
No Changes

Predicted Threatened Species Not On Site

BAM Biodiversity Credit Report (Like for like)

Name
No Changes

Ecosystem Credit Summary (Number and class of biodiversity credits to be retired)

Name of Plant Community Type/ID	Name of threatened ecological community	Area of impact	HBT Cr	No HBT Cr	Total credits to be retired
74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	1.2	41	0	41
80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion	Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions	1.6	21	0	21
110-Western Grey Box - Cypress Pine shrubby woodland on stony footslopes in the NSW South Western Slopes Bioregion and Riverina Bioregion	Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions	2.7	55	0	55
277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	3.5	119	0	119

319-Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion	Not a TEC	19.2	270	108	378
267-White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	0.3	8	0	8
5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.	Not a TEC	0.9	9	0	9

5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.

Like-for-like credit retirement options

Class	Trading group	Zone	HBT	Credits	IBRA region
Inland Riverine Forests This includes PCT's: 2, 5, 7, 8, 9, 10, 11, 36, 78, 79, 112, 233, 234, 249, 356, 362	Inland Riverine Forests <50%	5_Poor	Yes	9	Inland Slopes, Bogan-Macquarie, Bondo, Capertee Uplands, Capertee Valley, Crookwell, Hill End, Kerrabee, Lower Slopes, Murray Fans, Murrumbateman, Orange, Pilliga, Talbragar Valley and Wollemi. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

5-River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.	
74-Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion	**Like-for-like credit retirement options**

Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region
White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla This includes PCT's: 74, 75, 83, 250, 266, 267, 268, 270, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 286, 298,	-	74_Mod-good	Yes	41	Inland Slopes, Bogan-Macquarie, Bondo, Capertee Uplands, Capertee Valley, Crookwell, Hill End, Kerrabee, Lower Slopes, Murray Fans, Murrumbateman, Orange, Pilliga, Talbragar Valley and Wollemi. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	302, 312, 341, 342, 347, 350, 352, 356, 367, 381, 382, 395, 401, 403, 421, 433, 434, 435, 436, 437, 451, 483, 484, 488, 492, 496, 508, 509, 510, 511, 528, 538, 544, 563, 567, 571, 589, 590, 597, 599, 618, 619, 622, 633, 654, 702, 703, 704, 705, 710, 711, 796, 797, 799, 840, 847, 851, 921, 1099, 1103, 1303, 1304, 1307, 1324, 1329, 1330, 1331, 1332, 1333, 1334, 1383, 1401, 1512, 1606, 1608, 1611, 1691, 1693, 1695, 1698					
80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion	**Like-for-like credit retirement options**					
	Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region

	Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions This includes PCT's: 76, 80, 81, 82, 101, 110, 237, 248	-	80_Poor	Yes	21	Inland Slopes, Bogan-Macquarie, Bondo, Capertee Uplands, Capertee Valley, Crookwell, Hill End, Kerrabee, Lower Slopes, Murray Fans, Murrumbateman, Orange, Pilliga, Talbragar Valley and Wollemi. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
110-Western Grey Box - Cypress Pine shrubby woodland on stony footslopes in the NSW South Western Slopes Bioregion and Riverina Bioregion	**Like-for-like credit retirement options**					
	Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region

	Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions This includes PCT's: 76, 80, 81, 82, 101, 110, 237, 248	-	110_Mod-good	Yes	55	Inland Slopes, Bogan-Macquarie, Bondo, Capertee Uplands, Capertee Valley, Crookwell, Hill End, Kerrabee, Lower Slopes, Murray Fans, Murrumbateman, Orange, Pilliga, Talbragar Valley and Wollemi. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
267-White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion	**Like-for-like credit retirement options**					
	Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region
	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	-	267_Mod-good	Yes	8	Inland Slopes, Bogan-Macquarie, Bondo, Capertee Uplands, Capertee Valley, Crookwell, Hill End, Kerrabee, Lower Slopes, Murray Fans, Murrumbateman, Orange, Pilliga, Talbragar Valley and Wollemi. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	This includes PCT's: 74, 75, 83, 250, 266, 267, 268, 270, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 286, 298, 302, 312, 341, 342, 347, 350, 352, 356, 367, 381, 382, 395, 401, 403, 421, 433, 434, 435, 436, 437, 451, 483, 484, 488, 492, 496, 508, 509, 510, 511, 528, 538, 544, 563, 567, 571, 589, 590, 597, 599, 618, 619, 622, 633, 654, 702, 703, 704, 705, 710, 711, 796, 797, 799, 840, 847, 851, 921, 1099, 1103, 1303, 1304, 1307, 1324, 1329, 1330, 1331, 1332, 1333, 1334, 1383, 1401, 1512, 1606, 1608, 1611, 1691, 1693, 1695, 1698					
277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion	**Like-for-like credit retirement options**					
	Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region

	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla This includes PCT's: 74, 75, 83, 250, 266, 267, 268, 270, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 286, 298, 302, 312, 341, 342, 347, 350, 352, 356, 367, 381, 382, 395, 401, 403, 421, 433, 434, 435, 436, 437, 451, 483, 484, 488, 492, 496, 508, 509, 510, 511, 528, 538, 544, 563, 567, 571, 589, 590, 597, 599, 618, 619, 622, 633, 654, 702, 703, 704, 705, 710, 711, 796, 797, 799, 840, 847, 851, 921, 1099,	-	277_Mod-good	Yes	119	Inland Slopes, Bogan-Macquarie, Bondo, Capertee Uplands, Capertee Valley, Crookwell, Hill End, Kerrabee, Lower Slopes, Murray Fans, Murrumbateman, Orange, Pilliga, Talbragar Valley and Wollemi. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	1103, 1303, 1304, 1307, 1324, 1329, 1330, 1331, 1332, 1333, 1334, 1383, 1401, 1512, 1606, 1608, 1611, 1691, 1693, 1695, 1698					
	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla This includes PCT's: 74, 75, 83, 250, 266, 267, 268, 270, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 286, 298, 302, 312, 341, 342, 347, 350, 352, 356, 367, 381, 382, 395, 401, 403, 421, 433, 434, 435, 436, 437, 451, 483, 484, 488, 492, 496, 508, 509, 510, 511,	-	277_Derived	No	0	Inland Slopes, Bogan-Macquarie, Bondo, Capertee Uplands, Capertee Valley, Crookwell, Hill End, Kerrabee, Lower Slopes, Murray Fans, Murrumbateman, Orange, Pilliga, Talbragar Valley and Wollemi. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	528, 538, 544, 563, 567, 571, 589, 590, 597, 599, 618, 619, 622, 633, 654, 702, 703, 704, 705, 710, 711, 796, 797, 799, 840, 847, 851, 921, 1099, 1103, 1303, 1304, 1307, 1324, 1329, 1330, 1331, 1332, 1333, 1334, 1383, 1401, 1512, 1606, 1608, 1611, 1691, 1693, 1695, 1698					
319-Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion	**Like-for-like credit retirement options**					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Inland Rocky Hill Woodlands This includes PCT's: 177, 178, 318, 319	Inland Rocky Hill Woodlands >=50% and <70%	319_Mod-good	Yes	265	Inland Slopes, Bogan-Macquarie, Bondo, Capertee Uplands, Capertee Valley, Crookwell, Hill End, Kerrabee, Lower Slopes, Murray Fans, Murrumbateman, Orange, Pilliga, Talbragar Valley and Wollemi. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	Inland Rocky Hill Woodlands This includes PCT's: 177, 178, 318, 319	Inland Rocky Hill Woodlands >=50% and <70%	319_Derived	No	108	Inland Slopes, Bogan-Macquarie, Bondo, Capertee Uplands, Capertee Valley, Crookwell, Hill End, Kerrabee, Lower Slopes, Murray Fans, Murrumbateman, Orange, Pilliga, Talbragar Valley and Wollemi. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Inland Rocky Hill Woodlands This includes PCT's: 177, 178, 318, 319	Inland Rocky Hill Woodlands >=50% and <70%	319_Poor	Yes	5	Inland Slopes, Bogan-Macquarie, Bondo, Capertee Uplands, Capertee Valley, Crookwell, Hill End, Kerrabee, Lower Slopes, Murray Fans, Murrumbateman, Orange, Pilliga, Talbragar Valley and Wollemi. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

Species Credit Summary

BAM Biodiversity Credit Report (Like for like)

Species	Vegetation Zone/s	Area / Count	Credits
Cullen parvum / Small Scurf-pea	**74_Mod-good, 277_Mod-good, 5_Poor**	2.2	64.00
Petaurus norfolcensis / Squirrel Glider	**74_Mod-good, 267_Mod-good**	1.4	40.00

Credit Retirement Options

Like-for-like credit retirement options

Cullen parvum / Small Scurf-pea	Spp	IBRA subregion
	Cullen parvum / Small Scurf-pea	Any in NSW
Petaurus norfolcensis / Squirrel Glider	Spp	IBRA subregion
	Petaurus norfolcensis / Squirrel Glider	Any in NSW

APPENDIX F-6
BAM scattered trees credit report – South Olary Plain IBRA subregion

BAM Credit Summary Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00029618/BAAS17020/21/00029619	EnergyConnect East - South Olary Plain	24/11/2021
Assessor Name	Report Created	BAM Data version *
Alexander Cockerill	12/01/2022	50
Assessor Number	BAM Case Status	Date Finalised
BAAS17020	Finalised	12/01/2022
Assessment Revision	Assessment Type	BOS entry trigger
0	Scattered Trees	Major Project

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Scattered Trees Credit Requirement

Class	Contains hollows	Number of trees	Ecosystem credits
15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)			
3	True	1.0	1
			1
58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion			
3	True	1.0	1
			1
170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones			
3	True	10.0	10
			10
			12

Species credits for threatened species

Nil

Scattered Tree Report

Proposal Details

Assessment Id
00029618/BAAS17020/21/00029619

Assessment name
EnergyConnect East - South Olary Plain

BAM data last updated *
24/11/2021

Assessor Name
Alexander Cockerill

Report Created
12/01/2022

BAM Data version *
50

Assessor Number
BAAS17020

BAM Case Status
Finalised

Date Finalised
12/01/2022

Assessment Revision
0

Assessment Type
Scattered Trees

BOS entry trigger
Major Project

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Scattered Trees

PCT code	PCT name	No. of trees	Species	DBHOB Category	Contain hollows	Class	Assessment required
15	Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	1	Eucalyptus largiflorens	>= 50cm	True	3	Visual assessment for hollows, presence of important habitat features and habitat suitability for threatened species

Scattered Tree Report

58	Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion	1	Casuarina pauper	>= 30cm	True	3	Visual assessment for hollows, presence of important habitat features and habitat suitability for threatened species
170	Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones	10	Eucalyptus gracilis	>= 30cm	True	3	Visual assessment for hollows, presence of important habitat features and habitat suitability for threatened species

BAM Predicted Species Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00029618/BAAS17020/21/00029619	EnergyConnect East - South Olary Plain	24/11/2021
Assessor Name	**Report Created**	**BAM Data version ***
Alexander Cockerill	12/01/2022	50
Assessor Number	**BAM Case Status**	**Date Finalised**
BAAS17020	Finalised	12/01/2022
Assessment Revision	**Assessment Type**	**BOS entry trigger**
0	Scattered Trees	Major Project

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Threatened species reliably predicted to utilise the site. No surveys are required for these species. Ecosystem credits apply to these species.

Common Name	Scientific Name
Barking Owl	Ninox connivens
Black Falcon	Falco subniger
	Falco subniger
	Falco subniger
Black-breasted Buzzard	Hamirostra melanosternon
	Hamirostra melanosternon
	Hamirostra melanosternon
Dusky Woodswallow	Artamus cyanopterus cyanopterus
	Artamus cyanopterus cyanopterus
	Artamus cyanopterus cyanopterus
Grey Falcon	Falco hypoleucos
	Falco hypoleucos
	Falco hypoleucos
Grey-crowned Babbler (eastern subspecies)	Pomatostomus temporalis temporalis
	Pomatostomus temporalis temporalis
Hooded Robin (south-eastern form)	Melanodryas cucullata cucullata
	Melanodryas cucullata cucullata
	Melanodryas cucullata cucullata

Inland Forest Bat	Vespadelus baverstocki
	Vespadelus baverstocki
	Vespadelus baverstocki
Little Eagle	Hieraaetus morphnoides
	Hieraaetus morphnoides
	Hieraaetus morphnoides
Little Pied Bat	Chalinolobus picatus
	Chalinolobus picatus
	Chalinolobus picatus
Major Mitchell's Cockatoo	Lophochroa leadbeateri
	Lophochroa leadbeateri
	Lophochroa leadbeateri
Painted Honeyeater	Grantiella picta
	Grantiella picta
Purple-crowned Lorikeet	Glossopsitta porphyrocephala
Regent Parrot (eastern subspecies)	Polytelis anthopeplus monarchoides
	Polytelis anthopeplus monarchoides
	Polytelis anthopeplus monarchoides
Spotted Harrier	Circus assimilis
	Circus assimilis
	Circus assimilis
Varied Sittella	Daphoenositta chrysoptera
	Daphoenositta chrysoptera
	Daphoenositta chrysoptera
White-bellied Sea-Eagle	Haliaeetus leucogaster
	Haliaeetus leucogaster
	Haliaeetus leucogaster
Yellow-bellied Sheathtail-bat	Saccolaimus flaviventris
	Saccolaimus flaviventris
	Saccolaimus flaviventris

Threatened species assessed as not within the vegetation zone(s) for the PCT(s)

Refer to BAR for detailed justification

Common Name	Scientific Name	Justification in the BAM-C

BAM Biodiversity Credit Report (Like for like)

Proposal Details

Assessment Id
00029618/BAAS17020/21/00029619

Proposal Name
EnergyConnect East - South Olary Plain

BAM data last updated *
24/11/2021

Assessor Name
Alexander Cockerill

Assessor Number
BAAS17020

BAM Data version *
50

Proponent Names

Report Created
12/01/2022

Date Finalised
12/01/2022

Assessment Revision
0

Assessment Type
Scattered Trees

BAM Case Status
Finalised

BOS entry trigger
Major Project

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Potential Serious and Irreversible Impacts

Nil

Additional Information for Approval

PCTs With Customized Benchmarks

No Changes

Ecosystem Credit Summary

BAM Biodiversity Credit Report (Like for like)

PCT	TEC	HBT Cr	No HBT Cr	Credits
15-Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Not a TEC	1	0	1
58-Black Oak - Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion	Not a TEC	1	0	1
170-Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones	Not a TEC	10	0	10

Credit classes for 15

Like-for-like options

Class	Trading group	HBT	Credits	IBRA region
Inland Floodplain Woodlands	Inland Floodplain Woodlands >=50% and <70%	Yes	1	South Olary Plain, Barrier Range Outwash, Darling Depression, Great Darling Anabranch, Lachlan, Menindee, Murray Fans, Murray Scroll Belt, Murrumbidgee, Pooncarie-Darling and Robinvale Plains. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

Credit classes for 58

Like-for-like options

Class	Trading group	HBT	Credits	IBRA region

	Semi-arid Sand Plain Woodlands	Semi-arid Sand Plain Woodlands >=50% and <70%	Yes	1	South Olary Plain, Barrier Range Outwash, Darling Depression, Great Darling Anabranch, Lachlan, Menindee, Murray Fans, Murray Scroll Belt, Murrumbidgee, Pooncarie-Darling and Robinvale Plains. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Credit classes for 170	**Like-for-like options**				
	Class	Trading group	HBT	Credits	IBRA region
	Sand Plain Mallee Woodlands	Sand Plain Mallee Woodlands <50%	Yes	10	South Olary Plain, Barrier Range Outwash, Darling Depression, Great Darling Anabranch, Lachlan, Menindee, Murray Fans, Murray Scroll Belt, Murrumbidgee, Pooncarie-Darling and Robinvale Plains. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

APPENDIX F-7
BAM scattered trees credit report – Murrumbidgee IBRA subregion

BAM Credit Summary Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00029634/BAAS17020/21/00029647	EnergyConnect East - Scattered trees - Murrumbidgee	24/11/2021
Assessor Name	**Report Created**	**BAM Data version ***
Alexander Cockerill	12/01/2022	50
Assessor Number	**BAM Case Status**	**Date Finalised**
BAAS17020	Finalised	12/01/2022
Assessment Revision	**Assessment Type**	**BOS entry trigger**
0	Scattered Trees	Major Project

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Scattered Trees Credit Requirement

Class	Contains hollows	Number of trees	Ecosystem credits
11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)			
3	True	6.0	6
			6
75-Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion			
3	True	3.0	3
2	False	5.0	3
			6
			12

Species credits for threatened species

The scattered tree module is not applicable. This species much be assessed using chapter 5 of the BAM and BAM-C development module

Lathamus discolor
Swift Parrot

Scattered Tree Report

Proposal Details

Assessment Id	Assessment name	BAM data last updated *
00029634/BAAS17020/21/00029647	EnergyConnect East - Scattered trees - Murrumbidgee	24/11/2021
Assessor Name	Report Created	BAM Data version *
Alexander Cockerill	12/01/2022	50
Assessor Number	BAM Case Status	Date Finalised
BAAS17020	Finalised	12/01/2022
Assessment Revision	Assessment Type	BOS entry trigger
0	Scattered Trees	Major Project

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Scattered Trees

Scattered Tree Report

PCT code	PCT name	No. of trees	Species	DBHOB Category	Contain hollows	Class	Assessment required
11	River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	6	Eucalyptus camaldulensis	>= 50cm	True	3	Visual assessment for hollows, presence of important habitat features and habitat suitability for threatened species
75	Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion	3	Eucalyptus melliodora	>= 30cm	True	3	Visual assessment for hollows, presence of important habitat features and habitat suitability for threatened species
75	Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion	5	Eucalyptus melliodora	>= 20cm and <30cm	False	2	Visual assessment for hollows, presence of important habitat features and habitat suitability for threatened species

BAM Predicted Species Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00029634/BAAS17020/21/00029647	EnergyConnect East - Scattered trees - Murrumbidgee	24/11/2021
Assessor Name	Report Created	BAM Data version *
Alexander Cockerill	12/01/2022	50
Assessor Number	BAM Case Status	Date Finalised
BAAS17020	Finalised	12/01/2022
Assessment Revision	Assessment Type	BOS entry trigger
0	Scattered Trees	Major Project

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Threatened species reliably predicted to utilise the site. No surveys are required for these species. Ecosystem credits apply to these species.

Common Name	Scientific Name
Barking Owl	Ninox connivens
	Ninox connivens
Black Falcon	Falco subniger
	Falco subniger
Black-chinned Honeyeater (eastern subspecies)	Melithreptus gularis gularis
Dusky Woodswallow	Artamus cyanopterus cyanopterus
	Artamus cyanopterus cyanopterus
Grey Falcon	Falco hypoleucos
Grey-crowned Babbler (eastern subspecies)	Pomatostomus temporalis temporalis
Hooded Robin (south-eastern form)	Melanodryas cucullata cucullata
	Melanodryas cucullata cucullata
Koala	Phascolarctos cinereus
	Phascolarctos cinereus
Little Eagle	Hieraaetus morphnoides
	Hieraaetus morphnoides
Little Pied Bat	Chalinolobus picatus

Major Mitchell's Cockatoo	Lophochroa leadbeateri
Masked Owl	Tyto novaehollandiae
Painted Honeyeater	Grantiella picta
	Grantiella picta
Regent Parrot (eastern subspecies)	Polytelis anthopeplus monarchoides
Scarlet Robin	Petroica boodang
	Petroica boodang
Speckled Warbler	Chthonicola sagittata
Spotted Harrier	Circus assimilis
	Circus assimilis
Superb Parrot	Polytelis swainsonii
	Polytelis swainsonii
Swift Parrot	Lathamus discolor
	Lathamus discolor
Varied Sittella	Daphoenositta chrysoptera
	Daphoenositta chrysoptera
White-bellied Sea-Eagle	Haliaeetus leucogaster
	Haliaeetus leucogaster
White-throated Needletail	Hirundapus caudacutus
Yellow-bellied Sheathtail-bat	Saccolaimus flaviventris
	Saccolaimus flaviventris

Threatened species assessed as not within the vegetation zone(s) for the PCT(s)

Refer to BAR for detailed justification

Common Name	Scientific Name	Justification in the BAM-C

BAM Biodiversity Credit Report (Like for like)

Proposal Details

Assessment Id
00029634/BAAS17020/21/00029647

Proposal Name
EnergyConnect East - Scattered trees - Murrumbidgee

BAM data last updated *
24/11/2021

Assessor Name
Alexander Cockerill

Assessor Number
BAAS17020

BAM Data version *
50

Proponent Names

Report Created
12/01/2022

Date Finalised
12/01/2022

Assessment Revision
0

Assessment Type
Scattered Trees

BAM Case Status
Finalised

BOS entry trigger
Major Project

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Potential Serious and Irreversible Impacts

Nil

Additional Information for Approval

PCTs With Customized Benchmarks

No Changes

Ecosystem Credit Summary

BAM Biodiversity Credit Report (Like for like)

PCT	TEC	HBT Cr	No HBT Cr	Credits
11-River Red Gum - Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Not a TEC	6	0	6
75-Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	3	3	6

Credit classes for 11

Like-for-like options

Class	Trading group	HBT	Credits	IBRA region
Inland Riverine Forests	Inland Riverine Forests <50%	Yes	6	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

Credit classes for 75

Like-for-like options

TEC	Trading group	HBT	Credits	IBRA region

	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	-	Yes	3	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	-	No	3	Murrumbidgee, Darling Depression, Lachlan, Lachlan Plains, Lower Slopes, Murray Fans, Robinvale Plains and South Olary Plain. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

APPENDIX F-8
BAM scattered trees credit report – Lower Slopes IBRA subregion

BAM Credit Summary Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00029665/BAAS17020/21/00029667	EnergyConnect East - Scattered trees - Lower Slopes	24/11/2021
Assessor Name	Report Created	BAM Data version *
Alexander Cockerill	12/01/2022	50
Assessor Number	BAM Case Status	Date Finalised
BAAS17020	Finalised	12/01/2022
Assessment Revision	Assessment Type	BOS entry trigger
0	Scattered Trees	Major Project

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Scattered Trees Credit Requirement

Class	Contains hollows	Number of trees	Ecosystem credits
277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion			
3	True	2.0	2
			2
80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion			
3	True	10.0	10
3	False	7.0	5
2	False	2.0	1
2	False	1.0	1
2	False	2.0	1
			18
76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions			
3	True	13.0	13
2	False	1.0	1
			14

BAM Credit Summary Report

75-Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion			
3	True	11.0	11
3	False	1.0	1
2	False	1.0	1
2	False	1.0	1
			14
			48

Species credits for threatened species

The scattered tree module is not applicable. This species much be assessed using chapter 5 of the BAM and BAM-C development module

Lathamus discolor Swift Parrot

Scattered Tree Report

Proposal Details

Assessment Id
00029665/BAAS17020/21/00029667

Assessment name
EnergyConnect East - Scattered trees - Lower Slopes

BAM data last updated *
24/11/2021

Assessor Name
Alexander Cockerill

Report Created
12/01/2022

BAM Data version *
50

Assessor Number
BAAS17020

BAM Case Status
Finalised

Date Finalised
12/01/2022

Assessment Revision
0

Assessment Type
Scattered Trees

BOS entry trigger
Major Project

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Scattered Trees

Scattered Tree Report

PCT code	PCT name	No. of trees	Species	DBHOB Category	Contain hollows	Class	Assessment required
75	Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion	11	Eucalyptus melliodora	>= 30cm	True	3	Visual assessment for hollows, presence of important habitat features and habitat suitability for threatened species
75	Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion	1	Eucalyptus melliodora	>= 30cm	False	3	Visual assessment for hollows, presence of important habitat features and habitat suitability for threatened species
75	Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion	1	Allocasuarina luehmannii	>= 20cm and <30cm	False	2	Visual assessment for hollows, presence of important habitat features and habitat suitability for threatened species
75	Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion	1	Callitris glaucophylla	>= 20cm and <30cm	False	2	Visual assessment for hollows, presence of important habitat features and habitat suitability for threatened species

Scattered Tree Report

76	Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions	13	Eucalyptus microcarpa	>= 50cm	True	3	Visual assessment for hollows, presence of important habitat features and habitat suitability for threatened species
76	Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions	1	Allocasuarina luehmannii	>= 20cm and <50cm	False	2	Visual assessment for hollows, presence of important habitat features and habitat suitability for threatened species
80	Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion	10	Eucalyptus microcarpa	>= 50cm	True	3	Visual assessment for hollows, presence of important habitat features and habitat suitability for threatened species
80	Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion	7	Eucalyptus microcarpa	>= 50cm	False	3	Visual assessment for hollows, presence of important habitat features and habitat suitability for threatened species
80	Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion	2	Eucalyptus microcarpa	>= 20cm and <50cm	False	2	Visual assessment for hollows, presence of important habitat features and habitat suitability for threatened species

Scattered Tree Report

80	Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion	1	Eucalyptus melliodora	>= 20cm and <50cm	False	2	Visual assessment for hollows, presence of important habitat features and habitat suitability for threatened species
80	Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion	2	Callitris glaucophylla	>= 20cm and <50cm	False	2	Visual assessment for hollows, presence of important habitat features and habitat suitability for threatened species
277	Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion	2	Eucalyptus melliodora	>= 50cm	True	3	Visual assessment for hollows, presence of important habitat features and habitat suitability for threatened species

BAM Predicted Species Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00029665/BAAS17020/21/00029667	EnergyConnect East - Scattered trees - Lower Slopes	24/11/2021
Assessor Name	**Report Created**	**BAM Data version ***
Alexander Cockerill	12/01/2022	50
Assessor Number	**BAM Case Status**	**Date Finalised**
BAAS17020	Finalised	12/01/2022
Assessment Revision	**Assessment Type**	**BOS entry trigger**
0	Scattered Trees	Major Project

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Threatened species reliably predicted to utilise the site. No surveys are required for these species. Ecosystem credits apply to these species.

Common Name	Scientific Name
Barking Owl	Ninox connivens
	Ninox connivens
	Ninox connivens
	Ninox connivens
Black Falcon	Falco subniger
	Falco subniger
	Falco subniger
	Falco subniger
Black-chinned Honeyeater (eastern subspecies)	Melithreptus gularis gularis
	Melithreptus gularis gularis
	Melithreptus gularis gularis
Brown Treecreeper (eastern subspecies)	Climacteris picumnus victoriae
	Climacteris picumnus victoriae
Dusky Woodswallow	Artamus cyanopterus cyanopterus
	Artamus cyanopterus cyanopterus
	Artamus cyanopterus cyanopterus
	Artamus cyanopterus cyanopterus
Flame Robin	Petroica phoenicea

Flame Robin	Petroica phoenicea
	Petroica phoenicea
Glossy Black-Cockatoo	Calyptorhynchus lathami
	Calyptorhynchus lathami
	Calyptorhynchus lathami
Grey Falcon	Falco hypoleucos
	Falco hypoleucos
Grey-crowned Babbler (eastern subspecies)	Pomatostomus temporalis temporalis
	Pomatostomus temporalis temporalis
	Pomatostomus temporalis temporalis
	Pomatostomus temporalis temporalis
Hooded Robin (south-eastern form)	Melanodryas cucullata cucullata
	Melanodryas cucullata cucullata
	Melanodryas cucullata cucullata
	Melanodryas cucullata cucullata
Koala	Phascolarctos cinereus
	Phascolarctos cinereus
	Phascolarctos cinereus
	Phascolarctos cinereus
Little Eagle	Hieraaetus morphnoides
	Hieraaetus morphnoides
	Hieraaetus morphnoides
	Hieraaetus morphnoides
Little Lorikeet	Glossopsitta pusilla
	Glossopsitta pusilla
Little Pied Bat	Chalinolobus picatus
Major Mitchell's Cockatoo	Lophochroa leadbeateri
	Lophochroa leadbeateri
Masked Owl	Tyto novaehollandiae
	Tyto novaehollandiae
	Tyto novaehollandiae
Painted Honeyeater	Grantiella picta
	Grantiella picta
	Grantiella picta
	Grantiella picta

Scarlet Robin	Petroica boodang
	Petroica boodang
	Petroica boodang
	Petroica boodang
Speckled Warbler	Chthonicola sagittata
	Chthonicola sagittata
	Chthonicola sagittata
	Chthonicola sagittata
Spotted Harrier	Circus assimilis
	Circus assimilis
Superb Parrot	Polytelis swainsonii
	Polytelis swainsonii
	Polytelis swainsonii
	Polytelis swainsonii
Swift Parrot	Lathamus discolor
	Lathamus discolor
	Lathamus discolor
	Lathamus discolor
Varied Sittella	Daphoenositta chrysoptera
	Daphoenositta chrysoptera
	Daphoenositta chrysoptera
	Daphoenositta chrysoptera
White-bellied Sea-Eagle	Haliaeetus leucogaster
	Haliaeetus leucogaster
	Haliaeetus leucogaster
	Haliaeetus leucogaster
White-throated Needletail	Hirundapus caudacutus
	Hirundapus caudacutus
	Hirundapus caudacutus
Yellow-bellied Sheathtail-bat	Saccolaimus flaviventris
	Saccolaimus flaviventris
	Saccolaimus flaviventris
	Saccolaimus flaviventris

BAM Predicted Species Report

Threatened species assessed as not within the vegetation zone(s) for the PCT(s)

Refer to BAR for detailed justification

Common Name	Scientific Name	Justification in the BAM-C

BAM Biodiversity Credit Report (Like for like)

Proposal Details

Assessment Id
00029665/BAAS17020/21/00029667

Proposal Name
EnergyConnect East - Scattered trees - Lower Slopes

BAM data last updated *
24/11/2021

Assessor Name
Alexander Cockerill

Assessor Number
BAAS17020

BAM Data version *
50

Proponent Names

Report Created
12/01/2022

Date Finalised
12/01/2022

Assessment Revision
0

Assessment Type
Scattered Trees

BAM Case Status
Finalised

BOS entry trigger
Major Project

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Potential Serious and Irreversible Impacts

Nil

Additional Information for Approval

PCTs With Customized Benchmarks

No Changes

Ecosystem Credit Summary

BAM Biodiversity Credit Report (Like for like)

PCT	TEC	HBT Cr	No HBT Cr	Credits
75-Yellow Box - White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the eastern Riverina Bioregion and western NSW South Western Slopes Bioregion	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	11	3	14
76-Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions	Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions	13	1	14
80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion	Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions	10	8	18
277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	2	0	2

Credit classes for 75

Like-for-like options

TEC	Trading group	HBT	Credits	IBRA region

	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	-	Yes	11	Lower Slopes, Bogan-Macquarie, Inland Slopes, Lachlan Plains, Murray Fans, Murrumbidgee and Nymagee. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	-	No	3	Lower Slopes, Bogan-Macquarie, Inland Slopes, Lachlan Plains, Murray Fans, Murrumbidgee and Nymagee. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Credit classes for 76	**Like-for-like options**				
	TEC	Trading group	HBT	Credits	IBRA region
	Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions	-	Yes	13	Lower Slopes, Bogan-Macquarie, Inland Slopes, Lachlan Plains, Murray Fans, Murrumbidgee and Nymagee. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

	Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions	-	No	1	Lower Slopes, Bogan-Macquarie, Inland Slopes, Lachlan Plains, Murray Fans, Murrumbidgee and Nymagee. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Credit classes for 80	**Like-for-like options**				
	TEC	Trading group	HBT	Credits	IBRA region
	Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions	-	Yes	10	Lower Slopes, Bogan-Macquarie, Inland Slopes, Lachlan Plains, Murray Fans, Murrumbidgee and Nymagee. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions	-	No	8	Lower Slopes, Bogan-Macquarie, Inland Slopes, Lachlan Plains, Murray Fans, Murrumbidgee and Nymagee. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Credit classes for 277	**Like-for-like options**				
	TEC	Trading group	HBT	Credits	IBRA region

	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	-	Yes	2	Lower Slopes, Bogan-Macquarie, Inland Slopes, Lachlan Plains, Murray Fans, Murrumbidgee and Nymagee. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

APPENDIX F-9
BAM scattered trees credit report – Inland Slopes IBRA subregion

BAM Credit Summary Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00029671/BAAS17020/21/00029674	EnergyConnect East - Scattered trees - Inland Slopes	24/11/2021
Assessor Name	Report Created	BAM Data version *
Alexander Cockerill	12/01/2022	50
Assessor Number	BAM Case Status	Date Finalised
BAAS17020	Finalised	12/01/2022
Assessment Revision	Assessment Type	BOS entry trigger
0	Scattered Trees	Major Project

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Scattered Trees Credit Requirement

Class	Contains hollows	Number of trees	Ecosystem credits
277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion			
3	True	8.0	8
			8
80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion			
3	True	8.0	8
			8
			16

Species credits for threatened species

Nil

Scattered Tree Report

Proposal Details

Assessment Id
00029671/BAAS17020/21/00029674

Assessment name
EnergyConnect East - Scattered trees - Inland Slopes

BAM data last updated *
24/11/2021

Assessor Name
Alexander Cockerill

Report Created
12/01/2022

BAM Data version *
50

Assessor Number
BAAS17020

BAM Case Status
Finalised

Date Finalised
12/01/2022

Assessment Revision
0

Assessment Type
Scattered Trees

BOS entry trigger
Major Project

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Scattered Trees

PCT code	PCT name	No. of trees	Species	DBHOB Category	Contain hollows	Class	Assessment required
80	Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion	8	Eucalyptus microcarpa	>= 50cm	True	3	Visual assessment for hollows, presence of important habitat features and habitat suitability for threatened species

Scattered Tree Report

277	Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion	8	Eucalyptus melliodora	>= 50cm	True	3	Visual assessment for hollows, presence of important habitat features and habitat suitability for threatened species

BAM Predicted Species Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00029671/BAAS17020/21/00029674	EnergyConnect East - Scattered trees - Inland Slopes	24/11/2021
Assessor Name	Report Created	BAM Data version *
Alexander Cockerill	12/01/2022	50
Assessor Number	BAM Case Status	Date Finalised
BAAS17020	Finalised	12/01/2022
Assessment Revision	Assessment Type	BOS entry trigger
0	Scattered Trees	Major Project

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Threatened species reliably predicted to utilise the site. No surveys are required for these species. Ecosystem credits apply to these species.

Common Name	Scientific Name
Barking Owl	Ninox connivens
	Ninox connivens
Black Falcon	Falco subniger
	Falco subniger
Black-chinned Honeyeater (eastern subspecies)	Melithreptus gularis gularis
	Melithreptus gularis gularis
Brown Treecreeper (eastern subspecies)	Climacteris picumnus victoriae
Dusky Woodswallow	Artamus cyanopterus cyanopterus
	Artamus cyanopterus cyanopterus
Eastern False Pipistrelle	Falsistrellus tasmaniensis
Flame Robin	Petroica phoenicea
	Petroica phoenicea
Glossy Black-Cockatoo	Calyptorhynchus lathami
Grey-crowned Babbler (eastern subspecies)	Pomatostomus temporalis temporalis
	Pomatostomus temporalis temporalis
Hooded Robin (south-eastern form)	Melanodryas cucullata cucullata
	Melanodryas cucullata cucullata
Koala	Phascolarctos cinereus

Koala	Phascolarctos cinereus
Little Eagle	Hieraaetus morphnoides
	Hieraaetus morphnoides
Little Lorikeet	Glossopsitta pusilla
Major Mitchell's Cockatoo	Lophochroa leadbeateri
Masked Owl	Tyto novaehollandiae
	Tyto novaehollandiae
Painted Honeyeater	Grantiella picta
	Grantiella picta
Scarlet Robin	Petroica boodang
	Petroica boodang
Speckled Warbler	Chthonicola sagittata
	Chthonicola sagittata
Spotted Harrier	Circus assimilis
Superb Parrot	Polytelis swainsonii
	Polytelis swainsonii
Swift Parrot	Lathamus discolor
	Lathamus discolor
Varied Sittella	Daphoenositta chrysoptera
	Daphoenositta chrysoptera
White-bellied Sea-Eagle	Haliaeetus leucogaster
	Haliaeetus leucogaster
White-throated Needletail	Hirundapus caudacutus
	Hirundapus caudacutus
Yellow-bellied Sheathtail-bat	Saccolaimus flaviventris
	Saccolaimus flaviventris

Threatened species assessed as not within the vegetation zone(s) for the PCT(s)

Refer to BAR for detailed justification

Common Name	Scientific Name	Justification in the BAM-C

BAM Biodiversity Credit Report (Like for like)

Proposal Details

Assessment Id
00029671/BAAS17020/21/00029674

Proposal Name
EnergyConnect East - Scattered trees - Inland Slopes

BAM data last updated *
24/11/2021

Assessor Name
Alexander Cockerill

Assessor Number
BAAS17020

BAM Data version *
50

Proponent Names

Report Created
12/01/2022

Date Finalised
12/01/2022

Assessment Revision
0

Assessment Type
Scattered Trees

BAM Case Status
Finalised

BOS entry trigger
Major Project

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Potential Serious and Irreversible Impacts

Nil

Additional Information for Approval

PCTs With Customized Benchmarks

No Changes

Ecosystem Credit Summary

BAM Biodiversity Credit Report (Like for like)

PCT	TEC	HBT Cr	No HBT Cr	Credits
80-Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion	Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions	8	0	8
277-Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	8	0	8

Credit classes for 80

Like-for-like options

TEC	Trading group	HBT	Credits	IBRA region
Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions	-	Yes	8	Inland Slopes, Bogan-Macquarie, Bondo, Capertee Uplands, Capertee Valley, Crookwell, Hill End, Kerrabee, Lower Slopes, Murray Fans, Murrumbateman, Orange, Pilliga, Talbragar Valley and Wollemi. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

Credit classes for 277

Like-for-like options

TEC	Trading group	HBT	Credits	IBRA region

	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	-	Yes	8	Inland Slopes, Bogan-Macquarie, Bondo, Capertee Uplands, Capertee Valley, Crookwell, Hill End, Kerrabee, Lower Slopes, Murray Fans, Murrumbateman, Orange, Pilliga, Talbragar Valley and Wollemi. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.