STAGE 2 — IMPACT ASSESSMENT

7. Avoid and minimise impacts

This section demonstrates the efforts to avoid and minimise impacts on biodiversity values (including prescribed impacts) associated with the project in accordance with BAM, including an analysis of:

- Alternative locations' potential impacts on biodiversity values and justification for selecting the project location.
- Efforts to avoid and minimise impacts (including prescribed impacts) to biodiversity values through proposal design.
- Routes that avoid and minimise impacts on biodiversity values.
- Technologies that would avoid or minimise impacts on biodiversity values.

7.1. Actions to avoid/minimise project impacts

During initial phases of the project feasibility, multiple properties and regions within the broader Riverina and South West REZ were considered. The South West REZ as a whole was chosen for multiple reasons including renewable energy resource potential, existing (and planned) electricity network (i.e. Project EnergyConnect), low human population densities and existing land use patterns. Many of the proposed renewable energy developments in the South West REZ are sited in areas that support native vegetation cover, particularly in the central to eastern portions of the REZ. The prevalence of native vegetation in these areas is due to land use practices and patterns of agricultural development. Lower rainfall areas and non-arable areas away from irrigation infrastructure still support large tracts of native vegetation where broadacre grazing takes place. Development of intensive dryland and/or irrigated agriculture has been limited by appropriate soil types and proximity to irrigation infrastructure. Government policy and community pressure has meant future renewable energy development in the South West REZ is now focussed on the undeveloped grazing land that supports native vegetation rather than on the areas of high value agricultural land. This has made complete avoidance of biodiversity impacts at a landscape and site selection level challenging within the South West REZ. The site selection process has therefore focused on avoiding higher quality woodland and forested areas and on utilising land previously disturbed by low intensity agriculture. Whilst avoidance of native vegetation is challenging in the South West REZ, a key focus was siting wind farm infrastructure and the development footprint, particularly turbine locations, outside of riparian buffers, outside of important mapped habitat areas for Plains Wanderer, and outside of the highest value biodiversity areas within the subject land as much as possible.

Similar to the Dinawan Solar Farm, the final location of the project was chosen based on (EMM 2022):

- The subject land is within the South West REZ, an area nominated for significant investment in renewable energy generation, storage and transmission projects.
- The subject land is adjacent to Project EnergyConnect (including the Dinawan Substation), which minimises the impacts and cost of transmission infrastructure required to export the electricity generated by the project directly into the grid via Project EnergyConnect.
- The subject land is relatively flat and has a very good wind yield, particularly at night, that complements the available solar resource proposed to be utilised as part of the Dinawan Solar Farm.
- The land surrounding the subject land is sparsely populated with only 22 non-associated residences within 8 kilometres of a proposed turbine.

- The existing agricultural land use (native pasture grazing) and cropping land within and surrounding the subject land is compatible with wind energy generation .
- The subject land connects directly to Kidman Way, an approved B -Double route, with access to the Sturt and Newell Highways.

7.2. Preliminary constraints and opportunities assessment

Biosis was commissioned by Spark Renewables in late 2021 to undertake a preliminary biodiversity opportunities and constraints assessment at multiple contiguous properties totalling 54,000 hectares, as part of an overall due diligence for both potential so lar and wind farm developments. Initially, the constraints and opportunities assessment was undertaken with desktop data only, followed by rapid field investigation to verify findings. The scope of this assessment was to identify high level constraints and describe biodiversity values within the subject land and neighbouring properties and allowed for recommendations to be provided in terms of avoidance, mitigation and/or further detailed assessment of biodiversity, guiding concept, preliminary and final de signs. The constraints identified across the 54,000 hectare investigation area are listed in Table 69 and shown on Figure 16. **Note**, some constraints have been revised back from those indicated below and in Figure 16 following multiple field surveys, such as No -go to high constraint, and mostly around absence of Intact Weeping myall TEC or mapped wetlands. This is more prevalent for general infrastructure constraints (access tracks, cabling, compounds etc) as opposed to wind turbine locations (Figure 16a and Figure 16b).

Table 69 Constraints assessment for turbine layout and general infrastructure

Constraint category	Definition	Wind constraint value (Predominantly in regard to turbine placement)	General infrastructure constraint value
No Go areas (Constraint score – 4)	These are areas that should be avoided and if not, may seriously effect regulatory approval of the project (i.e. regulators may require significant redesign to reduce impacts).	• 200 m No -Go zone setback required around NPWS estate (Oolambeyan National Park). • Mapped NSW wetlands (DECCW 2010) with an additional 200 m buffer. • 300 m from treed watercourses that are the most likely location of raptor and parrot breeding sites. • 100 m buffer of mapped Plains Wanderer Important Habitat Areas.	• 200 m No -Go zone setback required around NPWS estate (Oolambeyan National Park). • 100 m buffer of mapped Plains Wanderer Important Habitat Areas.

Constraint category	Definition	Wind constraint value (Predominantly in regard to turbine placement)	General infrastructure constraint value
High Constraint (Constraint score – 3)	These are areas that should be avoided if possible and will require justification in a BDAR if they cannot be avoided. Likely to result in curtailment of wind turbines, and/or include areas that are likely to generate high biodiversity credit per hectare requirements that will require offsetting.	• Additional >200 m – 900 m buffer from mapped NSW wetlands (DECCW 2010) for potential of breeding migratory and/or nomadic wetland birds. • High likelihood EPBC and BC Act listed TECs. • 100 - 300 m buffer of mapped Plains Wanderer Important Habitat Areas. • Additional >300 m – 500 m buffer from treed watercourses to reduce impacts to raptor and wetland bird breeding sites • Woodland Plant Community Types (PCTs) that are more likely to provide habitat for birds (non -waders) and microbats likely to be at risk of collision with turbines • Lower likelihood TECS and/or TECs that require ground validation to confirm presence and constraint level (incl. EPBC Act Grasslands, Sandhill Pine Woodland and Box Gum Woodland) (hatched areas on figures).	• 300 m within treed watercourses are the most likely location of raptor and parrot breeding sites. • 100 - 300 m buffer of mapped Plains Wanderer Important Habitat Areas. • Any EPBC and BC Act listed TECs. • Additional >300 m – 500 m buffer from treed watercourses to reduce impacts to raptor breeding sites. • All other PCTs within 300m of a watercourse. • EPBC grassland TECs that require ground -truthing to confirm presence and constraint level (hatched areas on figures).
Moderate Constraint (Constraint score – 2)	Suitable for development. These areas do not necessarily need to be avoided but will generate a moderate biodiversity credit per hectare that require offsetting.	• All native vegetation not subject to the above constraints.	• All native vegetation not subject to the above constraints. • Non-native vegetation or areas likely to meet the definition of Category 1 land however where prescribed impacts may be possible.

Constraint category	Definition	Wind constraint value (Predominantly in regard to turbine placement)	General infrastructure constraint value
Low Constraint (Constraint score – 1)	Best suited for development. These areas are unlikely to generate biodiversity credits (exotic/cultivated/irrigated areas) or may have low biodiversity credit requirements per hectare.	• Non-native vegetation or areas likely to meet the definition of Category 1 exempt land and where prescribed impacts are considered negligible.	• Non-native vegetation or areas likely to meet the definition of Category 1 land and where prescribed impacts are considered negligible.

The development corridor and development footprint has been refined through consideration of the findings of a preliminary ecological study and identification of constraints and opportunities mapped through the environmental impact assessment process (including this BDAR). The intent of this process was to avoid impacts to the highest ecological values identified as much as possible, whilst taking into account the high proportion of native vegetation within the subject land. Although impacts to native vegetation, threatened species habitat and TECs will occur, complete avoidance of impacts wasn't possible due to the large amount of native vegetation within the subject land and broader investigation area, with instead a focus on avoidance of the highest value areas (Figure 16).

Measures to avoid and minimise impacts on highest value areas of native vegetation were considered during the planning stage of the project and designs were 'workshopped' through an iterative mapping process between Spark Renewables, EMM and the Biosis BAM Assessors and project ecologists. Other disciplines such as flooding and archaeology were also considered during multiple revisions of the development corridor to ensure highest biodiversity values, as well archaeological values and areas likely to be inundated during significant flood events were accounted for.

Overall, siting of current infrastructure within the exhibited EIS design resulted in the following areas of constraints

- 1.5% of the development footprint occurring in Very High areas.
    - Primarily based on impacts (predominantly access) to important mapped areas for Plains Wanderer and non-ground truthed mapped wetlands.
- 12.8% of the development footprint occurring in highly constrained areas.
    - Primarily buffers applied to wetlands areas, treed riparian areas and buffers to important mapped areas for Plains Wanderer
- 71.6% of the development footprint occurring in moderately constrained areas.
    - Primarily due to levels of native vegetation present.
- 14.1% of the development footprint occurring in low constrained areas.

Following this, the process of further refinement once areas were ground truthed has resulted in impacts to areas of highest biodiversity value being avoided and/or minimised, which has included ;

- Project design workshops were held on multiple occasions between Biosis ecologists, project designers/engineers and environmental approvals specialists to work through opportunities and constraints relating to how impacts to biodiversity values could be avoided and minimised through project design and the location of infrastructure.

- Removal of infrastructure from the Four Corners property, adjacent to Oolambeyan National Park.
- Avoidance of impacts throughout the broader study area, and an overall reduction in loss of higher quality habitats from multiple design revisions.
- Use of existing tracks, public roads and fencelines to delineate sections of the project and used preferentially for locating access tracks and linear infrastructure.
- Relocating and combining footprints and micro -siting corridors to contain as much infrastructure as possible (e.g. collocating access tracks with electrical cabling and/or transmission line infrastructure), making a more efficient design and keeping impacts to the minimum extent necessary.
- Large scale avoidance of important mapped areas for the Plains Wanderer which is common within the subject land.
- Minimising the removal of habitat trees that may provide habitat for species such as Superb Parrot and Corbens long -eared Bat.
- Siting turbine mast locations at least 200m away from PCT 13, PCT 15, PCT 10 and PCT 2 8 as far as practicable, allows increased buffers from blade tip to edge of canopy.
- Removing and/or relocating turbines away from active and non -active large nests observed during the surveys.
- Removing and/or relocating turbines out of PCT 26 intact areas where vulnerable listed Painted Honeyeaters were recorded and vulnerable listed Grey -crowned Babblers were nesting.
- Avoidance and minimisation of impacts to large patches of *Swainsona murrayana* and *Swainsona sericea.*
- Avoidance and minimisation of impacts to *Maireana cheelii* individuals.
- Removal of all 'very high' risk turbines and 26 'high' risk turbines.
- Avoidance of a known location of a Plains Wanderer individual and supporting habitat buffers.

Following turbine layout revisions, the preliminary layout was reduced from 294 turbines to 267, with 214 of the original 294 turbines relocated to some degree based on biodiversity impacts, as well as other environmental constraints.

An overall summary of the reduction of the scale of the development corridor can be seen in Table 70.

Table 70 Summary of key project refinements

Area	Preliminary investigation Area (ha)	Preliminary Development Corridor total area (ha)	Development Corridor V3 (ha) total area	Exhibited Development Corridor V8 total area (ha)	Amended Development Corridor total area (ha)
Total hectares	54,000	10,366	7,956	7,256	6,426

As previously indicated, the principal means to reduce impacts on biodiversity values is to avoid and/or minimise the removal of native vegetation and fauna habitat. Additional recommendations include measures to mitigate residual impacts after all measures to avoid and minimise impacts have been considered in Section 9. Figure 17 shows the extent of refinements undertaken to avoid or minimise impacts on biodiversity values. The final development footprint (including construction and operation) as well as demonstrating prescribed impacts and indirect impact zones where applicable is shown in Figure 18 and Figure 19 respectively.

7.3. Hollow bearing trees

Many patches of woody vegetation dominated by Black Box within the development corridor contain a significant number of hollows, many of which are classified within the small size category, however, do contain medium to large hollows on occasion. Due to the significant number of hollow bearing trees, recording of hollow bearing tree data was focused on the medium or greater size classes that many of the threatened fauna in the region would occupy. A concerted effort during preliminary design was to avoid Black Box dominated vegetation and hollow bearing trees as much as possible, and site wind turbines at least 200 metres away from these areas. However, due primarily to access and cabling requirements, some hollow bearing trees will be impacted. During the course of multiple surveys, 132 hollow bearing trees were observed in the broader subject land, of which 60 are within the development corridor. The development footprint will impact directly or indirectly upon nine hollow bearing trees . This represents a 85% retention of woody vegetation with medium or greater sized hollows. The EIS exhibited BDAR had potential impacts resulting to 15 hollow bearing trees, which has now been reduced to nine. These hollows provide denning, sheltering and breeding for a raft of hollow dependent native fauna, however observations during multiple seasonal surveys noted use of the hollows by more common fauna such as Galahs and Blue Bonnets.

7.4. Response to submissions

As previously mentioned, following the exhibition of the EIS, further review of the design has been completed to refine and optimise the project layout (including the removal of 67 potential WTG locations and an 18% reduction to the development footprint). The reduction has facilitated further avoidance of impacts in the amended design. Amendments to the project layout and development footprint have also been made in response to biodiversity constraints, as well as feedback from key stakeholders, including Transgrid (as proponents for the proposed VNI West) and Origin (as proponents for the approved Yanco Delta Wind Farm). A summary of amended project has resulted the following

- a reduction in the project area from 39,061 ha to 34, 546 ha (12% decrease).
- a reduction in the development corridor from 7,256 ha to 6, 426 ha (12% decrease).
- a reduction in the development footprint from 1,339 ha to 1, 100 ha (18% decrease).
- a reduction in the number of assessed locations for WTGs from 267 to 200 .

An overview of reductions and amendments specifically in relation to biodiversity can be seen in Table 71 and Table 72.

Table 71 Comparison of EIS and amended project (PCT)

Vegetation zone	Development corridor (Ha) EIS	Development corridor (Ha) Amended project	Development footprint (Ha) EIS	Development footprint (Ha) Amended project	Footprint (%) change
PCT 10_moderate	9.35	4.25	0.33	0.19	-41
PCT 13_moderate	19.71	16.61	4.83	3.97	-26
PCT 13_thinned	29.17	29.78	9.14	7.83	-14
PCT 15_moderate	34.32	33.13	6.20	2.54	-59
PCT 15_thinned	7.05	6.39	1.61	1.10	-31

Vegetation zone	Development corridor (Ha) EIS	Development corridor (Ha) Amended project	Development footprint (Ha) EIS	Development footprint (Ha) Amended project	Footprint (%) change
PCT 17_mod_good	15	23.90	1.84	0.76	-59
PCT 17_moderate	3.06	11.16	1.09	1.33	+17
PCT 24_moderate	2.52	-	0.23	-	-100
PCT 26_DNG	2,282.95	2,184.03	395.93	343.19	-14
PCT 26_intact	871.09	795.47	133.14	116.77	-12
PCT 26_sparse	2,137.46	1,962.40	416.60	340.71	-18
PCT 28_low	278.04	240.65	54.00	47.62	-12
PCT 28_moderate	25.36	22.54	0.98	1.11	-13
PCT 45_mod_good	57	22.79	8.83	2.26	-80
PCT 45_Intersection	-	0.83	-	0.83	+100
PCT 46_moderate	620.14	399.65	105.59	72.62	-30
PCT 46_ Intersection	-	0.34	-	0.34	+100
PCT 160_mod_good	42.34	27.70	4.07	4.97	+22
PCT 160_moderate	5.75	-	0.84	-	-100

Table 72 Comparison of EIS and amended project (threatened ecological communities)

TEC	Listing status	Development corridor (Ha) EIS	Development Corridor (Ha) Amended project	Development footprint (Ha) EIS	Development footprint (Ha) Amended project	Footprint (%) change
Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions	BC Act Endangered	3,008.55	2,757.87	549.75	457.48	-17
	EPBC Act Endangered	991.34	873.57	150.46	128.71	-14
Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions	BC Act Endangered	303.40	263.19	54.98	48.73	-11

TEC	Listing status	Development corridor (Ha) EIS	Development Corridor (Ha) Amended project	Development footprint (Ha) EIS	Development footprint (Ha) Amended project	Footprint (%) change
Natural Grasslands of the Murray Valley Plains	EPBC Act Critically Endangered	677.14	423.62	114.42	76.06	-33

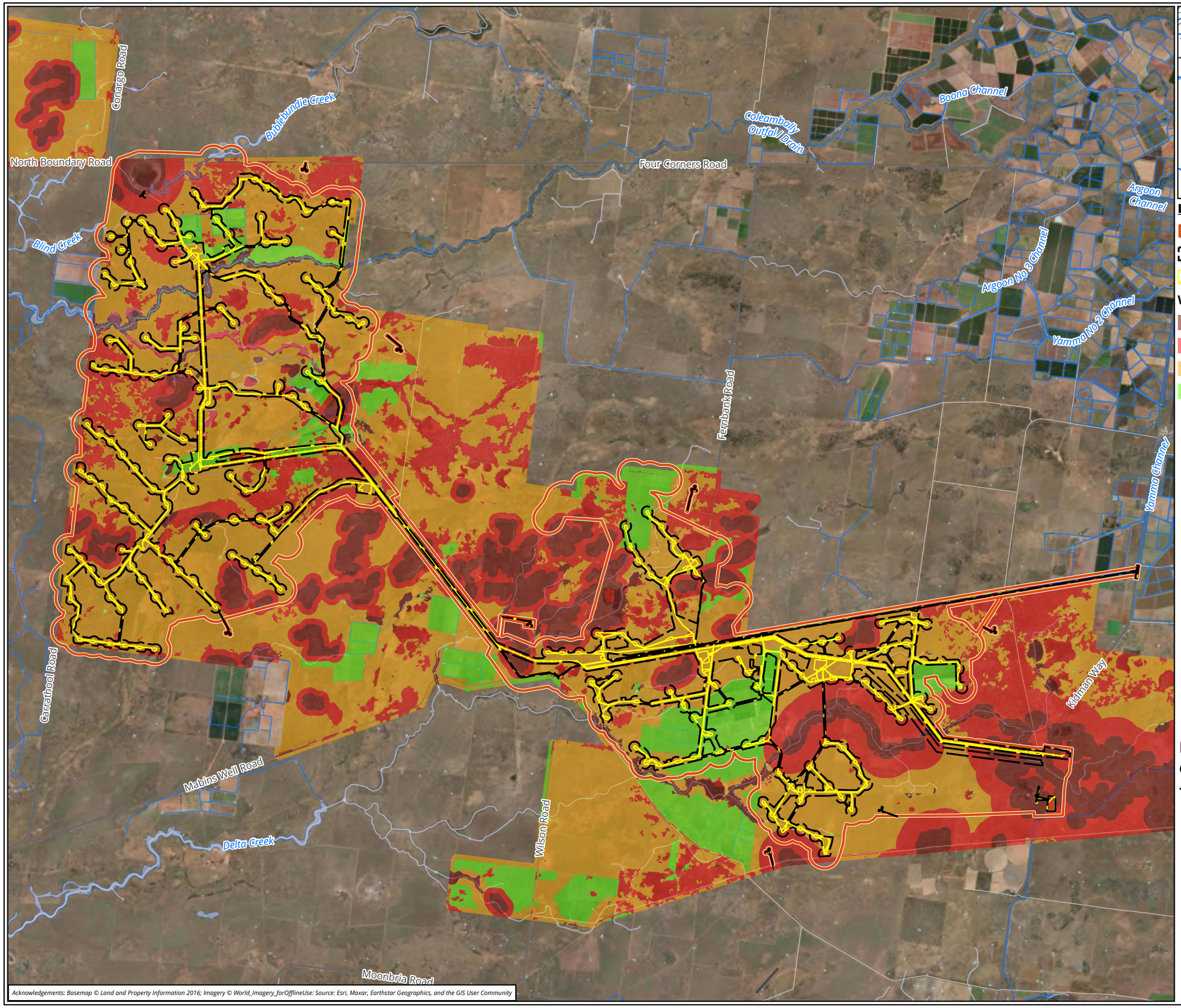
7.5. Avoid and minimise summary

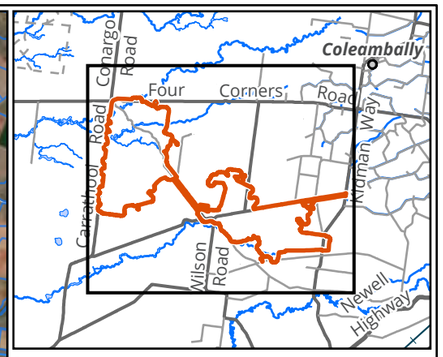
Table 73 demonstrates the application of the high level criteria for avoid and minimise in accordance with the BAM. As previously indicated, the principal means to reduce impacts on biodiversity values within a development corridor and subject land is to avoid and /or minimise the removal of native vegetation and fauna habitat. Additional recommendations include measures to mitigate residual impacts after all measures to avoid and minimise impacts have been considered (refer to Section 9. Figure 16 demonstrates the constraints modelling used to guide earlier designs, Figure 17 demonstrates further avoidance and previous footprints and development corridors and Figure 18 demonstrates the current footprint for assessment.

Table 73 Summary of avoidance and minimisation of impact

Avoidance and minimisation components	Action	Outcome	Timing	Responsibility
Modes or technologies that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed mode or technology.	Investigate modes or technologies that would avoid or minimise impacts on biodiversity values. High turbine masts and hub height .	High turbine masts and hub height currently selected allow for at least an 68m horizontal distance from blade tip to canopy tip .	Project design	Spark Renewables
Routes that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed route.	Utilisation of existing public roads and access tracks as far as possible. Good access to existing local and regional roads.	Minimise clearing impacts. Avoidance of higher biodiversity values.	Project design Construction	Spark Renewables
Alternative locations that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed location	Site selection . Location next to Dinawan Substation and Project EnergyConnect.	Minimise clearing impacts. Avoidance of higher biodiversity values.	Project design	Spark Renewables

Avoidance and minimisation components	Action	Outcome	Timing	Responsibility
Alternative sites within a property on which the project is located that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed site.	Constraints and opportunities assessment undertaken. Adapting project design to avoid areas of highest biodiversity value.	Avoidance of higher biodiversity values as much as practicable . Minimising impacts to key habitat for Plains Wanderer . Minimising impacts to hollow bearing trees .	Project design	Spark Renewables
Describe efforts to avoid and minimise impacts (including prescribed impacts) to biodiversity values through proposal design.	Constraints and opportunities assessment undertaken. Adapting project design to avoid areas of highest biodiversity value. Amended turbine layout in response to collision risks and TECS	Avoidance of higher biodiversity values as much as practicable . Minimising impacts to key habitat for Plains Wanderer . Minimising impacts to hollow bearing trees . Relocating wind turbines away from key nesting sites and breeding habitat for threatened avian fauna. Allowing for movement corridors and fly paths, minimising barrier effects.	Project design	Spark Renewables
Identification of any other site constraints that the proponent has considered in determining the location and design of the project.	Conduct surveys to identify site constraints and opportunities to avoid and minimise.	Avoidance and minimising impacts to confirmed areas of *Swainsona murrayana* and *Swainsona sericea* patches . Relocating wind turbines away from key active nesting sites and breeding habitat for threatened avian fauna.	Project design Construction	Spark Renewables





Legend

- Subject land
- Development corridor
- Development footprint

Wind constraints

- No-go
- High
- Moderate
- Low

Figure 16 Preliminary wind constraints to inform design - Overview

0 1 2 3 4 5

Kilometers
Scale: 1:130,000 @ A3
Coordinate System:
GDA2020 MGA Zone 55

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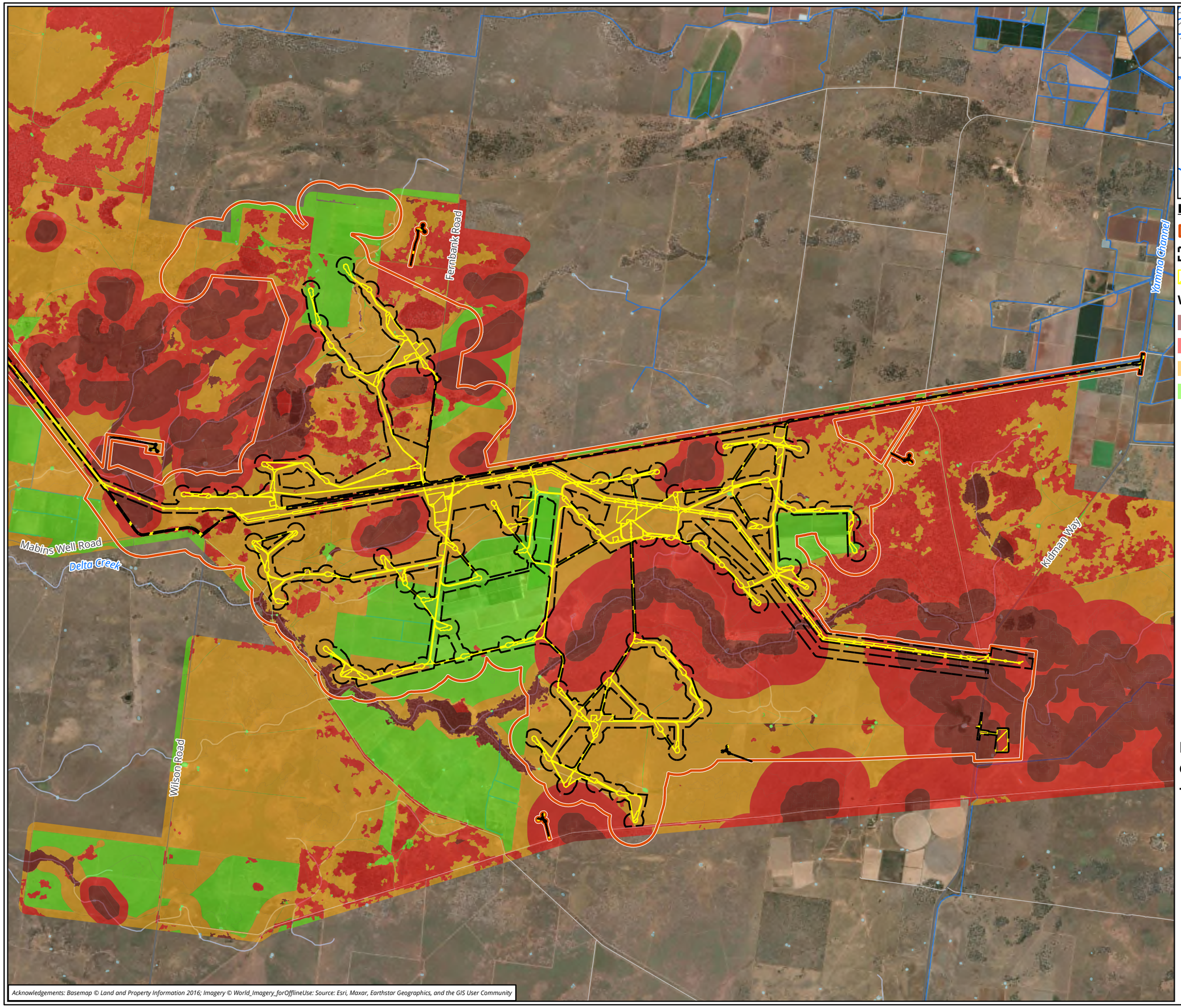

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Figure 16 Preliminary wind constraints to inform design - Eastern area

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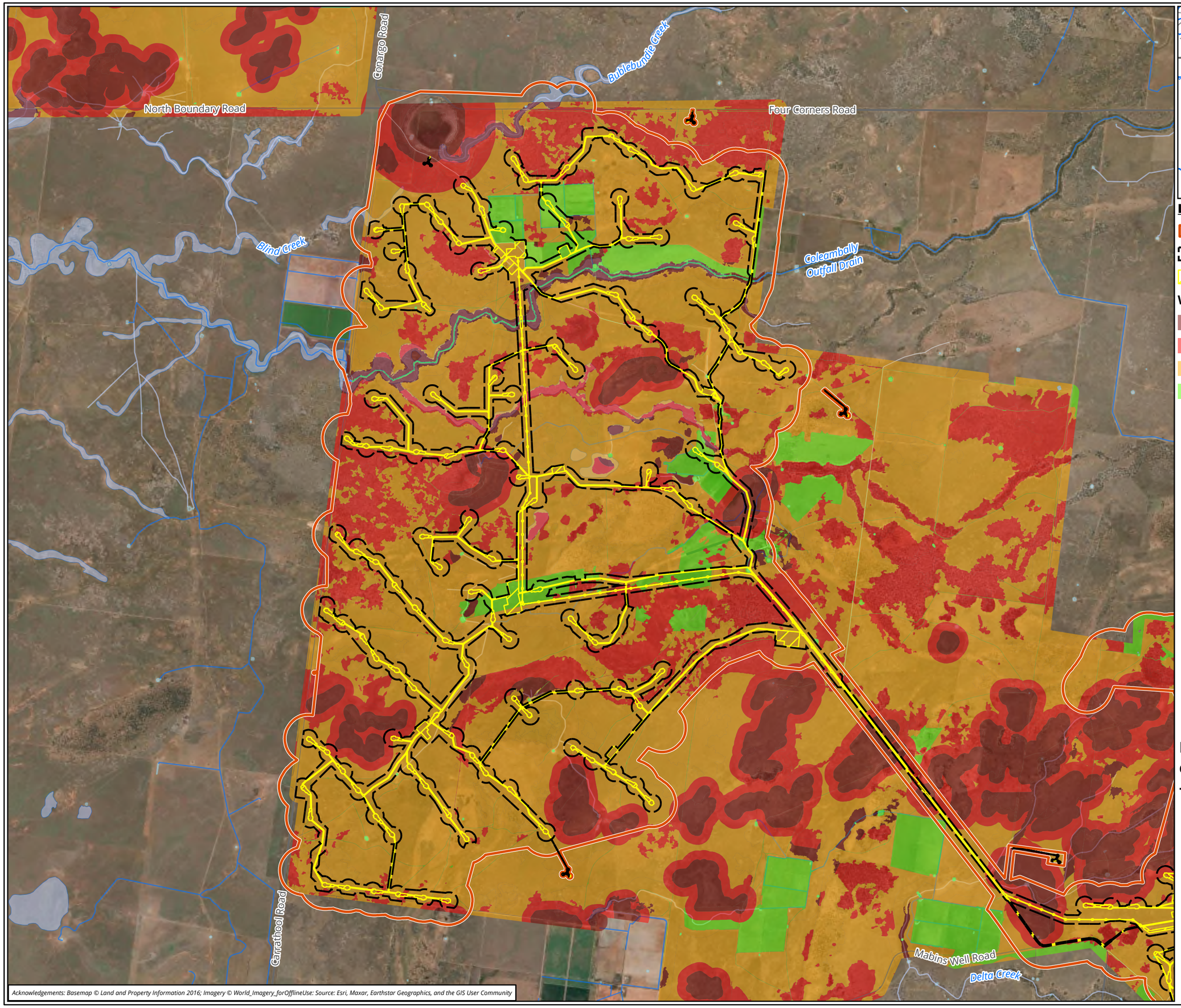

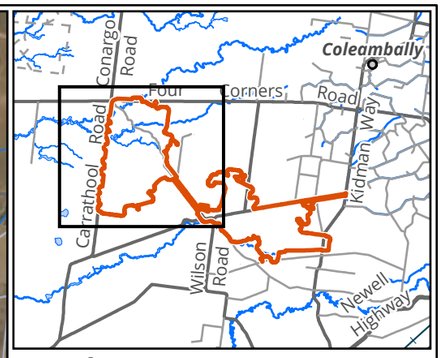

Legend

- Subject land
- Development corridor
- Development footprint

Wind constraints

- No-go
- High
- Moderate
- Low

Figure 16 Preliminary wind constraints to inform design - Western area

0 1 2 3

Kilometers
Scale: 1:80,000 @ A3
Coordinate System:
GDA2020 MGA Zone 55

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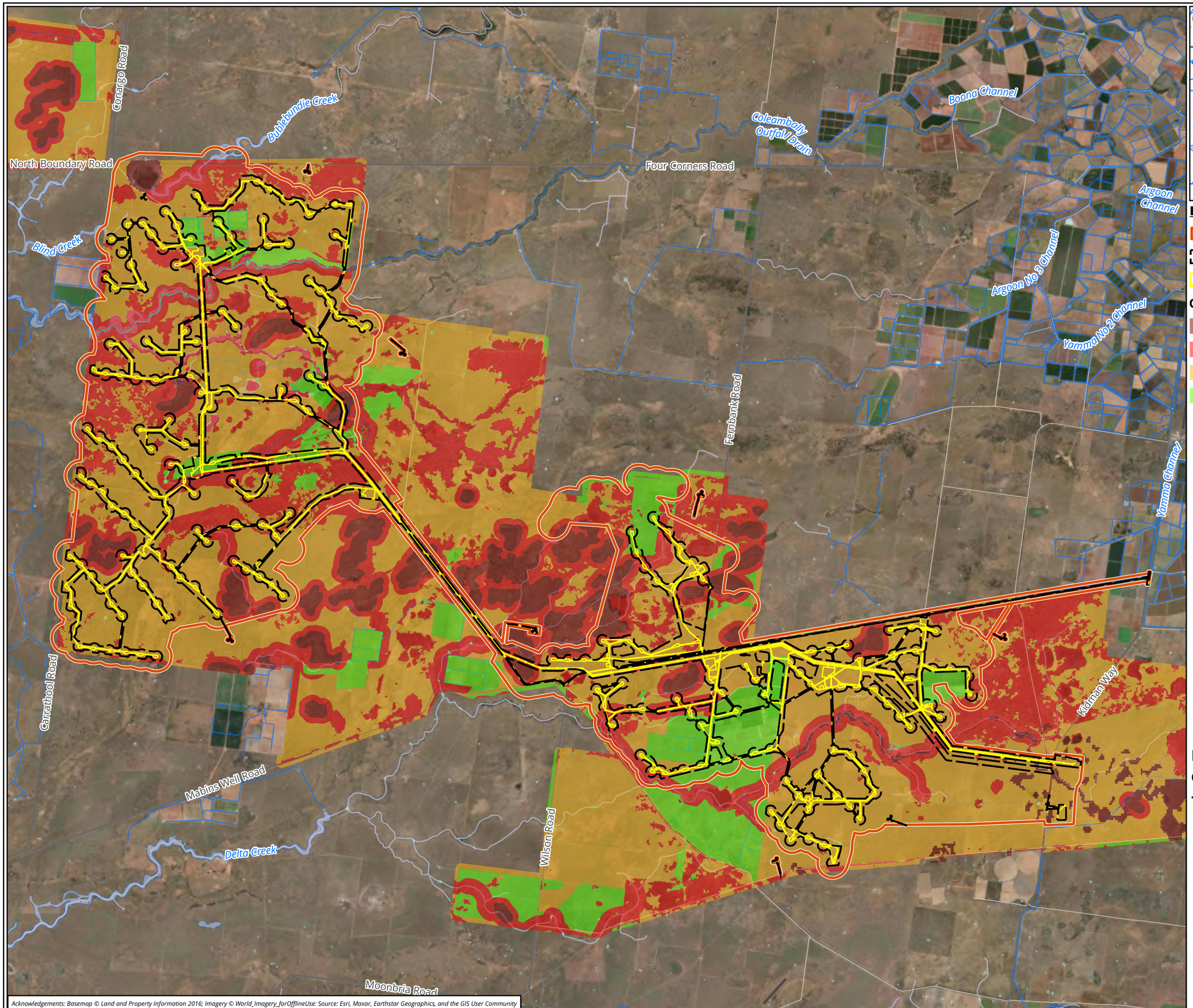

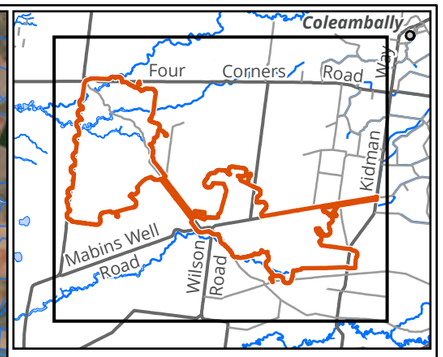

Legend

- Subject land
- Development corridor
- Development footprint

Civil constraints

- No-go
- High
- Moderate
- Low

Figure 16B Preliminary civil constraints to inform design - Overview

0 1 2 3 4 5
Kilometers
Scale: 1:130,000 @ A3
Coordinate System:
GDA2020 MGA Zone 55

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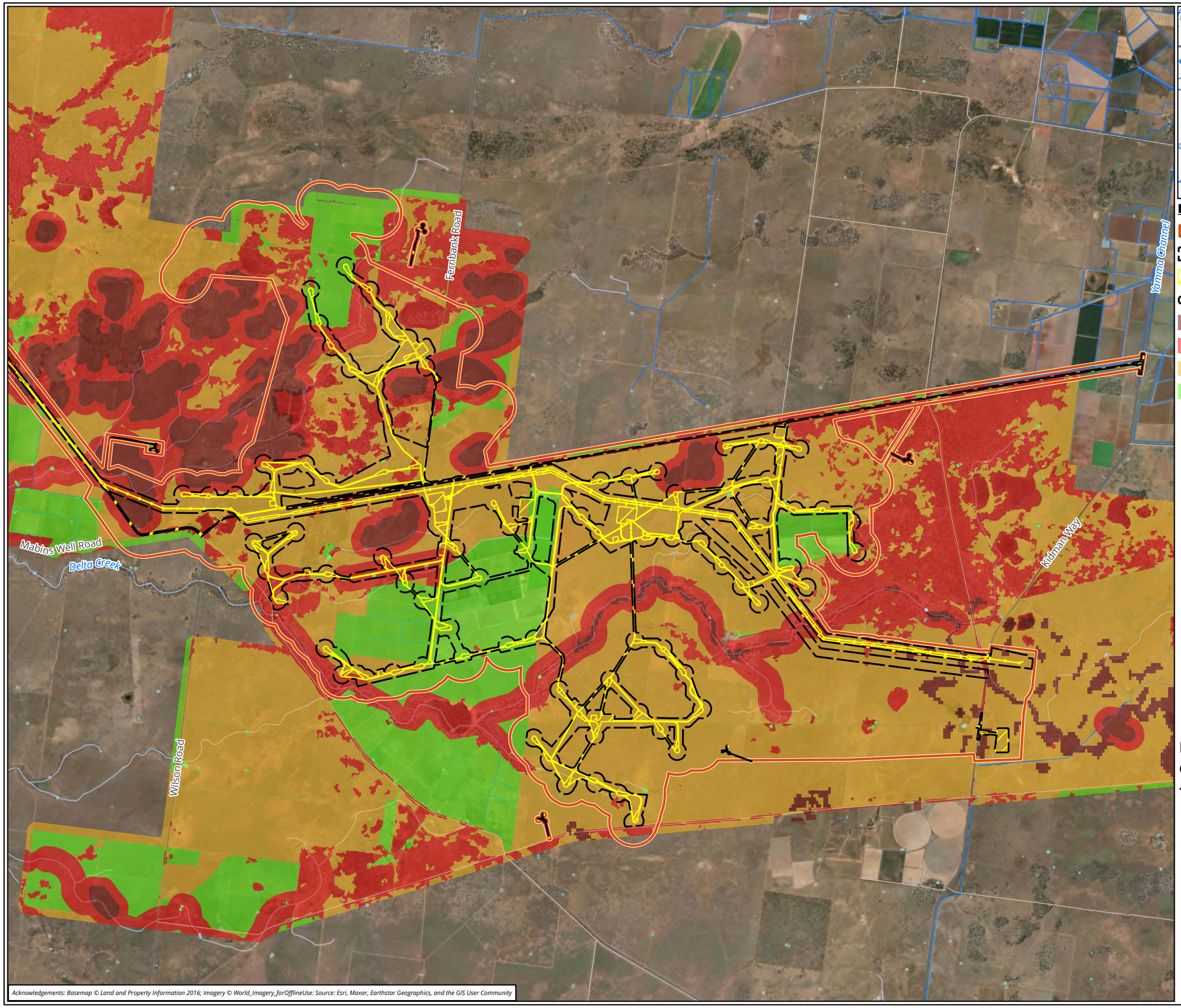

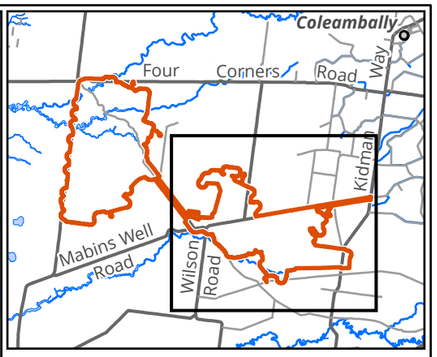

Legend

- Subject land
- Development corridor
- Development footprint

Civil constraints

- No-go
- High
- Moderate
- Low

Figure 16B Preliminary civil constraints to inform design - Eastern area

0 1 2 3

Kilometers
Scale: 1:80,000 @ A3
Coordinate System:
GDA2020 MGA Zone 55

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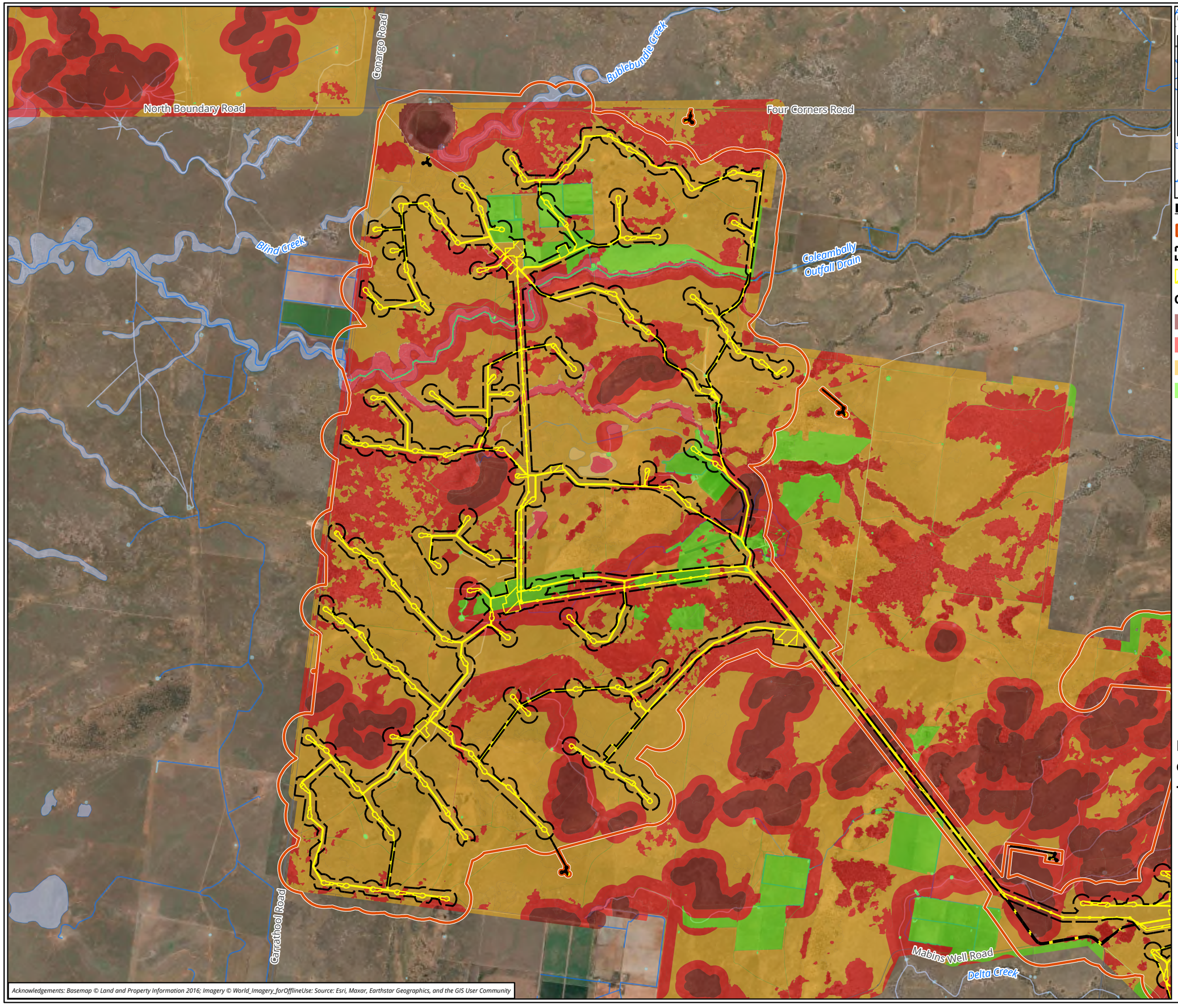

Figure 16B Preliminary civil constraints to inform design - Western area

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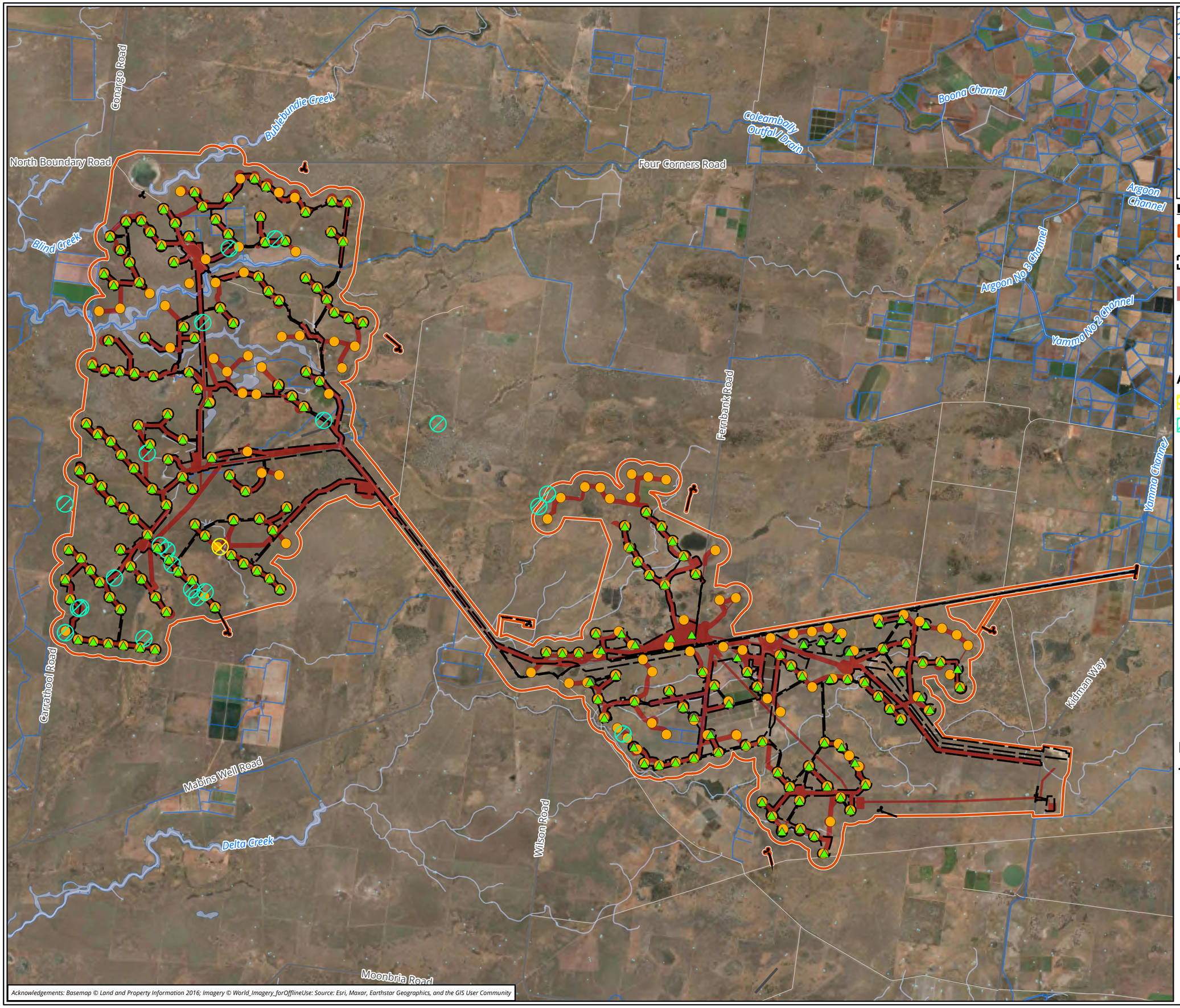

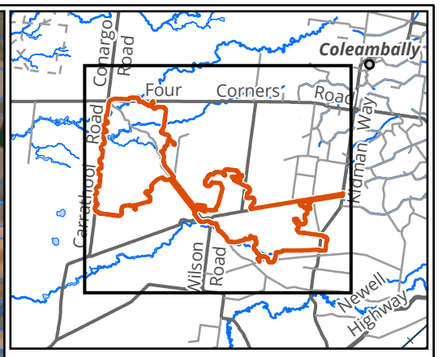

Legend

- Subject land
- Amended development corridor
- EIS Development corridor
- Wind turbine
- Wind turbine alternative option

Additional avoidance measures

- Plains-wanderer buffer (300m)
- Large nest buffers (300m)

Figure 17 Alternative options - Overview

0 1 2 3 4 5
Kilometers
Scale: 1:130,000 @ A3
Coordinate System:
GDA2020 MGA Zone 55

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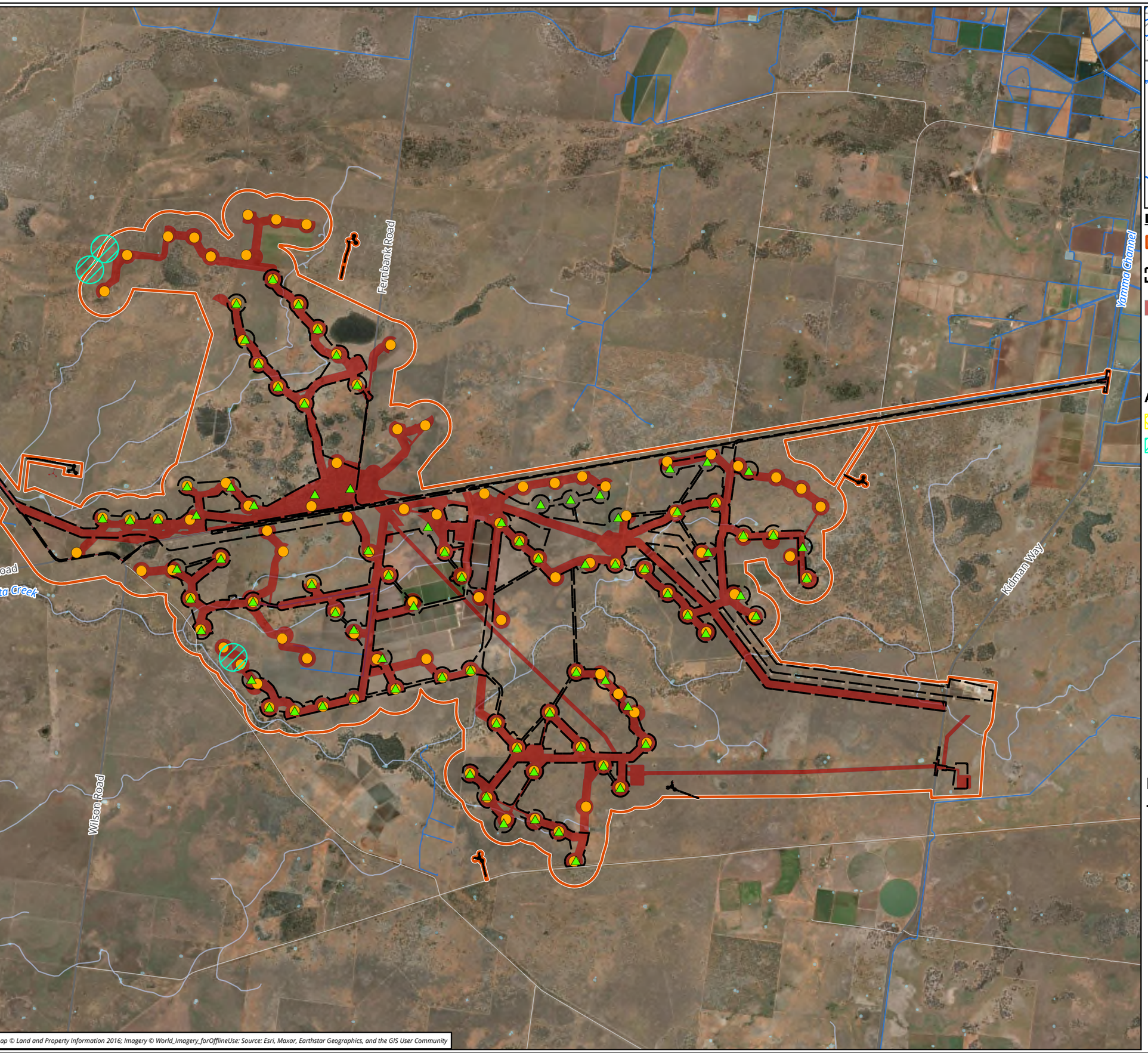

Legend

- Subject land
- Amended development corridor
- EIS Development corridor
- Wind turbine
- Wind turbine alternative option

Additional avoidance measures

- Plains-wanderer buffer (300m)
- Large nest buffers (300m)

Figure 17 Alternative options - Eastern area

0 1 2 3

Kilometers
Scale: 1:80,000 @ A3
Coordinate System:
GDA2020 MGA Zone 55

N

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GIS: JB, Checked by: MP, Last edited by: jbeckius
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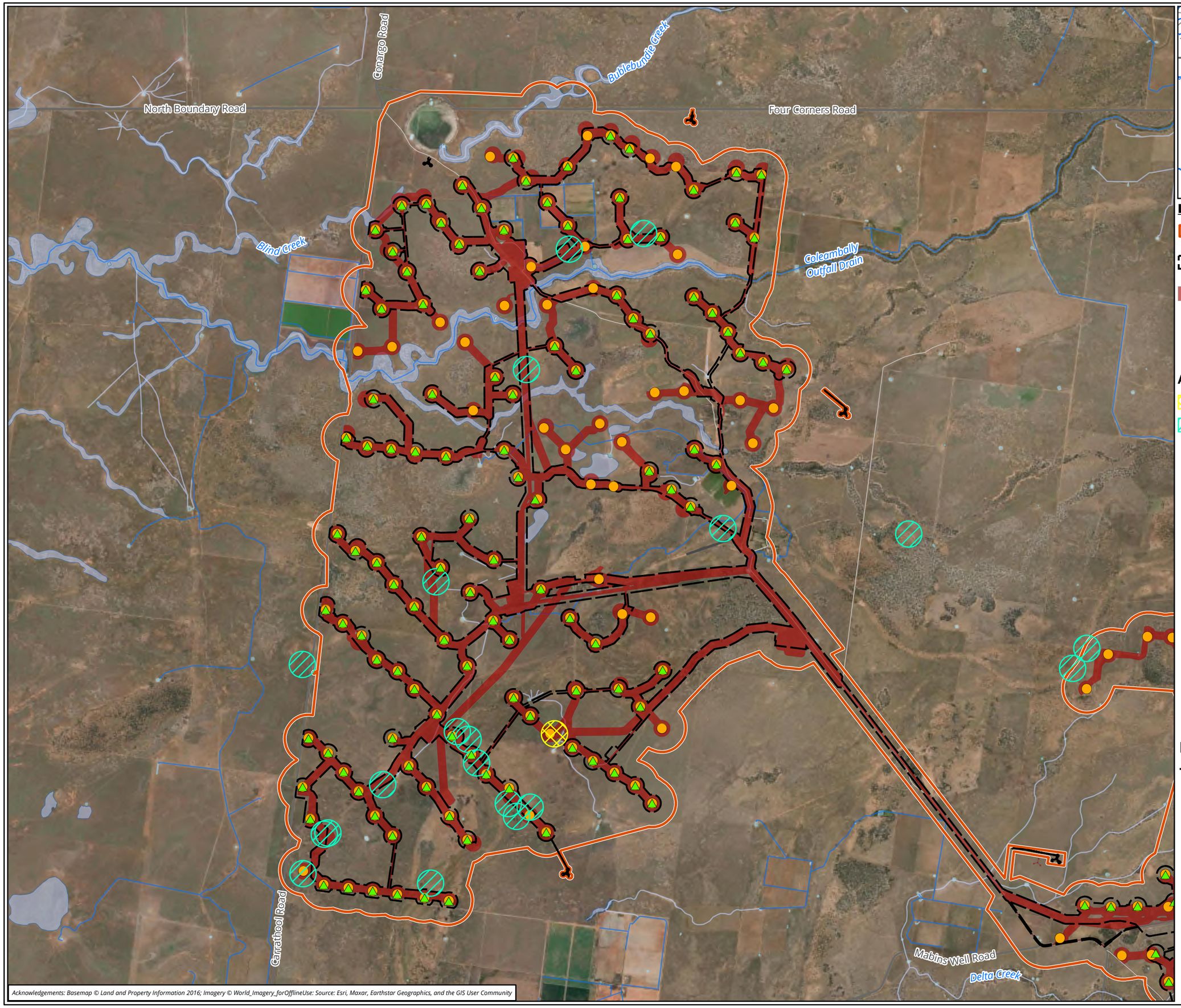

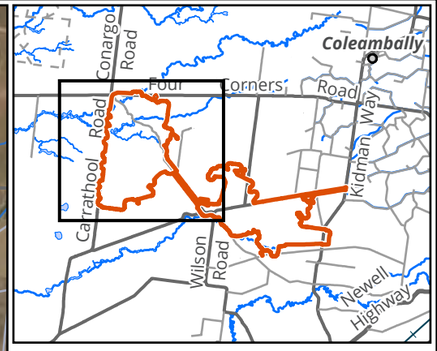

Legend

- Subject land
- Amended development corridor
- EIS Development corridor
- Wind turbine
- Wind turbine alternative option

Additional avoidance measures

- Plains-wanderer buffer (300m)
- Large nest buffers (300m)

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Figure 17 Alternative options - Western area

0 1 2 3

Kilometers
Scale: 1:80,000 @ A3
Coordinate System:
GDA2020 MGA Zone 55

N

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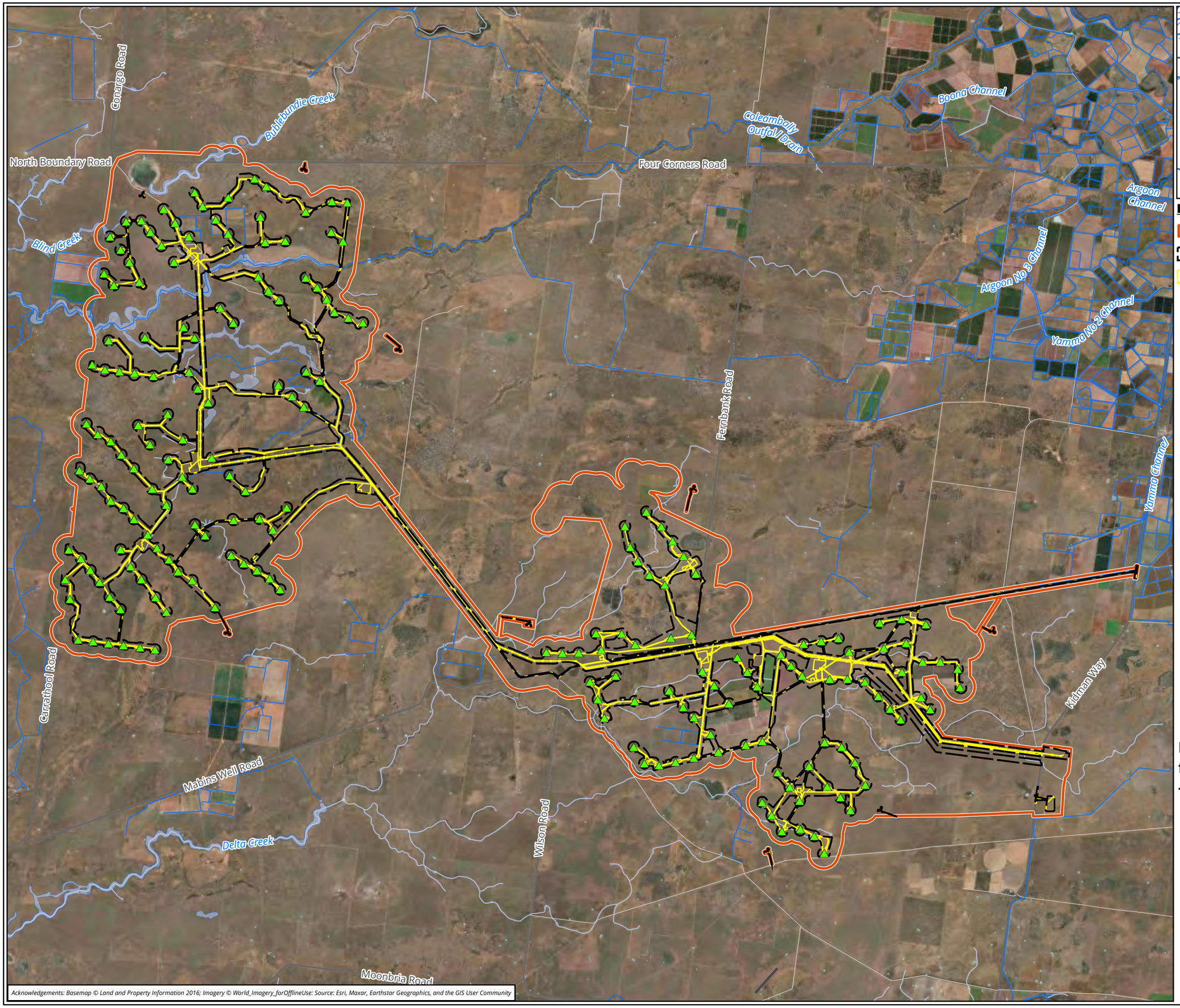

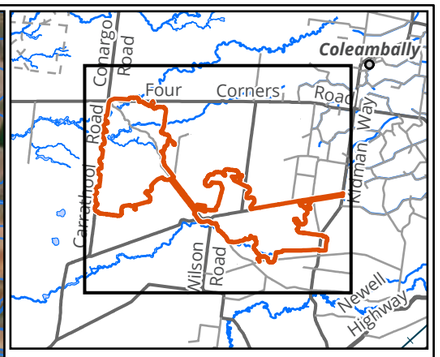

Legend

- Subject land
- Development corridor
- Development footprint
- Wind turbine

Figure 18 Development footprint and corridor - Overview

0 1 2 3 4 5

Kilometers
Scale: 1:130,000 @ A3
Coordinate System:
GDA2020 MGA Zone 55

N

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37263_Dinawan_BDAR_Wind_F18-24.aprx
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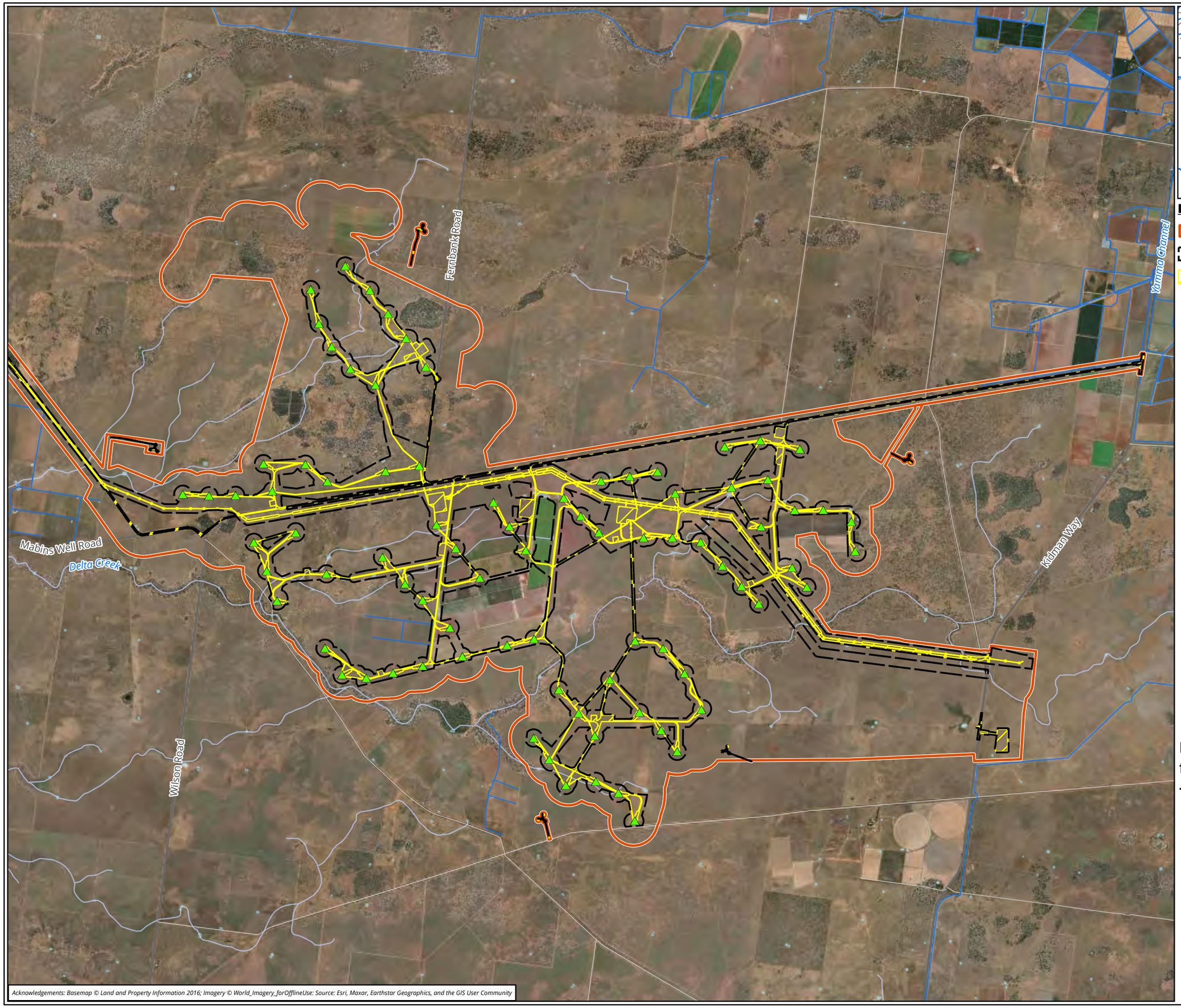

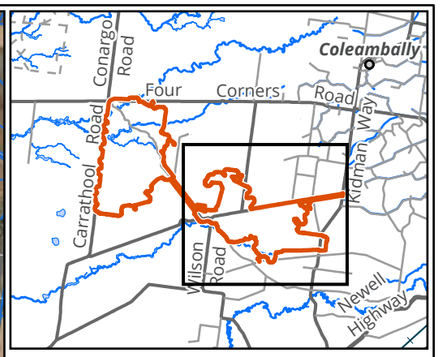

Legend

- Subject land
- Development corridor
- Development footprint
- Wind turbine

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Figure 18 Development footprint and corridor - Eastern area

0 1 2 3

Kilometers
Scale: 1:80,000 @ A3
Coordinate System:
GDA2020 MGA Zone 55

N

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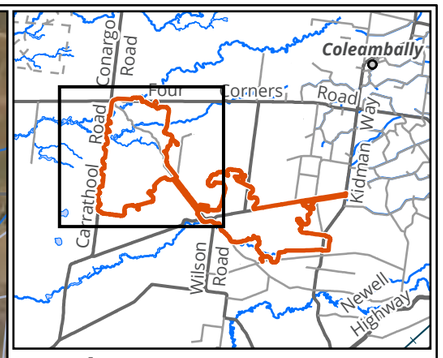

Legend

- Subject land
- Development corridor
- Development footprint
- Wind turbine

Figure 18 Development footprint and corridor - Western area

0 1 2 3

Kilometers
Scale: 1:80,000 @ A3
Coordinate System:
GDA2020 MGA Zone 55

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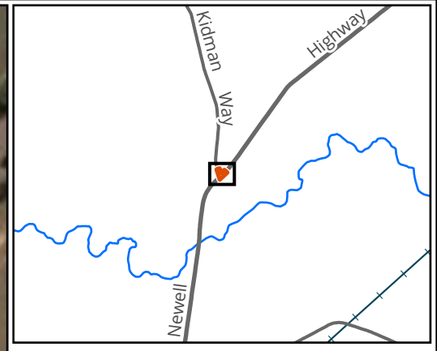

Legend

- Subject land
- Development corridor
- Development footprint

Figure 18 Development footprint and corridor - Newell Highway/Kidman Way

0 80

Meters
Scale: 1:2,000 @ A3
Coordinate System:
GDA2020 MGA Zone 55

N

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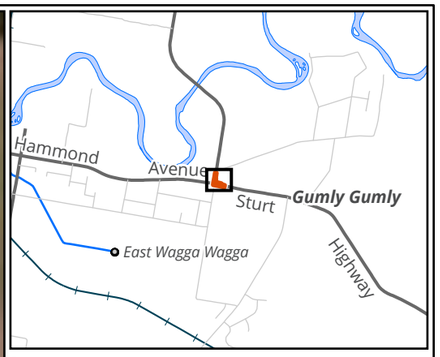

Legend

- Subject land
- Development corridor
- Development footprint

Figure 18 Development footprint and corridor - Sturt Highway/Eunony Bridge Road

0 40

Meters
Scale: 1:1,000 @ A3
Coordinate System:
GDA2020 MGA Zone 55

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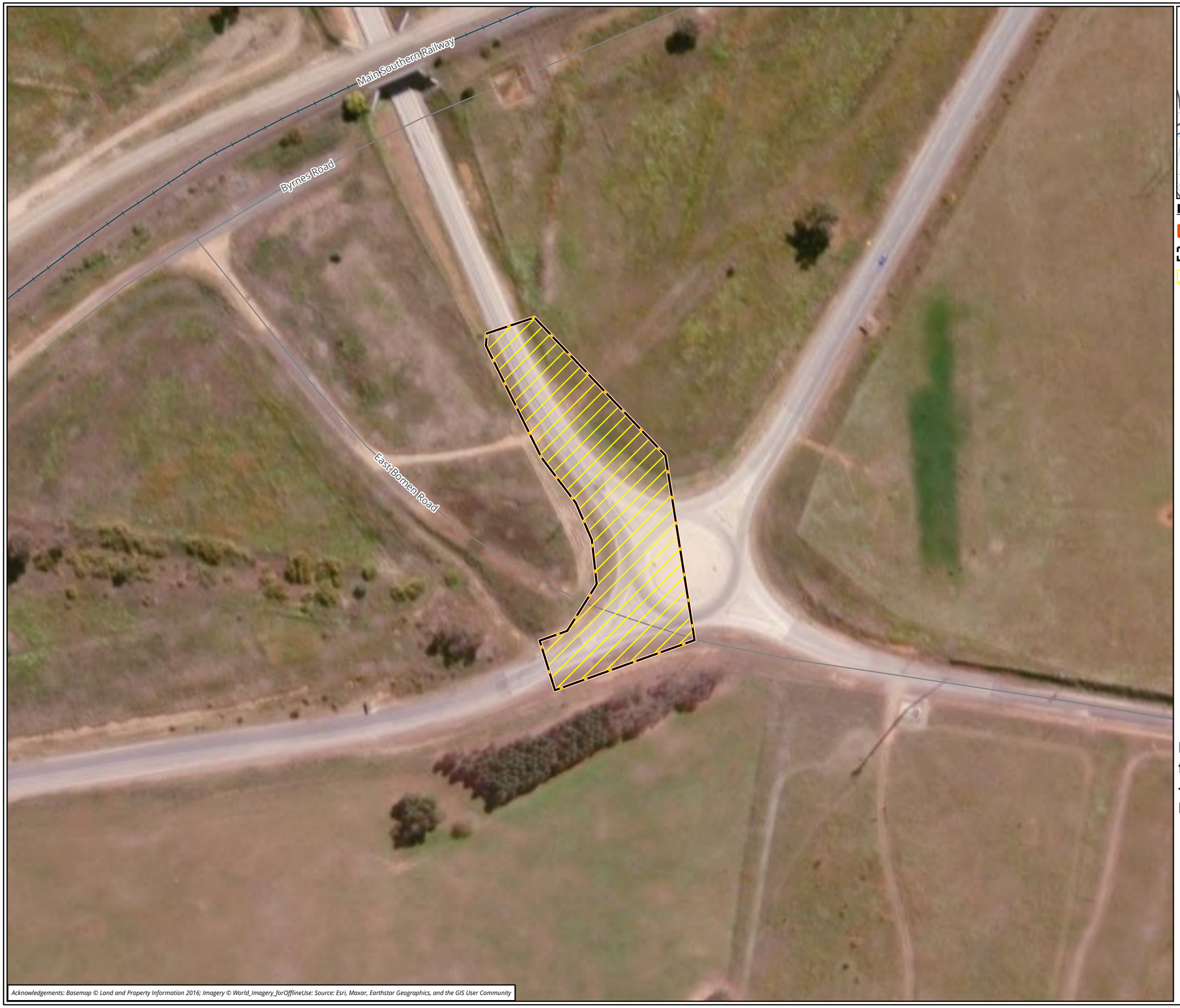

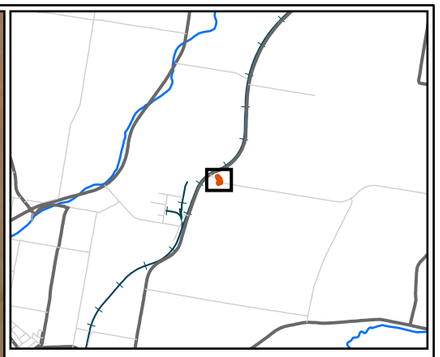

Legend

- Subject land
- Development corridor
- Development footprint

Figure 18 Development footprint and corridor - Byrnes Road/West Bomen Road

0 50

Meters
Scale: 1:1,500 @ A3
Coordinate System:
GDA2020 MGA Zone 55

N

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Matter: 37263, Date: 09 January 2026,
GIS: JB, Checked by: MP, Last edited by: jbeckius
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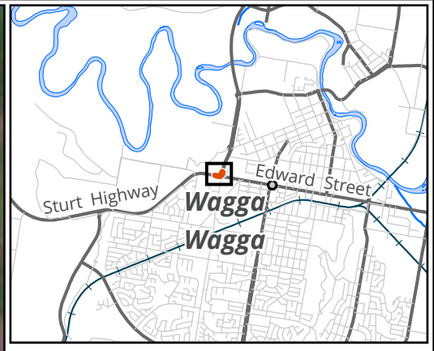

Legend

- Subject land
- Development corridor
- Development footprint

Figure 18 Development footprint and corridor - Olympic Highway/Sturt Highway

0 50

Meters
Scale: 1:1,500 @ A3
Coordinate System:
GDA2020 MGA Zone 55

N

biosis

Matter: 37263, Date: 09 January 2026,
GIS: JB, Checked by: MP, Last edited by: jbeckius
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8. Assessment of impacts unable to be avoided

Assessment of direct and indirect impacts unable to be avoided has been undertaken in accordance with the BAM (DPIE 2020a). The following direct and indirect impacts are unable to be avoided in progressing the project.

8.1. Direct impacts

Direct impacts include vegetation clearing calculated from within the development footprint including WTG hardstands, electrical cabling, access roads, public road upgrades, APZs, and other infrastructure such as construction compounds.

A breakdown of direct impacts arising from the project include:

- Impacts to up to 0.19 ha of PCT 10 River Red Gum - Black Box woodland wetland of the semi -arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion
- Impacts to up to 11.78 ha 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).
- Impacts to up to 3.65 ha 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).
- Impacts to up to 2.09 ha of PCT 17 Lignum shrubland wetland of the semi -arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion).
- Impacts to up to 800.66 ha of PCT 26 Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion, comprising the following:
    - 343.19 ha to PCT 26 DNG (43%).
    - 340.71 ha to PCT 26 sparse (43%).
    - 116.77 ha to PCT 26 intact (15%).
- Impacts to up to 48.73 ha of PCT 28 White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi -arid (warm) climate zone.
- Impacts to up to 3.09 ha of PCT 45 Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion.
- Impacts to up to 72.96 ha of PCT 46 Curly Windmill Grass – speargrass – wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion.
- Impacts to up to 4.97 ha of PCT 160 Nitre Goosefoot shrubland wetland on clays of the inland floodplains.
- Impacts to up to:
    - 457.48 ha of Weeping Myall TEC listed under the BC Act (i.e. areas mapped as PCT 26 Sparse and Intact) and 128.71 ha (116.77 ha of Intact and 11.94 ha of Sparse) of Weeping Myall woodland listed under the EPBC Act.

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- 76.06 ha of grasslands considered to align with the Natural Grasslands of the Murray Valley TEC listed under the EPBC Act (ie areas mapped as PCT 45 and PCT 46).
- 48.73 ha of Sandhill Pine woodland TEC listed under the BC Act .
- Impacts to 9.23 ha of confirmed *Swainsona murrayana* and 4.98 ha *Swainsona sericea* habitat as well as 4.73 ha of assumed habitat .
- Impacts to 0.44 ha of confirmed *Maireana cheelii* habitat , as well as 2.54 ha of assumed habitat.
- Impacts to 2. 55 ha of important mapped areas for Plains Wanderer , note this does not include important mapped habitat that occurs across an existing public road (Goolgumbla Road) and exi sting formed farm tracks or exotic vegetation , as well as additional 39.16 h a of potential habitat used for SAII assessment purposes.
- Impacts to 83. 63 ha of habitat and associated buffers considered suitable for Southern Bell Frog.
- Impacts to 3 6.66 ha of habitat and associated buffers considered suitable for Superb Parrot.
- Assumed impacts to 4.01 ha of habitat considered marginal for Southern Myotis , of which 2.41 ha is associated with buffers of PCT 13.
- Assumed impacts to 22. 68 ha of habitat considered marginal for Grey Snake.
- Assumed impacts to potential habitat wh ere representative and adequate survey is yet to be undertaken for
  - Austral Pilwort .
  - Austrostipa wakoolica.
  - Mossgiel Daisy.
  - Claypan Daisy.
  - Winged Peppercress .
  - Lanky Buttons .
  - Turnip Copperburr.
  - Red Darling Pea.

A summary and assessment of the above impact s are provided in Table 74 and Table 75, as well as Table 76 and Table 77, with many of these impacts considered permanent , relating to the development footprint , and will occur over the course of the construction phase of the project. Mitigation measures outlined in Section 9 will help to minimise the potential impacts to biodiversity values that remain present within the subject land .

To mitigate impacts to native vegetation as a result of temporary impacts, site rehabilitation and ecological restoration works will be completed in areas such as temporary construction laydown areas and trenching for underground cabling. A Biodiversity Ma nagement Plan (BMP) will also look at opportunities for revegetation and restoration plans to buffer areas of important habitat, such as the adjacent retained areas and to provide for biodiversity corridors through the subject land and ensure improve and m aintain principles are delivered to these areas.

8.1.1. Summary of direct impacts

A summary of direct impacts to native vegetation as a result of the project are provided in Table 74, impacts to species credit species are provided in Table 75, and impacts to scattered trees are provided in Table 76 below.

Table 74 Summary of direct impacts to vegetation for the entire development footprint

Zone	PCT	NSW TEC	Area impacted (ha)	VI Score
PCT 10_moderate	River Red Gum - Black Box woodland wetland	No	0.19	29.2
PCT 13_moderate	Black Box - Lignum woodland	No	3.96	70.6
PCT 13_thinned		No	7.82	69.2
PCT 15_moderate	Black Box open woodland wetland	No	2.54	75.7
PCT 15_thinned		No	1.10	67.1
PCT 17_mod_good	Lignum shrubland wetland	No	0.76	84.2
PCT 17_moderate		No	1.33	83.5
PCT 26_DNG	Weeping Myall open woodland	No	343.19	20.3
PCT 26_intact		Yes – Weeping Myall Woodlands	116.77	67.1
PCT 26_sparse			340.71	46.2
PCT 28_low	White Cypress Pine open woodland	Yes - Sandhill Pine Woodland	47.62	57.1
PCT 28_moderate			1.11	73.8
PCT 45_mod_good	Plains Grass grassland	Yes – Natural Grasslands (EPBC ACT ONLY)	2.26	65.1
PCT 45_intersection			0.83	100
PCT 46_moderate	Curly Windmill Grass - speargrass - wallaby grass grassland		72.62	90.6
PCT 46_intersection			0.34	100
PCT 160_mod_good	Nitre Goosefoot shrubland wetland	No	4.97	79

Table 75 Summary of direct impacts species credit habitat or individuals

Species	Biodiversity Risk Weighting	Area impacts (ha)
Austrostipa wakoolica	2	1.58 Assumed
Brachyscome muelleroides **Claypan Daisy**	2	0.93 Assumed
Brachyscome papillosa **Mossgiel Daisy**	2	1.74 Assumed
Hemiaspis damelii **Grey Snake**	2	22.68 Assumed
Lepidium monoplocoides **Winged Peppercress**	2	1.61 Assumed
Leptorhynchos orientalis	2	2.54 Assumed

Species	Biodiversity Risk Weighting	Area impacts (ha)
Lanky Buttons		
Litoria raniformis **Southern Bell Frog**	2	83.63 Known
Maireana cheelii	2	0.44 Known 2.54 Assumed
Myotis macropus ***Southern Myotis***	2	2.41 Assumed within associated PCTS
Pedionomus torquatus **Plains-wanderer**	3	2.55 Important Mapped Area
Pilularia novae-hollandiae **Austral Pillwort**	3	70.71 Assumed
Polytelis swainsonii **Superb Parrot**	2	36.66 Known
Sclerolaena napiformis **Turnip Copperburr**	2	7.03 Assumed
Swainsona murrayana **Slender Darling Pea**	2	9.23 Known 4.73 Assumed
Swainsona plagiotropis **Red Darling pea**	2	4.67 Assumed
Swainsona sericea **Silky Swainson-pea**	2	4.98 Known 4.73 Assumed

Table 76 Summary of direct impacts to scattered trees

Scattered tree class	No. trees impacted
1	-
2	5
3	2
Associated TEC impacts*	
Trees conforming to Weeping Myall Woodland	4

***Trees noted as TECs are included in those listed above, seven scattered trees are impacted in total**

Direct impacts per stage is shown in Table 77.

Table 77 Summary of direct impacts per stage

Veg Zone or Species	Total footprint	Enabling Works	Stage 1	Stage 2
Vegetation zones				
PCT 10_moderate	0.19	-	-	0.19
PCT 13_moderate	3.96	-	-	3.96

Veg Zone or Species	Total footprint	Enabling Works	Stage 1	Stage 2
PCT 13_thinned	7.82	-	2.52	5.30
PCT 15_moderate	2.54	-	-	2.54
PCT 15_thinned	1.10	-	-	1.10
PCT 17_mod_good	0.76	-	0.32	0.43
PCT 17_moderate	1.33	-	0.50	0.83
PCT 26_DNG	343.19	24.91	107.03	211.24
PCT 26_intact	116.77	1.18	22.63	92.96
PCT 26_sparse	340.71	8.99	111.67	219.97
PCT 28_low	47.62	-	-	47.62
PCT 28_moderate	1.11	-	-	1.11
PCT 45_mod_good	2.26	-	2.24	0.01
PCT 45_intersection	0.83	0.83	-	-
PCT 46_moderate	72.62	-	1.34	71.28
PCT 46_intersection	0.34	0.34	-	-
PCT 160_mod_good	4.97	-	-	4.97
Species				
Austrostipa wakoolica	1.58	-	1.23	0.35
Brachyscome muelleroides	0.93	-	-	0.93
Brachyscome papillosa	1.74	-	-	1.74
Lepidium monoplocoides	1.61	-	-	1.61
Leptorhynchos orientalis	2.54	-	-	2.54
Maireana cheelii	2.98	-	-	2.98
Pilularia novae-hollandiae	70.71	3.48	9.78	57.45
Sclerolaena napiformis	7.03	-	-	7.03
Swainsona sericea	9.71	-	-	9.71
Swainsona murrayana	13.96	0.01	0.78	13.16
Swainsona plagiotropis	9.71	-	-	9.71
Southern Bell Frog	83.63	6.49	28.26	48.88
Grey Snake	22.68	-	3.35	19.33
Plains-wanderer	2.55	-	-	2.55
Superb Parrot	36.66	-	4.70	31.96
Southern Myotis	2.41	-	-	2.41

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Table 78 Summary of direct impacts to scattered trees per stage

Scattered tree class	No. trees impacted	Stage 1	Stage 2
1	-	-	-
2	5	1	4
3	2	2	-
Associated TEC impacts*			
Trees conforming to Weeping Myall Woodland	4	1	3

8.1.2. Loss of hollow bearing trees

Many patches of woody vegetation dominated by Black Box, with occasional River Red Gum and White Cypress Pine communities, within the development corridor contain a significant number of hollows. The project will result in the loss of nine hollow -bearing trees, out of the 60 recorded within the development corridor that contain small, medium and large hollows, or a combination of all three. This represents a 85% retention of woody vegetation with medium or greater sized hollows.

8.2. Indirect impacts

This section details potential indirect impacts associated with the construction and operation of the project following the implementation of proposed avoidance and minimisation measures. Indirect impacts are considered to potentially occur in areas outsid e the development footprint, but within the development corridor. In accordance with the BAM, a proponent can retire credits to offset indirect impacts that cannot be avoided or adequately minimised. Total indirect impacts equate to 5,131.49 hectares. All indirect impacts can be adequately mitigated within a BMP via active management and improve and maintain principles. Potential indirect impacts arising from the project are outlined and addressed in Table 79.

Table 79 Assessment of indirect impacts

Indirect impact	Impacted entities	Extent	Frequency	Duration	Project phase/ timing of impact	Likelihood and consequences
Inadvertent impacts on adjacent habitat or vegetation	All PCT/zones All ecosystem credit species assumed present Weeping Myall TEC (BC Act and EPBC Act listings) Natural grasslands TEC (EPBC Act listing) Sandhill Pine Woodland TEC (BC Act listing) *Swainsona murrayana* *Swainsona sericea* Plains Wanderer important mapped areas Southern Bell Frog habitat Superb Parrot forging habitat Grey Snake habitat Southern Myotis habitat along the Coleambally channel	Within the retained vegetation surrounding the final development footprint within an approximate 30 m – 50 m buffer.	Ongoing in a staged manner for the life of the project (up to 3 5 years).	Long-term	Construction, operation and Decommissioning	Low. Impacts to adjacent vegetation during construction and operational phase can be prevented or minimised through appropriate exclusion fencing of sensitive areas , implementation of a detailed Biodiversity Management Plan (BMP) . A Construction Environmental Management Plan (CEMP) or similar detailing best practice environmental protection measures, strict water quality practices and stormwater controls, and by ensuring any lighting is directed towards the developed area, rather than towards adjacent retai ned habitat will be implemented .
Reduced viability of adjacent habitat due to edge effects	All PCT/zones	Within the retained vegetation surrounding	Ongoing in a staged manner for the life of	Long-term	Construction and operation	Low-Moderate. The majority of avoided / retained vegetation within the subject land is already subject to some level of edge effects due to the level of historical clearing for

Indirect impact	Impacted entities	Extent	Frequency	Duration	Project phase/ timing of impact	Likelihood and consequences
	All ecosystem credit species assumed present Weeping Myall TEC (BC Act and EPBC Act listings) Natural grasslands TEC (EPBC Act listing) Sandhill Pine Woodland TEC (BC Act listing) *Swainsona murrayana* *Swainsona sericea* Plains Wanderer important mapped areas Southern Bell Frog Superb Parrot forging habitat Grey Snake habitat Southern Myotis habitat along the Coleambally channel	the final development footprint within an approximate 30 m – 50 m buffer.	the project (up to 3 5 years).			agricultural purposes and the patchy nature of the vegetation. The irregularly -shaped and linear nature of the project means there will be considerable new edges created, which have the potential for impacts such as the spread of weeds along access tracks. Native vegetation across the subject land is generally in high ecological condition so is likely to be somewhat resilient to edged effects, and large patches will remain so edge to perimeter ratios will remain low overall. No areas considered large and intact will be impacted by the project in a manner that would substantially increase edges and/or edge effects. Weed incursions will be managed through regular weed control as part of the CEMP and OEMP.
Reduced viability of adjacent habitat due to noise, dust or light spill	All PCT/zones All ecosystem credit species assumed present Weeping Myall TEC (BC Act and EPBC Act listings)	Within the retained vegetation surrounding the final development footprint.	Temporary – Construction	Short-term	Predominantly construction	Low-Moderate. It is predicted that the adjacent habitat may be impacted by noise, dust, vibration and light spill, during construction and operation. Dust is likely to be an issue for vegetation adjacent to existing and newly created access tracks, and dust suppression of these areas will be required.

Indirect impact	Impacted entities	Extent	Frequency	Duration	Project phase/ timing of impact	Likelihood and consequences
	Natural grasslands TEC (EPBC Act listing) Sandhill Pine Woodland TEC (BC Act listing) *Swainsona murrayana* *Swainsona sericea* Plains Wanderer important mapped areas Southern Bell Frog Superb Parrot forging habitat Grey Snake habitat Southern Myotis habitat along the Coleambally channel					It is expected that the majority of noise and dust impacts will occur during the construction phase, with a reduction to near -normal levels following completion of construction. However, there is some consideration of the noise produced by operational turb ines continuing to impact upon fauna species utilising maintained habitats. Studies have indicated that narrow space foraging bats have been found to have a decreased presence of 50% within 80 - 450 m of wind turbines, due to rotor noise, although open spac e foragers and edge space foragers were not shown to have any decrease in habitat use due to turbines (Ellerbrook et al. 2022). With an increase in wind speed, rotor speed increases and therefore noise. As wind speed increase s, a decrease in activity for forest bats near turbines was recorded due to increased noise (Ellerbrook et al. 2024). In birds , ongoing noise from operational wind turbines has been shown to decrease breeding success, chick survival, displacement of individuals and reduce quality of f oraging habitat (Tolvanen et al. 2023). Despite the large size of the project, significant areas of commensurate habitat will remain in the immediate locality, which can continue to be utilised by fauna species, away from noise impacts. Substantial buffers have been established between known nest locations and turbines, and as such nesting is unlikely to be substantially impacted by operational noise. Less mobile spec ies, such as Plains-wanderer, have the potential to be more impacted than other more mobile species,

Indirect impact	Impacted entities	Extent	Frequency	Duration	Project phase/ timing of impact	Likelihood and consequences
						however the large areas of unaffected habitat that will remain will still reduce the significance of the potential impacts. Operational lighting systems will be designed to minimise light spill onto adjacent retained habitats. Impacts of this nature will be managed via best practices outlined in a BMP and CEMP or similar. Improve and maintain principles will apply within the BMP to ensure retained areas of adjacent habitat do not decline or are subjected to adverse impacts. Ongo ing monitoring will ensure any unexpected impact are realised early on (if they occur), rectified, and measures put in- place to minimise the possibility of reoccurrence.
Transport of weeds and pathogens from within the development footprint to adjacent vegetation	All PCT/zones All ecosystem credit species assumed present Weeping Myall TEC (BC Act and EPBC Act listings) Natural grasslands TEC (EPBC Act listing) Sandhill Pine Woodland TEC (BC Act listing) *Swainsona murrayana* *Swainsona sericea*	Within the retained vegetation surrounding the final development footprint within an approximate 30 m – 50 m buffer.	Ongoing in a staged manner for the life of the project (up to 3 5 years).	Long-term	Construction, operation and rehabilitation	Low-Moderate. Weeds occurring within the disturbance footprint are consistent with those occurring within adjacent vegetation to be retained. However there is likely to be a substantial increase in traffic movement through the subject land during the const ruction phase of the project, and an ongoing increase in traffic through operation. This increase in vehicle movements, with many vehicles coming from other construction sites, has the potential to spread novel weed species within the subject land and stri ct biosecurity protocols will need to be established and adhered to prevent outbreaks of weeds. Biosecurity measures will be outlined in the BMP and CEMP or similar. During both the construction and the operational phases of the project regular

Indirect impact	Impacted entities	Extent	Frequency	Duration	Project phase/ timing of impact	Likelihood and consequences
	Plains Wanderer important mapped areas Southern Bell Frog Superb Parrot forging habitat Grey Snake habitat Southern Myotis habitat along the Coleambally channel					monitoring and management (weed control) will occur within retained areas adjacent to the development footprint.
Increased risk of starvation, exposure and loss of shade or shelter	Plains Wanderer important mapped areas Southern Bell Frog Grey Snake habitat Southern Myotis habitat along the Coleambally channel All ecosystem credit species assumed present	Loss of nine Hollow bearing trees Impacts to 2.38 ha of important mapped areas of Plains Wanderer habitat Loss of intact vegetation	Ongoing for the life of the project (up to 3 5 years).	Temporary, Possibly long - term	Construction and operation	Low. Improve and maintain principles will apply within the BMP to ensure retained areas of adjacent habitat do not decline or are subjected to adverse impacts. While the removal of sheltering vegetation within the development footprint is linear in nature, and a small proportion of the commensurate habitat available within the subject land and broader study area, the removal of potential roost/sheltering sites is a more adverse impact, but not one that is likely to result in mortality of individuals, howeve r, may result in an increase of competition for remaining habitat features. The level of change is minimal in the context of the subject land and broader locality and the ecosystem is unlikely to be at carrying capacity such that displaced fauna cannot continue to persist in adjacent retained areas.
Loss of breeding habitats	Hollow dependent fauna Southern Bell Frog	Within the retained vegetation surrounding the final	Ongoing for the life of the project.	Long-term	Construction and operation	Low. Nine hollow -bearing trees will be removed by the project. Indirect impacts associated with the loss of breeding habitats are not considered likely to be substantial or

Indirect impact	Impacted entities	Extent	Frequency	Duration	Project phase/ timing of impact	Likelihood and consequences
	All ecosystem credit species assumed present At risk bird avian fauna and microbats	development footprint within an approximate 30 m – 50 m buffer. Estimated zone of disturbance behind turbine blade, approximately 50m				significant to any locally occurring threatened, or non -threatened, species. Breeding habitats supported by hollow -bearing trees and nest trees have the potential to be indirectly impacted during construction of the project via noise, dust, vibration, lights etc, and during operation by the noise, movement and potential changes to air pressure surrounding operation al turbines. Where nests occur adjacent to the development footprint of the wind farm indirect impact s may occur. Impacts will be managed and mitigated through monitoring and adaptive management via the BBAMP, BMP and operational/construction restrictions may occur if breeding is confirmed.
Trampling of threatened flora species	*Swainsona murrayana* *Swainsona sericea* Species assumed present	Areas of known and potential habitat within retained vegetation.	Ongoing for the life of the project (up to 3 5 years).	Temporary	Construction and operation	Low. Majority of individuals recorded within the subject land have been avoided. Species that occur within retained vegetation will be protected, improved and maintained. Principals will apply within the BMP to ensure retained areas of adjacent habitat and individuals do not decline or are subjected to adverse impacts. Grazing within and adjacent to known records of threatened flora species will be managed wherever possible to ensure potential trampling from livestock is minimised.
Inhibition of nitrogen fixation and increased soil salinity	N/A	N/A	N/A	N/A	N/A	Negligible. Not expected to result from the project . May be associated with ongoing treatment of nearby agricultural land unrelated to the project. Any future excavations or soil disturbance resulting from the project within the development corridor would be largely restricted to areas having undergone

Indirect impact	Impacted entities	Extent	Frequency	Duration	Project phase/ timing of impact	Likelihood and consequences
						significant previous disturbance through cattle grazing and vehicular traffic. As such it is not considered likely that the future development of the subject land would result in substantial changes to the level of nitrogen fixation or soil salinity in the locality.
Fertiliser drift	N/A	N/A	N/A	N/A	N/A	Negligible. The subject land has a long history of grazing over its total extent. Grazing is still active in all areas. Exotic species dominance and presence is common. No fertiliser is proposed to be used.
Rubbish dumping	N/A	N/A	N/A	N/A	N/A	Negligible. Standard environmental controls for the project will ensure potential impacts are minimised. Works will follow an approved CEMP or similar and specific waste and water management requirements.
Wood collection	N/A	N/A	N/A	N/A	N/A	Low. Temporary on -site construction facilities for a maximum of 450 people, are proposed throughout construction. The potential exists for construction work ers to harvest wood for fires during the construction period of the project. Clear guidance around banning of fires, or the provision of firewood for approved fires, will be provided in the BMP and CEMP. Not expected to occur post construction. Future development proposed within the subject land is unlikely to increase access to any retained vegetation, beyond current access capacity. Based on the future use of the subject land, future landholders are not expected to be likely to undertake wood collection beyond existing rural approvals within the retained vegetation to a level that it will have a

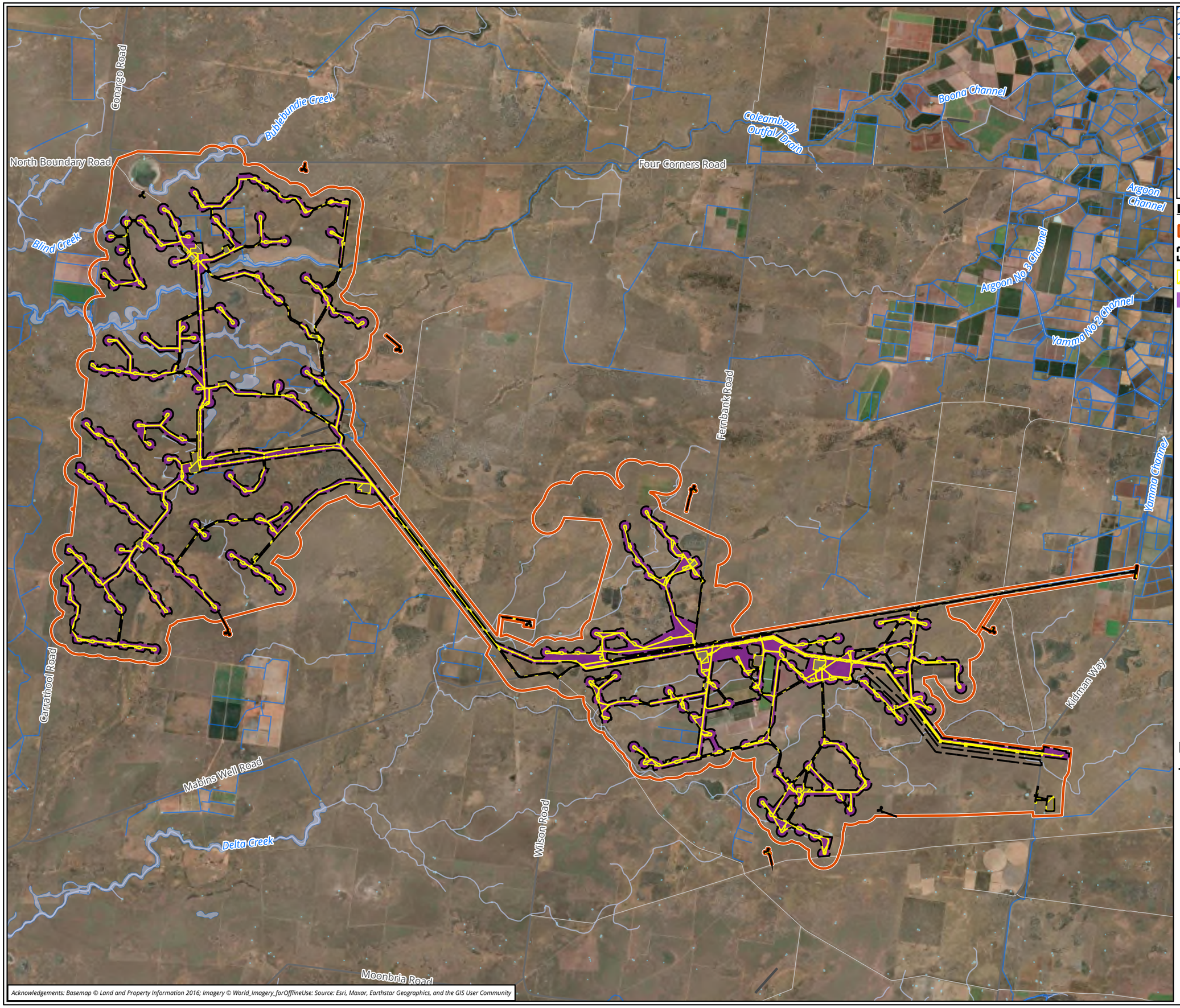
Indirect impact	Impacted entities	Extent	Frequency	Duration	Project phase/ timing of impact	Likelihood and consequences
						detrimental effect. Unauthorised access and collection of wood is expected to be negligible.
Removal and disturbance of rocks, including bush rock	N/A	N/A	N/A	N/A	N/A	Negligible. The development corridor does not support bush rock.
Increase in predators and pest animal populations	Plains Wanderer important mapped areas Southern Bell Frog Superb Parrot All ecosystem credit species assumed present	Areas of known and potential habitat within retained vegetation.	Ongoing for the life of the project (up to 35 years).	Long-term	Construction and operation	Moderate. Foxes *Vulpes vulpes* are noted and have been observed regularly during this assessment, however this is a common occurrence in this rural area. The project is not expected to increase numbers with required mitigation, however movement through the subject land may be considered to be exacerbated with construction and improved access roads through the subject land. European Rabbit *Oryctolagus cuniculus* is also known to occur within the soft sandhills. The BMP and BBAMP will detail pest management regimes in order to control foxes and other pests within the subject land during construction and operations.
Changed fire regimes	Unlikely to occur	N/A	N/A	N/A	N/A	Low. Appropriate asset protection zones and fire mitigation systems will be implemented for the project and the implementation of bushfire management and mitigation measures for the project will help to manage risk of fire within the subject land.

Indirect impact	Impacted entities	Extent	Frequency	Duration	Project phase/ timing of impact	Likelihood and consequences
Disturbance to specialist breeding and foraging habitat, e.g. important mapped areas	Plains Wanderer important mapped areas and potential SAII habitat Southern Bell Frog breeding habitat All ecosystem credit species assumed present	Areas of known and potential habitat within retained vegetation. 9.42 ha of retained important mapped areas for plains wanderer in the development corridor 642 ha within the subject land	One-off	Long-term	Construction and operation	Moderate. Mapped Important Areas for Plains Wanderer occur within the development footprint, development corr idor and subject land, and impacts have been limited to 2. 55 ha of linear removal, and potential indirect impacts to a further 9.42 ha. This includes areas overlapping an existing formed public road, and farm tracks. Potential indirect impacts to Plains- wanderer and Southern Bell Frog may also occur in the form of invasion by exotic species altering the composition of the species' habitats, or erosion and/or sedimentation negatively impacting on suitable grasslands. Both of these potential indirect impact vectors can be effectively managed, in relation to Plains-wanderer and Southern Bell Frog habitat, as outlined above for impacts to biodiversity values more broadly, however specific mitigation will be implemented via the inclusion of commitments to ensure Plains - wanderer habitat is specifically considered during the preparation of the BMP and on to the CEMP, OEMP and other relevant sub -plans. Improve and maintain principles will apply within the BMP to ensure retained important mapped areas and adjacent potential habitat do not decline or are subjected to adverse impacts. See Section 10.2 and Appendix 5 for further assessment of these impacts in the associated SAII assessment.

Indirect impact	Impacted entities	Extent	Frequency	Duration	Project phase/ timing of impact	Likelihood and consequences
Fragmentation of movement corridors	All PCT/zones All ecosystem credit species assumed present Weeping Myall TEC (BC Act and EPBC Act listings) Natural grasslands TEC (EPBC Act listing) Sandhill Pine Woodland TEC (BC Act listing) *Swainsona murrayana* *Swainsona sericea* Plains Wanderer important mapped areas Southern Bell Frog Superb Parrot forging habitat At risk avian fauna Australasian bittern movement	Areas of known and potential habitat within retained vegetation. Flyways and movement corridors	Ongoing for the life of the project (up to 3 5 years).	Long-term	Construction and operation	Low. Patches utilised for movement of ground dwelling fauna and canopy fliers have been maintained within the development corridor as far as practicable . However, the removal of vegetation associated with the project may impact upon movement corridors at the site scale and the landscape scale for at risk avian fauna and microbats due to meso and macro avoidance. Improve and maintain principles will apply within the BMP to ensure retained adjacent habitat does not decline or is subjected to adverse impacts. Perimeter fencing will be limited to surrounding critical infrastructure for safety reasons (eg. Substations) and not through the entire development corridor. In some areas, this may disturb the movement of larger ground dwelling fauna such as Kangaroos and Emus, but overall, this effect is not likely to be substantially exacerbated beyond the existing rural impacts installed currently .
Impacts to Oolambeyan National Park and the South West Woodland Nature Reserve (Kulki Precinct)	Biodiversity values present in the conservation reserves. Populations of species that occur within the subject land and extend to	Within the subject land and local conservation reserves.	Ongoing for the life of the project (up to 3 5 years).	Long-term	Construction and operation.	Low. Oolambeyan National Park occurs 10 km to the north -west of the subject land, with South West Woodland Nature Reserve (Kulki) Precinct) occurring eight km north to north east of the subject land. It is conceivable that highly mobile species utilise habitats within these conservation

Indirect impact	Impacted entities	Extent	Frequency	Duration	Project phase/ timing of impact	Likelihood and consequences
	the conservation reserves.					reserves as well as the subject land as part of their larger home ranges, and that habitat removal within the development footprint may reduce the total habitat available to these mobile species. The removal of habitat as a result of the project is not considered to be substantial enough to result in the constriction of habitat available to these mobile species, which would be substantial enough to increase the abundance of the species with the reserves to above their carrying capacity. Sufficient habitat supporting similar values will remain within the forage range of any such species to prevent the conservation reserves becoming unsustainable refuge islands. The distance between the development footprint and the conservation reserves is also great enough to prevent any impacts associated with construction and operation of the project, such as noise, light, dust, vibration, from impacting upon the reserves and the habitats and populations they support.
Collision (transmission line strike), electrocution, and exposure to electrical and magnetic fields due to installation of powerlines	Bird and bat species utilising the habitats within the subject land	Transmission line to be constructed within the disturbance corridor	Ongoing for the life of the project (up to 3 5 years).	Long-term	Construction and operation.	Low. The potential exists for threatened species of birds and bats to be impacted via direct collision (transmission line strike), electrocution, and exposure to electrical and magnetic fields as result of this aspect of the project. Small and large transm ission lines currently exist in or adjacent to the development corridor. Birds and bats have high ability to avoid collisions with birds

Indirect impact	Impacted entities	Extent	Frequency	Duration	Project phase/ timing of impact	Likelihood and consequences
						generally accepted as having between a 95 % to 98 % avoidance rate for the dynamic components of operational turbines, and a 99 % avoidance rate for the static components such as towers. It is acknowledged that transmission lines are like ly to be less visible to birds and bats and therefore avoidance potential will not be as high as for large static turbine towers, however it can be assumed that the vast majority of the time a bird or bat flies in the vicinity of a powerline it will not result in a collisio n. Transmission line towers are often used for nesting in this landscape. Collisions are considered likely to be infrequent and will be mitigated by including measures such as those outlined in Section 9 below.



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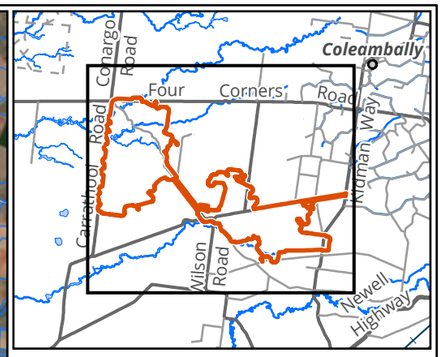

Legend

- Subject land
- Development corridor
- Development footprint
- Indirect impact

Figure 19 Indirect impacts - Overview

0 1 2 3 4 5

Kilometers
Scale: 1:130,000 @ A3
Coordinate System:
GDA2020 MGA Zone 55

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GIS: JB, Checked by: MP, Last edited by: jbeckius
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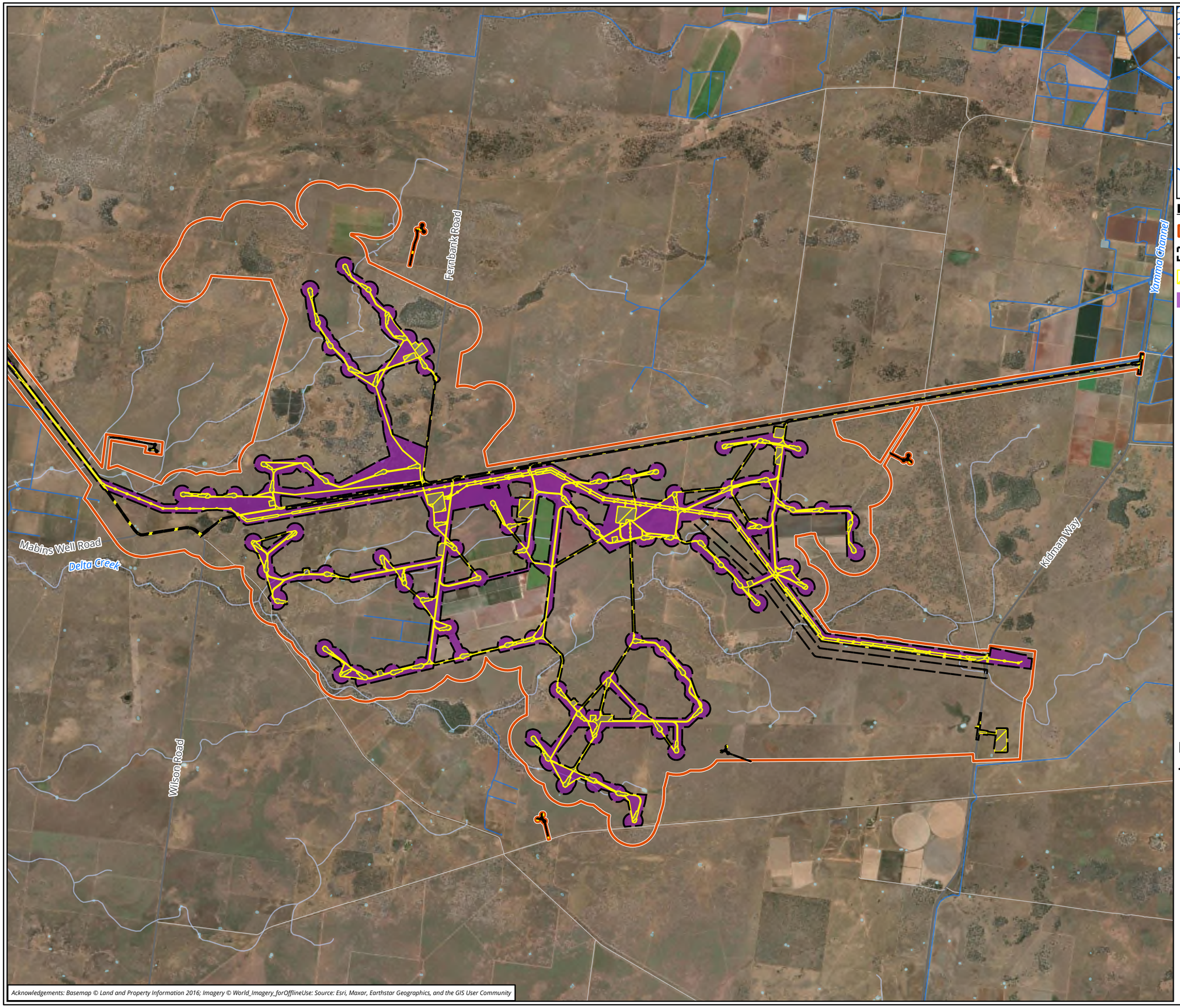

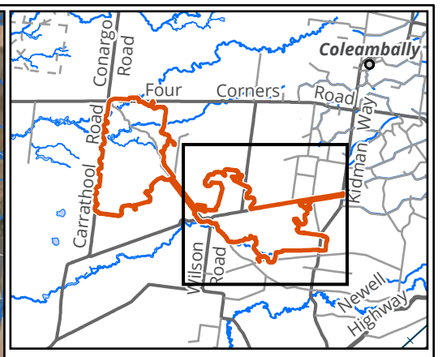

Legend

- Subject land
- Development corridor
- Development footprint
- Indirect impact

Figure 19 Indirect impacts - Eastern area

0 1 2 3

Kilometers
Scale: 1:80,000 @ A3
Coordinate System:
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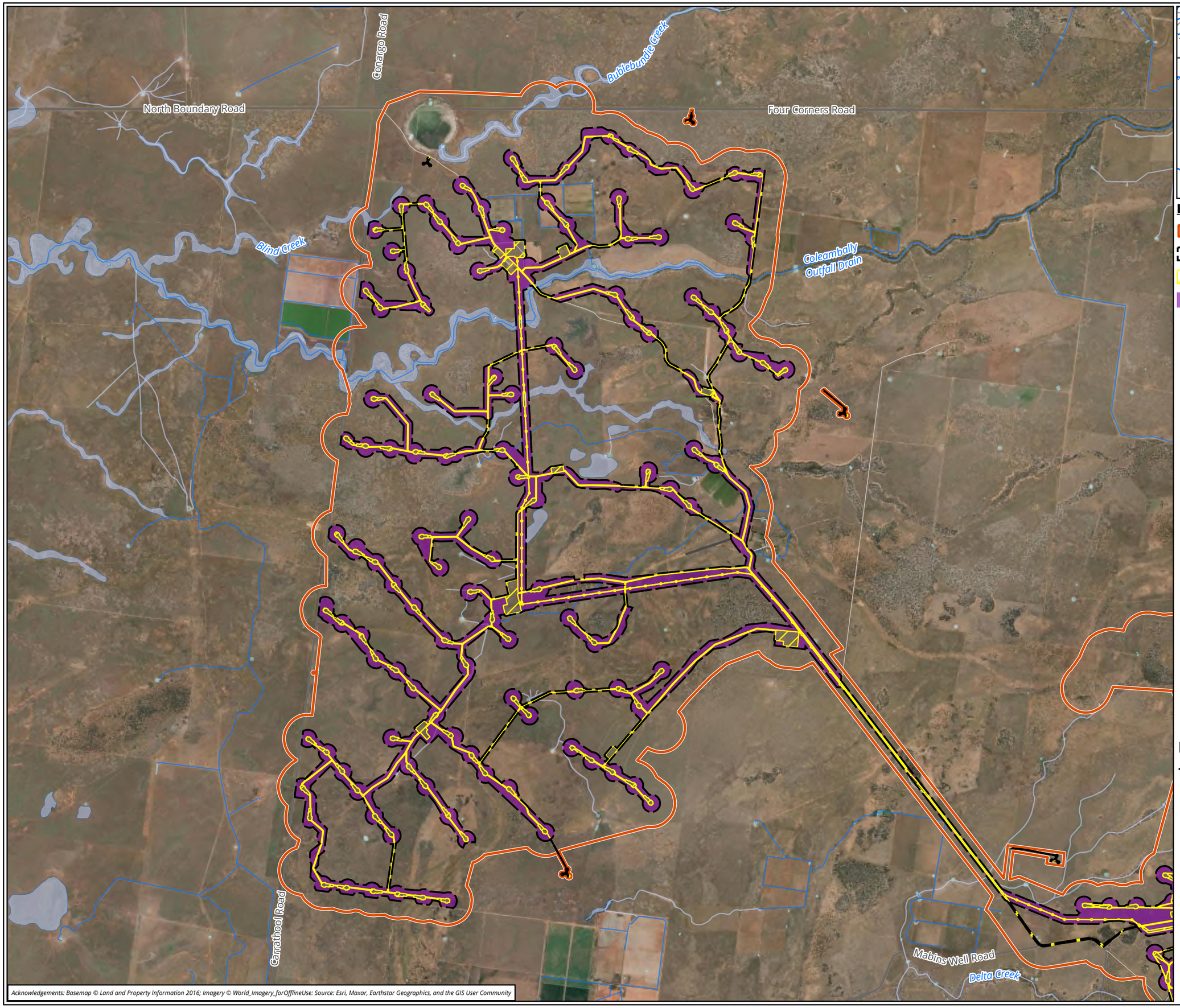

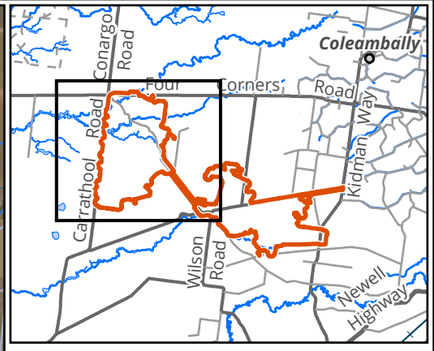

Legend

- Subject land
- Development corridor
- Development footprint
- Indirect impact

Figure 19 Indirect impacts - Western area

0 1 2 3

Kilometers
Scale: 1:80,000 @ A3
Coordinate System:
GDA2020 MGA Zone 55

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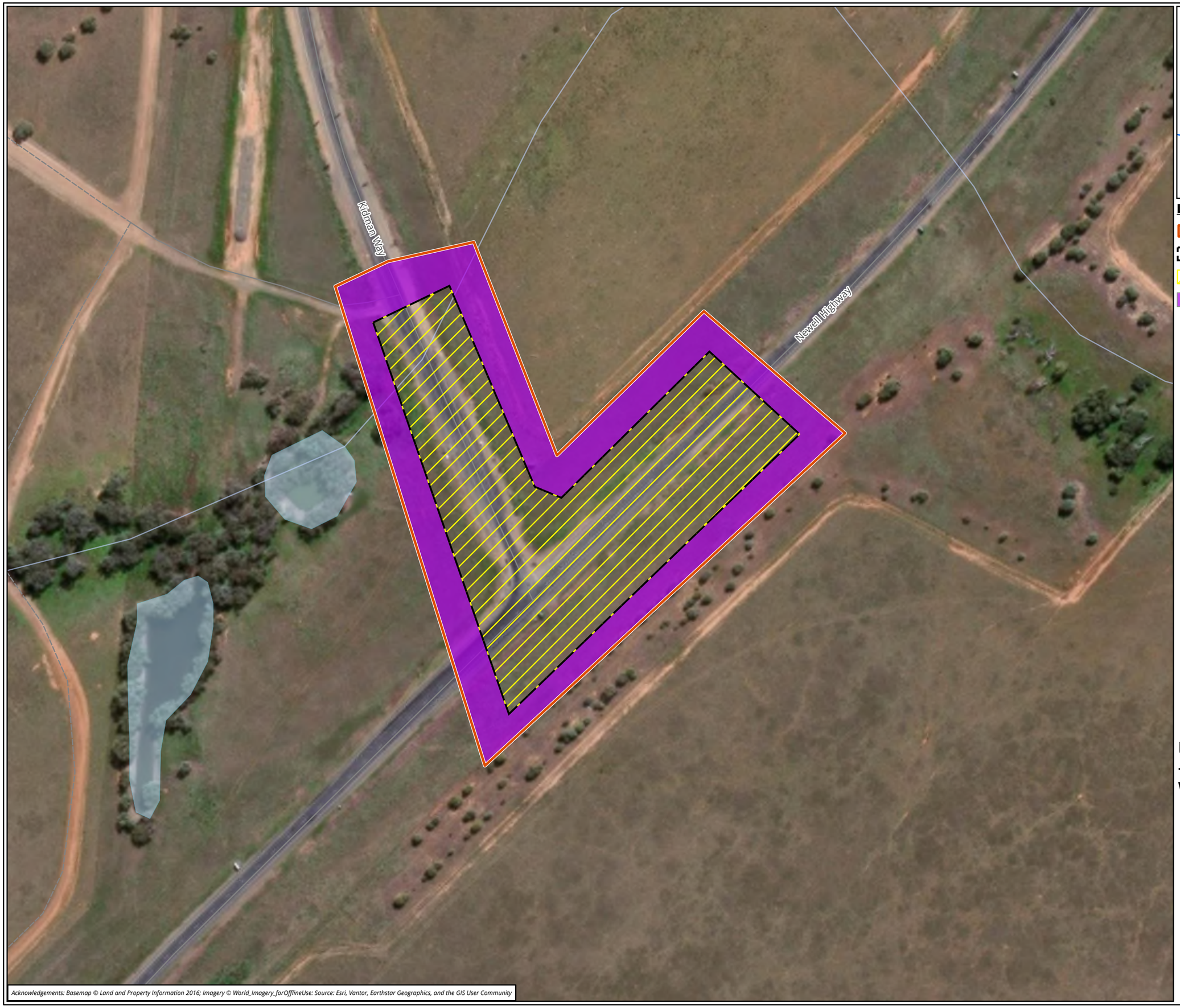

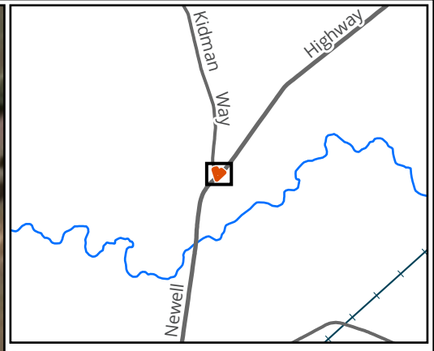

Legend

- Subject land
- Development corridor
- Development footprint
- Indirect impact

Figure 19 Indirect impacts - Newell Highway/Kidman Way

0 80

Meters
Scale: 1:2,000 @ A3
Coordinate System:
GDA2020 MGA Zone 55

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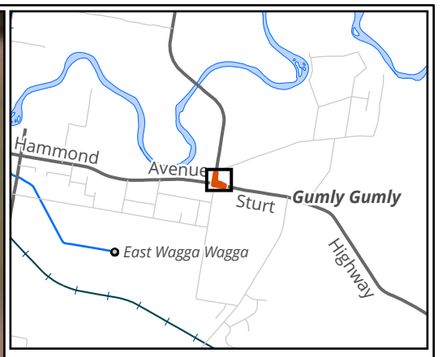

Legend

- Subject land
- Development corridor
- Development footprint
- Indirect impact

Figure 19 Indirect impacts - Sturt Highway/Eunony Bridge Road

0 40

Meters
Scale: 1:1,000 @ A3
Coordinate System:
GDA2020 MGA Zone 55

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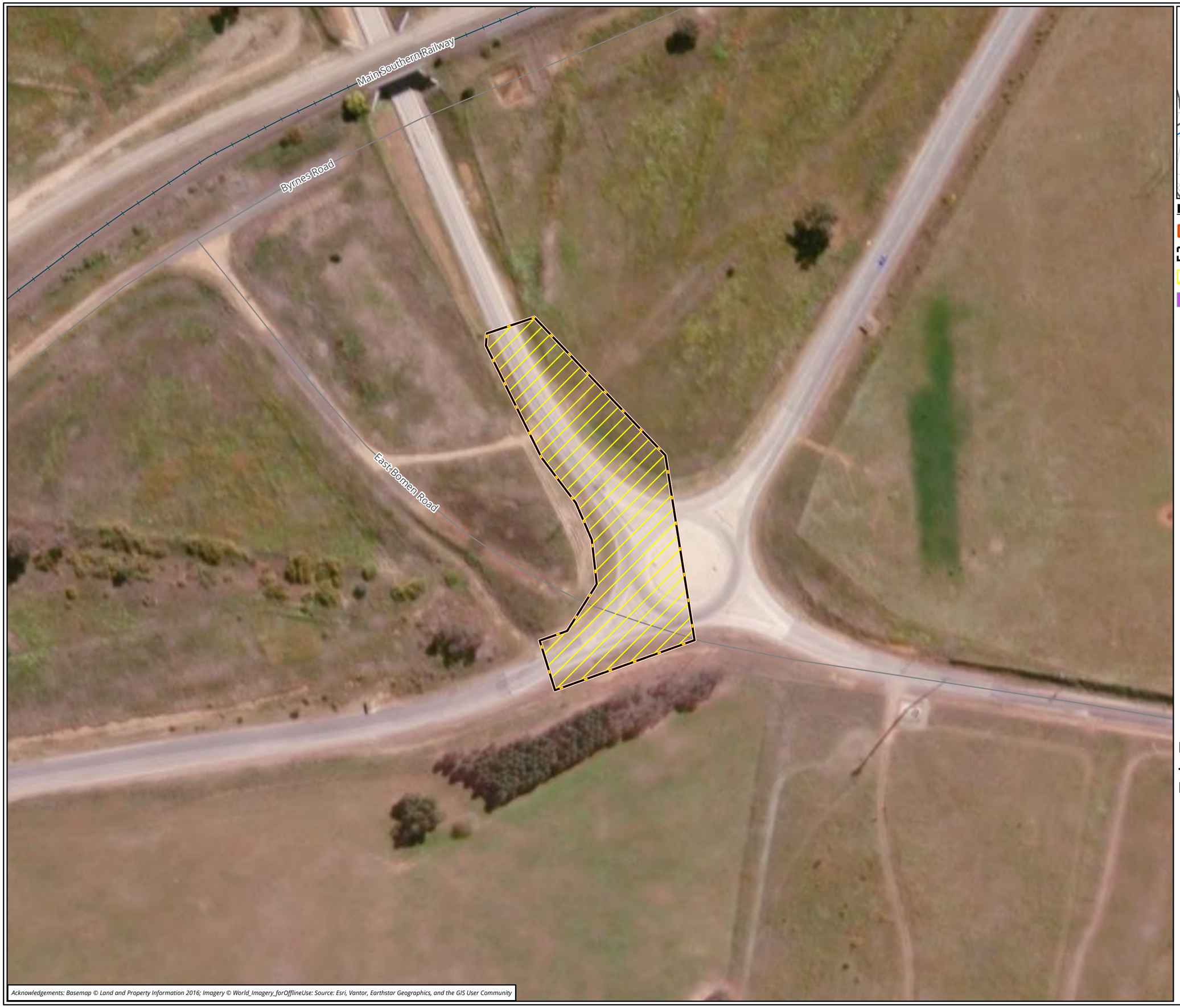

Legend

- Subject land
- Development corridor
- Development footprint
- Indirect impact

Figure 19 Indirect impacts - Byrnes Road/West Bomen Road

0 50

Meters
Scale: 1:1,500 @ A3
Coordinate System:
GDA2020 MGA Zone 55

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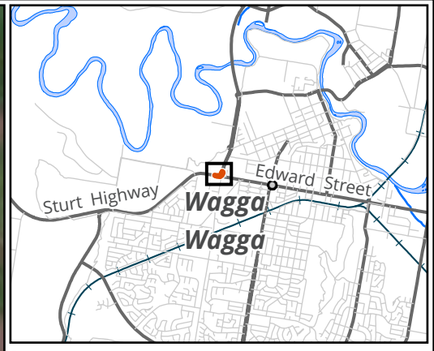

Legend

- Subject land
- Development corridor
- Development footprint
- Indirect impact

Figure 19 Indirect impacts - Olympic Highway/Sturt Highway

0 50

Meters
Scale: 1:1,500 @ A3
Coordinate System:
GDA2020 MGA Zone 55

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8.3. Prescribed impacts

Identification of prescribed impacts, including a description of relevant habitat features associated with prescribed impacts and threatened species likely to utilise habitat features is provided above in Table 46, and Sections 5.2 and 6. A summary of the importance of habitat feature, relating to potential prescribed impacts, is provided in Table 80 below. Assessment of potential impacts to biodiversity values are provided in the following sections, with prescribed impacts illustrated on Figure 20.

Table 80 Prescribed impacts associated with the subject land

Prescribed impact	Importance of habitat feature to impacted species
Karst, caves, crevices, cliffs, rocks and other geological features of significance	No karst, caves, crevices, cliffs, rocks or other geological features of significance occur within the subject land
Occurrences of human-made structures and non-native vegetation	Where possible, features such as dams, windmills and water troughs will be avoided during micrositing of the projects as they aid in supporting, mainly fauna, populations within the subject land. These features hold a low level of biodiversity value, generally due to their degraded nature from livestock use (dams), or their lack of natural features (windmills and troughs). Exotic vegetation, although utilised by many raptor species holds a low biodiversity value. Irrigated cropped areas will be avoided.
Corridors or other areas of connectivity linking habitat for threatened entities	Connectivity corridors, where present, can have a high biodiversity importance.
Water bodies or any hydrological processes that sustain threatened entities	When containing water, migratory species, and some threatened fauna species may be supported by creeks and floodplain depressions / watercourses within the subject land. These areas would form a matrix of stepping stone wetlands during these wetter times, providing important habitat to some species; however , the wetlands within the subject land comprise only a small fraction of similar habitat types available across the broader locality. Existing hydrological processes also support areas of ephemeral wetland and woodland wetland vegetation that support threatened terrestrial species outside 'flood seasons'. Again, these areas comprise a small fraction of similar habitats across the broader locality . Impacts to these areas would likely negatively impact some local threatened species populations.
Protected animals that may use the proposed wind farm development site as a flyway or migration route	Detailed information is provided in Section 8.3.4 below.
Where the proposed development may result in vehicle strike on threatened fauna or on animals that are part of a threatened ecological community	It can reasonably be expected that the potential for vehicle strikes can be effectively managed. The project is not expected to result in any substantial or significant impacts associated with vehicle strikes.

8.3.1. Human-made structures and non-native vegetation

Nature and Extent

Approximately 10% of the development corridor occurs within areas supporting non -native vegetation such as irrigated and dryland cropping areas. Other agricultural practices and disturbance such as rural storage sheds, farm tracks, dams and irrigation chan nels occur within or adjacent to the development corridor. Existing small and large transmission lines and towers dissect the subject land and development corridor on occasion.

The Coleambally Outfall Drain bisects the development footprint. The drain itself will not be modified by the project , however crossings are required. Flow regimes will not be modified within or downstream of the drain.

Highly managed non -native groundcover and roadside plantings occur within areas of intersection upgrades in the Wagga Wagga locality.

Duration

Roads, farm tracks and fences may be subject to modification and upgrade from the outset of the project. It is not anticipated that rural storage sheds or shearing sheds will be impacted. Existing transmission lines may be temporarily impacted during const ruction but reinstated should impacts occur. Upgrades to existing water crossings and culverts along the Coleambally Outfall D rain will be temporary in nature during construction, and provides a source of artificial habitat upon operation.

Consequences

Avian fauna species are known to utilise artificial, and human made structures such as transmission towers for nesting due to historic clearing of native vegetation. Numerous small and moderate sized nests were recorded on manmade structures within the subject land, but not within the development corridor . The consequence of the removal of these features is considered to be low.

Exotic vegetation, including cropped land is known to be utilised by fauna species, such as parrots, raptors, waterbirds and large mammals (e.g., Kangaroo) for foraging. Exotic vegetation, although utilised by some fauna species is considered to have a low biodiversity value. Impacts to non -native vegetation will not have more than a negligible impact to threatened and non -threatened species.

Dams and irrigation channels are utilised by fauna species, such as waterbirds and raptors, potentially including threatened and migratory species, and Southern Bell Frog, as permanent water resources throughout the year, with some dams created in areas that l ikely originally supported natural ephemeral billabongs. Where possible, features such as dams and irrigation channels are to be avoided during micro - siting of the project as they aid in supporting, mainly fauna, populations within the subject land. Th e consequence of removing dams and troughs, within the broader landscape is considered low, as other large water features will remain in the area. However, at a microscale, any fauna species present in dams such as Southern Bell Frog and other common amphi bians, yabby or turtle species may be required to relocate to nearby areas of similar habitat. Any dams to be removed should be subject to mitigation measures, including draining several days prior to removal, and should have an appropriately qualified ind ividual present to relocate any large fauna such as turtles.

Dams have been found to support Southern Bell Frogs and possibl y Southern Myotis where they occur in connection to, or in proximity of, irrigated channels and the Coleambally Outfall Drain. These habitat features have been considered in the creation of species polygons for both species, and have generated offsets for

impacts. Whilst some dams will be removed as a result to the project , numerous dams will be maintained and general flow patterns will not be substantially impacted by the project. Habitat for Southern Bell Frog will remain within the subject land, particularly along the Coleambally Outfall Drain, where the majority of the species' recordings were located, and impacts during construction will be managed via implementation of the BMP.

A number of farm tracks would be upgraded for the project, this would include widening of some roads. Existing tracks hold no biodiversity value, however widening of tracks may lead to increases in edge effect for some species. Intersection upgrades within the Wagga Wagga locality primarily occur where highly managed and maintenance via slashing and pesticide use is existing.

Table 81 below details the threatened species considered potentially at risk from the project's impacts to Human -made structures and non -native vegetation, and subject to the above assessment, including those not specifically mentioned above.

Table 81 Threatened (ecosystem and candidate species) species considered in the human-made structures and non-native vegetation impact assessment

Common name	Species name
Australasian Bittern	*Botaurus poiciloptilus*
Australian Painted Snipe	*Rostratula australis*
Blue-billed Duck	*Oxyura australis*
Brolga	*Grus rubicunda*
Curlew Sandpiper	*Calidris ferruginea*
Freckled Duck	*Stictonetta naevosa*
Grey Falcon	*Falco hypoleucos*
Little Eagle	*Hieraaetus morphnoides*
Magpie Goose	*Anseranas semipalmata*
Southern Bell Frog	*Litoria raniformis*
Southern Myotis	*Myotis macropus*
Spotted Harrier	*Circus assimilis*
Square-tailed Kite	*Lophoictinia isura*
White-bellied Sea-Eagle	*Haliaeetus leucogaster*

8.3.2. Habitat connectivity

Nature and extent

Loss of native vegetation and habitat has potential to affect landscape connectivity permanently or temporarily during construction and operation. Habitat connectivity primarily through ephemeral riparian areas, pine sandhills and intact native vegetation occurs throughout the subject land and development corridor. The vast majority of fauna species move through these areas, with exception to more disturbance tolerant species, such as Australian Raven, Galahs as well as Raptor species, which utilise and mo ve throughout more open areas as well.

Within the broader landscape, watercourses such as Coleambally Outfall drain, Delta Creek, Blind Creek and Bublebundie Creeks, as well as smaller unnamed watercourses form part of a large network of ephemeral and non -ephemeral creeks and waterbodies. These key areas of connectivity form a mosaic with a large

number of smaller features subject to disturbance and fragmentation. Although disturbed, these areas aid in maintaining connectivity throughout the landscape between larger core areas of habitat. Smaller features including floodplain lakes, depressional we tlands and other waterbodies in the landscape provide connectivity during flood events, which can be a key dispersal mechanism for frog and other aquatic or semi - aquatic species. Southern Bell Frog is known to benefit from flood induced dispersal and is kn own to occur in areas where it had previously been absent prior to flood events.

Vegetated roadsides within and between the main subject land also provide critical movement corridors for majority of fauna species, including along the network of Travelling Stock Reserves and public road reserves along roads in the locality (LLS 2024) Conversely, planted roadside native vegetation within the Wagga Wagga locality and where intersection upgrades may occur are in a highly urban environment containing both planted native and non - native trees, but at these locations, provide minimal biodiversity value, outside of occasional transient use by common highly disturbance tolerant fauna, such as Magpies, Ravens and Galahs.

A total of 948. 15 hectares of native vegetation is to be removed. The proposed wind turbine infrastructure occurs across a project area of approximately 34,5 46 hectares and subject land containing 31,481 hectares of native vegetation , with 200 turbines proposed, the design of which reduces the potential impact to habitat connectivity by allowing strategic placement of infrastructure within the landscape. This includes avoidance and minimisation of impacts to key waterbodies, riparian zones and woodland corridors, allowing continued movement through the subject land.

Increased fragmentation within the subject land is not expected to be substantial due to the largely open nature of a wind farm site, where habitats will generally not be fragmented by large -scale, wide disruption, but instead by narrow , linear infrastructure such as access roads, transmission lines and turbine hardstands. It is noted that the new network of access tracks throughout the site has the potential to alter/reduce habitat connectivity, particularly for ground- dwelling threatene d fauna and Plains wanderer, however the nature, extent and consequences of this are not considered significant. Tracks to be constructed as part of the development footprint will be level with the ground, or slightly elevated, and similar to the higher condition existing fa rm tracks through the subject land. Ground- dwelling threatened fauna species such as Plains-wanderer, Australian Bustard, Bush Stone -curlew and Southern Bell Frog (two of which have been assessed as absent from the site) are able to cross these kinds of tr acks, and have been recorded on tracks on site, and at other sites in the region, and as such the proposed network of tracks is not expected to substantially or significantly affect habitat connectivity for these species.

Larger areas of impact will occur around ancillary sites, however all occur in large open areas where species will continue to be able to move around or potentially though operational areas.

Barrier effect has been minimised as a result of the proposed layout of WTGs, with substantial areas of airspace remaining available for birds and bats to move through once the wind farm becomes operational . Access road upgrades, and installation of internal access roads will increase impact s to connectivity, however, measures have been taken to avoid and minimise this impact, such as:

- Use of existing tracks, roads and fence lines to delineate sections of the project and used preferentially for locating access tracks and linear infrastructure.
- Access tracks to infrastructure proposed within the adjacent paddock have been located to avoid impacts to TECs, riparian areas and aquatic areas wherever possible.
- Impacts to the hydrology of Coleambally Outfall Drain will not occur and waterflows feeding areas of riparian and aquatic habitat will be maintained.

- Road upgrades will not alter the surface drainage or habitat connectivity for species utilising this habitat.

Further impact of potential barrier effect and threatened bats and birds (i.e. that may use the site as a flyway or migration route), including Southern Myotis and Corben's Long -eared Bat, is provided in Section 5, Section 6, and Section 8.3.4.

Further detail is provided below on the project's expected impacts to local flooding regimes, however it is not considered to be substantial and is unlikely to impact upon habitat connectivity between separate ephemeral wetland / watercourses and more permanent sources of water, such that species like Southern Bell Frog may be impacted.

Duration

Impacts are considered long -term as they will occur over the 30 -year life of the project and subject to stringent mitigation measures.

Consequences

Habitat connectivity is critical for maintaining healthy populations, as it promotes biological diversity through the exchange of genes. Due to linear nature of the impacts generally, areas of more abundant and mature woody vegetation, as well as lower lying ephemeral grasslands and drainage lines, have been prioritised for avoidance, with retained areas subject to improvement within criteria set out in a BMP . Retained woody areas within the subject land, create stepping stones for mobile fauna to actively move through the subject land, as well as promoting movement of genetic floristic material into adjacent areas of habitat such as riparian areas, retained grassland areas and roadside vegetation. This would continue to allow for the uninterrupted movement of the majority fauna species to be possible during construction and operation of the project. Perimeter or non- rural exclusion fencing of areas within the development corridor if installed may cause disruption to large ground dwelling fauna such as Kangar oos and Emus . This will primarily be around critical infrastructure only. Overall, this effect is not likely to be substantially exacerbated beyond the existing rural impacts installed currently.

The project may to reduce the width of habitat connectivity areas, but will not remove any key areas of connectivity for aquatic, arboreal or terrestrial species. Key connectivity through the subject land, to external wildlife corridors will be maintained, including woodland, waterways, shrubland and grassland. The project will not result in the loss of, or substantial impacts to key functional corridors within the landscape. It is expected that fauna species will continue to utilise the existing corridors within the subject land and broader landscape, with minor or negligible impact to movement patterns and/or population viability.

Roadside vegetation corridors contain intact remnant vegetation, predominately Weeping Myall and occasional Black Box patches, that act as a conduit to larger intact patches throughout the broader landscape.

While the project would diminish local scale connectivity, this is unlikely to prevent genetic exchange of the threatened entities known, or assumed to be, inhabiting the subject land and broader assessment area.

Habitat connectivity will be maintained, where:

- The proposed design was sited, where possible within areas of non -native vegetation to avoid and minimise impacts to native vegetation.

- Impacts to key movement corridors, including Coleambally Outfall Drain, Delta Creek, Blind Creek and Bublebundie Creeks, have been avoided and minimised to the fullest extent possible.
- As outlined above, substantial efforts have been made to maximise separation distances between WTG RSAs for the purposes of maintaining habitat connectivity for birds and bats through and within the wind farm.
- Habitat connectivity was considered and the proposed design was sited to reduce edge effect by avoiding and minimising impacts on large areas of native vegetation where possible.
- Existing tracks and disturbed areas were used to avoid and minimise impacts to less disturbed areas.
- Where impacts to mapped watercourses are expected to occur, this has been limited to watercourses modified and disturbed from historic agricultural use and clearing.

Impacts associated with barrier effects and collision risk s as discussed in Section 8.3.4.

Table 81 below details the threatened species considered potentially at risk from the project's impacts to habitat connectivity, and subject to the above assessment, including those not specifically mentioned above.

Table 82 Threatened species considered in the habitat connectivity impact assessment

Common name	Species name
Australasian Bittern	*Botaurus poiciloptilus*
Australian Bustard	*Ardeotis australis*
Australian Painted Snipe	*Rostratula australis*
Barking Owl	*Ninox connivens*
Black Falcon	*Falco subniger*
Blue-billed Duck	*Oxyura australis*
Brolga	*Grus rubicunda*
Bush Stone-curlew	*Burhinus grallarius*
Curlew Sandpiper	*Calidris ferruginea*
Diamond Firetail	*Stagonopleura guttata*
Dusky Woodswallow	*Artamus cyanopterus cyanopterus*
Freckled Duck	*Stictonetta naevosa*
Gilbert's Whistler	*Pachycephala inornata*
Grey Falcon	*Falco hypoleucos*
Grey-crowned Babbler (eastern subspecies)	*Pomatostomus temporalis temporalis*
Inland Forest Bat	*Vespadelus baverstocki*
Little Eagle	*Hieraaetus morphnoides*
Little Pied Bat	*Chalinolobus picatus*
Magpie Goose	*Anseranas semipalmata*
Major Mitchell's Cockatoo	*Lophochroa leadbeateri*
Masked Owl	*Tyto novaehollandiae*
Painted Honeyeater	*Grantiella picta*
Pied Honeyeater	*Certhionyx variegatus*
Plains Wanderer	*Pedionomus torquatus*

Scarlet Robin	*Petroica boodang*
South-eastern Hooded Robin	*Melanodryas cucullata*
Southern Bell Frog	*Litoria raniformis*
Southern Myotis	*Myotis macropus*
Southern Whiteface	*Aphelocephala leucopsis*
Spotted Harrier	*Circus assimilis*
Square-tailed Kite	*Lophoictinia isura*
Superb Parrot	*Polytelis swainsonii*
Swift Parrot	*Lathamus discolor*
Varied Sittella	*Daphoenositta chrysoptera*
White-bellied Sea-Eagle	*Haliaeetus leucogaster*
White-fronted Chat	*Epthianura albifrons*
White-throated Needletail	*Hirundapus caudacutus*
Yellow-bellied Sheathtail-bat	*Saccolaimus flaviventris*

8.3.3. Water bodies, water quality and hydrological processes

Nature and Extent

The development corridor is largely within a flat uniform landscape on poorly drained red clay soils with minor ephemeral drainage lines or slightly lower lying grey clay depressions which are seasonally and infrequently inundated. Current water quality and hydrological process (how water flows and is distributed across the subject land) contribute to the sustenance and resilience of the vegetation present, and in turn, the flora and fauna species that rely on said vegetation. Watercourse crossings and inst ream works, where required, will be designed, and constructed to minimise potential impacts to watercourses and water quality. No material impacts to river flow objectives are anticipated as the quantity and timing of runoff leaving the project is expected to be similar to that which currently occurs.

The project will require excavation below existing surface levels to establish suitable foundation conditions for infrastructure, and for the installation of underground services, with primary risk to groundwater quality during construction and operations as a result of accidental spillage of wastewater, fuel or other hazardous materials used to support site activities that may infiltrate through soils to groundwater. Appropriate controls to effectively manage these activities, consistent with best practice and relevant guidelines, will be incorporated CEMP.

A number of wetlands mapped on the Wetlands of NSW dataset (NSW DCCEEW 2010a) occur at the northern and southern ends of the subject land. These areas are likely to be higher quality examples of ephemeral wetlands with in the landscape, and have been largely avoided by the project. A series of wetland s are mapped along the northern tributary of Delta Creek, and the project avoids these areas by approximately 1 kilometre in all directions, with the exception of a small transmission line that traverses one section of the watercourse. Impacts associated wi th a transmission line are not expected to be substantial to the mapped wetlands, and mitigation during construction and operation will be provided in the BMP. Another series of wetlands is mapped further east, along a separate branch of the same Delta Creek tributary, and these wetland s again have the potential to be impacted by the transmission line that joins existing infrastructure along Kidman Way. These areas will again be subject to specific mitigation as detailed in the BMP, to minimise impacts during construction and operation.

Duration

No significant direct impacts are considered likely to occur to major water ways in the region, change hydrological flow, or contribute to the degradation of waterways within the subject land or broadly.

Consequences

If unmanaged, ground disturbance during earthworks and other site activities (e.g. material handling, installation of WTGs, new buildings, new substations, trenching for services and grading for new access roads) may lead to exposure of soils and potential erosion and mobilisation of sediment into receiving watercourses.

Water management will be covered within the CEMP and BMP to ensure:

- Minimisation of discharge from the construction and operational site.
- Maintaining current water flow regimes within the landscape of the subject land.
- Providing industry best practice erosion and sedimentation controls.
- Provide monitoring requirements to ensure longer -term impacts are realised if they are to occur.
- Ensure impacts to areas of identified DPE wetlands are outlined and mitigated in the CEMP and BMP.

The development corridor generally lies outside the 1% AEP flood extent following consideration of flooding constraints during preliminary design (EMM, 2024). A number of services and access corridors cross predicted flooding flow paths; however, flooding at these interactions is typically shallow and low hazard. On this basis, there is low potential for adverse flooding impacts either within or downstream of the development corridor for events up to 1% AEP. The development corridor is likely to have intera ctions with approximately 29 watercourses. The number of required watercourse crossings has been minimised through the utilisation of the existing access roads and tracks of the existing agricultural operations. Where instream works are proposed (i.e. cons truction or upgrade of watercourse crossings), these works will be designed and constructed to consider local hydraulic conditions, minimise local flooding impacts, and will be consistent with relevant guidelines.

Impacts to retained vegetation such as areas of Black Box woodland, from built up tracks, turbine hardstands, and other infrastructure altering hydrology on ephemeral floodplains, will be minimised through detailed design and implementing measures to ensur e the flow of water maintains the frequent or semi -regular inundation patterns required to maintain vegetation health. Adaptive management measures will be outlined in the BMP to ensure if impacts occur as a result of altered hydrology , mitigation is imple mented.

Contamination of surface water as a result of accidental spillage of materials such as fuel, lubricants, herbicides and other chemicals used to support construction activities could also adversely impact water quality. In the event of flooding that impacts , construction work sites or compounds, either as a result of mainstream flooding along watercourses or local overland flooding, there is potential for entrainment of sediment, vegetation, plant/equipment, hazardous substances/chemicals and other debris in floodwaters that is carried downstream. This risk can be adequately managed by suitable construction site planning that considers flood risk, avoids use of higher risk areas (i.e. subject to more frequent and/or severe flooding) and implements suitable co ntrols for areas subject to lower risk (i.e. less frequent and/or less severe flooding). Appropriate controls to effectively manage these activities, consistent with best practice and relevant guidelines, will also be incorporated into the CEMP.

Groundwater is not expected to be intercepted by excavations.

Impacts to threatened species, including Southern Bell Frog, as a result of direct impacts to watercourses, or indirect impacts to hydrological patterns are not expected to be substantial or significant.

The project is not considered an action that would alter the surface drainage, natural drainage systems or flow of watercourses within or adjacent to the subject land. No instream woody debris will be removed and no modification s to key areas of aquatic habitat are proposed. As such, a permit under Part 7 of the FM Act is not required.

Table 83 below details the threatened species considered potentially at risk from the project's impacts to water bodies, water quality and hydrological processes, and subject to the above assessment, including those not specifically mentioned above (and noting all biodiversity could be affected by impacts to water and hydrology to some degree).

Table 83 Threatened species considered in the water bodies, water quality and hydrological processes impact assessment

Common name	Species name
Australasian Bittern	*Botaurus poiciloptilus*
Australian Painted Snipe	*Rostratula australis*
Austrostipa wakoolica	A spear-grass
Blue-billed Duck	*Oxyura australis*
Brachyscome muelleroides	Claypan Daisy
Brachyscome papillosa	Mossgiel Daisy
Brolga	*Grus rubicunda*
Curlew Sandpiper	*Calidris ferruginea*
Eucalyptus leucoxylon subsp. pruinosa	Yellow Gum
Freckled Duck	*Stictonetta naevosa*
Lepidium monoplocoides	Winged Peppercress
Leptorhynchos orientalis	Lanky Buttons
Magpie Goose	*Anseranas semipalmata*
Maireana cheelii	Chariot Wheels
Pilularia novae-hollandiae	Austral Pillwort
Sclerolaena napiformis	Turnip Copperburr
Southern Bell Frog	*Litoria raniformis*
Southern Myotis	*Myotis macropus*
Swainsona murrayana	Slender Darling Pea
Swainsona plagiotropis	Red Darling Pea
Swainsona sericea	Silky Swainsona-pea
White-bellied Sea-Eagle	*Haliaeetus leucogaster*

8.3.4. Collision risk associated with wind farm developments

Mathematical CRM has been undertaken for the project over a 24 month period and eight seasons worth of BUS data, and therefore predictions of flight movements at risk and timing can be estimated for some species (i.e. those recorded flying at RSA height during BUS) . Where this data is not available , risk assessments have been undertaken as demonstrated in Section 6.2 and Section 6.3 .

A summary of at risk avian fauna and potential for prescribed impacts is shown Table 84.

Table 84 Prescribed impact assessment – wind farm developments

Protected / threatened species	SAII entity	Predicted impact	Rate & timing of impact per turbine per year	Consequences	Cumulative impact	Likelihood and nature of collision impacts	Impact of avoidance behaviour - nomadic and migratory movement
Australasian Bittern	No	Turbine strike and macro avoidance	• Due to flight behaviour, it is less probable than not that the risk event could occur in any year (< 50%). • Collisions more likely to occur between spring and autumn. • High risk turbines near waterways, wetlands and irrigation channels.	• Moderate loss in numbers of individuals, leading to minor reduction in population viability for between one and five years. • Macro avoidance or changes in flight paths to avoid turbines possible, but not substantial.	Likely – further addressed below	Low	Low. Not considered substantial or significant .
Australian Magpie	No	Turbine strike	• It is equally probable that the risk event could or could not occur in any year (50%). • Collisions may occur year round. • High risk turbines	• Repeated loss of small number of individuals but no reduction in population viability.	Likely – further addressed below	Low	Negligible 4-6 movements per annum at risk.
Australian Raven	No	Turbine strike	• It is equally probable that the risk event could or could not occur in any year (50%). • Collisions may occur year round. • High risk turbines	• Repeated loss of small number of individuals but no reduction in population viability.	Likely – further addressed below	Low	Negligible 4-6 movements per annum at risk.
Australian Painted Snipe	No	Meso and/or macro avoidance	• An event may occur only in unusual circumstances (less than 5 %). The risk event is only theoretically possible, or would require exceptional circumstances to occur . • High risk turbines near waterways, wetlands and irrigation channels.	• Repeated loss of small number of individuals but no reduction in population viability	Likely – further addressed below	Low	Low. Not considered substantial or significant .
Australian White Ibis	No	Turbine strike	• It is equally probable that the risk event could or could not occur in any year (50%).	• Repeated loss of small number of individuals but no reduction in population viability.	Likely – further addressed below	Low	Negligible

Protected / threatened species	SAII entity	Predicted impact	Rate & timing of impact per turbine per year	Consequences	Cumulative impact	Likelihood and nature of collision impacts	Impact of avoidance behaviour - nomadic and migratory movement
			• Collisions may occur year round. • High risk turbines near waterways, wetlands and irrigation channels.				1-2 movements per annum at risk.
Australian Wood Duck	No	Turbine strike	• It is equally probable that the risk event could or could not occur in any year (50%). • Collisions may occur year round. • High risk turbines near waterways, wetlands and irrigation channels.	• Repeated loss of small number of individuals but no reduction in population viability.	Likely – further addressed below	Low	Negligible 1 movement on average per annum at risk.
Black Falcon	No	Turbine strike and meso and/or macro avoidance	• It is equally probable that the risk event could or could not occur in any year (50%). • Collision more likely to occur between spring and autumn • High risk turbines, particularly turbine WT109, WT81, WT63, WT 56, ET43, ET48 where sightings and potential nesting may be occurring	• Moderate loss in numbers of individuals, leading to minor reduction in population viability for between one and five years.	Likely – further addressed below	Moderate	Low. Not considered substantial or significant 1 movement on average per annum at risk.
Black Kite	No	Turbine strike	• It is equally probable that the risk event could or could not occur in any year (50%). • Collisions may occur year round. • High and moderate risk turbines	• Repeated loss of small number of individuals but no reduction in population viability.	Likely – further addressed below	Low	Negligible 1-3 movements per annum at risk.
Black-shouldered Kite	No	Turbine strike and meso and/or macro avoidance	• It is more probable than not that the risk event could occur in any year (>50%) • Collisions may occur year round. • High and moderate risk turbines	• Moderate loss in numbers of individuals, leading to minor reduction in population viability for between one and five years.	Likely – further addressed below	Moderate 1 individual at risk of collision per annum	Low. Not considered substantial or significant

Protected / threatened species	SAII entity	Predicted impact	Rate & timing of impact per turbine per year	Consequences	Cumulative impact	Likelihood and nature of collision impacts	Impact of avoidance behaviour - nomadic and migratory movement
							1 movement on average per annum at risk.
Brown Falcon	No	Turbine strike	• It is very probable that the risk even t could occur in any year (>95%). • Collisions may occur year round. • High and moderate risk turbines	• Repeated loss of small number of individuals but no reduction in population viability.	Likely – further addressed below	Low	Negligible 1 movement on average per annum at risk.
Fork-tailed Swift	No	Turbine strike	• It is more probable than not that the risk event could occur in any year (>50%) • Collision more likely to occur between spring and early autumn, or prior cold fronts and storm events • High and moderate risk turbines	• Repeated loss of small number of individuals but no reduction in population viability.	Likely – further addressed below	Low	Negligible – species presence infrequent due to the irregularity of its occurrence, and the small numbers possibly affected
Galah	No	Turbine strike	• It is equally probable that the risk event could or could not occur in any year (50%). • Collisions may occur year round. • High and moderate risk turbines	• Repeated loss of small number of individuals but no reduction in population viability.	Likely – further addressed below	Low	Negligible 8 movements on average per annum at risk.
Little Egret	No	Turbine strike	• It is equally probable that the risk event could or could not occur in any year (50%). • Collisions more likely to occur between spring and autumn.	• Repeated loss of small number of individuals but no reduction in population viability.	Likely – further addressed below	Low	Negligible

Protected / threatened species	SAII entity	Predicted impact	Rate & timing of impact per turbine per year	Consequences	Cumulative impact	Likelihood and nature of collision impacts	Impact of avoidance behaviour - nomadic and migratory movement
			• High risk turbines near waterways, wetlands and irrigation channels.				
Little Pied Cormorant	No	Turbine strike	• It is equally probable that the risk event could or could not occur in any year (50%). • Collisions more likely to occur between spring and autumn. • High risk turbines near waterways, wetlands and irrigation channels.	• Repeated loss of small number of individuals but no reduction in population viability.	Likely – further addressed below	Low	Negligible
Nankeen Kestrel	No	Turbine strike and meso and/or macro avoidance	• It is very probable that the risk even t could occur in any year (>95%). • Collisions may occur year round. • High risk turbines	• Moderate loss in numbers of individuals, leading to minor reduction in population viability for between one and five years.	Likely – further addressed below	Moderate 2-5 individuals at risk of collision per annum	Low. Not considered substantial or significant 2-5 movements on average per annum at risk.
Plumed Whistling-Duck	No	Turbine strike	• It is equally probable that the risk event could or could not occur in any year (50%). • Collisions may occur year round. • High risk turbines near waterways, wetlands and irrigation channels.	• Repeated loss of small number of individuals but no reduction in population viability.	Likely – further addressed below	Low	Negligible 2-5 movements on average per annum at risk.
Spotted Harrier	No	Turbine strike and meso and/or macro avoidance	• It is more probable than not that the risk event could occur in any year (>50%) • Collisions may occur year round. • High and moderate risk turbines	• Repeated loss of small number of individuals but no reduction in population viability.	Likely – further addressed below	Low	Low Not considered substantial or significant

Protected / threatened species	SAII entity	Predicted impact	Rate & timing of impact per turbine per year	Consequences	Cumulative impact	Likelihood and nature of collision impacts	Impact of avoidance behaviour - nomadic and migratory movement
							1 movement on average per annum at risk.
Straw-necked Ibis	No	Turbine strike	• It is equally probable that the risk event could or could not occur in any year (50%). • Collisions may occur year round. • High risk turbines near waterways, wetlands and irrigation channels.	• Repeated loss of small number of individuals but no reduction in population viability.	Likely – further addressed below	Low	Negligible 1-2 movements per annum at risk.
Superb Parrot	No	Turbine strike and meso and/or macro avoidance	• It is equally probable that the risk event could or could not occur in any year (50%). • Collisions more likely to occur between spring and autumn, less likely in Winter • High risk turbines, particularly turbine WT1 3, WT7, WT86, ET47, E48 and E43.	• Moderate loss in numbers of individuals, leading to minor reduction in population viability for between one and five years.	Likely – further addressed below	Moderate	Low. Not considered substantial or significant 1-3 movements per annum at risk.
Wedge-tailed Eagle	No	Turbine strike and meso and/or macro avoidance	• It is very probable that the risk even t could occur in any year (>95%). • Collisions may occur year round. • High and moderate risk turbines	• Moderate loss in numbers of individuals, leading to minor reduction in population viability for between one and five years.	Likely – further addressed below	High 3-6 individuals at risk of collision per annum	Low. Not considered substantial or significant 3-6 movements per annum at risk.
Whistling Kite	No	Turbine strike	• It is more probable than not that the risk event could occur in any year (>50%) • Collisions may occur year round.	• Repeated loss of small number of individuals but no reduction in population viability.	Likely – further addressed below	Low	Negligible

Protected / threatened species	SAII entity	Predicted impact	Rate & timing of impact per turbine per year	Consequences	Cumulative impact	Likelihood and nature of collision impacts	Impact of avoidance behaviour - nomadic and migratory movement
			• High risk turbines near waterways, wetlands and irrigation channels.				1 movement on average per annum at risk.
White-faced Heron	No	Turbine strike	• It is equally probable that the risk event could or could not occur in any year (50%). • Collisions may occur year round. • High risk turbines near waterways, wetlands and irrigation channels.	• Repeated loss of small number of individuals but no reduction in population viability.	Likely – further addressed below	Low	Negligible
White-necked Heron	No	Turbine strike	• It is equally probable that the risk event could or could not occur in any year (50%). • Collisions may occur year round. • High risk turbines near waterways, wetlands and irrigation channels.	• Repeated loss of small number of individuals but no reduction in population viability.	Likely – further addressed below	Low	Negligible 1 movement on average per annum at risk.
Yellow-billed Spoonbill	No	Turbine strike	• It is equally probable that the risk event could or could not occur in any year (50%). • Collisions may occur year round. • High risk turbines near waterways, wetlands and irrigation channels.	• Repeated loss of small number of individuals but no reduction in population viability.	Likely – further addressed below	Low	Negligible 1 to 3 movements on average per annum at risk.
White-striped Free-tailed Bat	No	Turbine strike	• It is very probable that the risk even t could occur in any year (>95%). • Collisions may occur year round. • High and moderate risk turbines	• Repeated loss of small number of individuals but no reduction in population viability.	Likely – further addressed below	Low	Low. Not considered substantial or significant
Gould's Wattled Bat	No	Turbine strike	• It is more probable than not that the risk event could occur in any year (>50%)	• Repeated loss of small number of individuals but no reduction in population viability.	Likely – further addressed below	Low	Low.

Protected / threatened species	SAII entity	Predicted impact	Rate & timing of impact per turbine per year	Consequences	Cumulative impact	Likelihood and nature of collision impacts	Impact of avoidance behaviour - nomadic and migratory movement
			• Collisions may occur year round. • High risk turbines				Not considered substantial or significant
Inland Free-tailed Bat	No	Turbine strike	• It is more probable than not that the risk event could occur in any year (>50%) • Collision more likely to occur over spring and summer. • High risk turbines	• Repeated loss of small number of individuals but no reduction in population viability.	Likely – further addressed below	Low	Negligible
South-eastern Free-tailed Bat	No	Turbine strike	• It is more probable than not that the risk event could occur in any year (>50%) • Collision more likely to occur over spring and summer • High risk turbines	• Repeated loss of small number of individuals but no reduction in population viability.	Likely – further addressed below	Low	Negligible
Ride's Free-tailed Bat	No	Turbine strike	• It is more probable than not that the risk event could occur in any year (>50%) • Collision more likely to occur over spring and summer • High risk turbines	• Repeated loss of small number of individuals but no reduction in population viability.	Likely – further addressed below	Low	Negligible
Yellow-bellied Sheathtail-bat	No	Turbine strike	• It is equally probable that the risk event could or could not occur in any year (50%). • Collision more likely to occur over spring and summer • High risk turbines	• Repeated loss of small number of individuals but no reduction in population viability.	Likely – further addressed below	Low	Low. Not considered substantial or significant

Protected / threatened species	SAII entity	Predicted impact	Rate & timing of impact per turbine per year	Consequences	Cumulative impact	Likelihood and nature of collision impacts	Impact of avoidance behaviour - nomadic and migratory movement
Little Red Flying Fox	No	Turbine strike	• It is less probable than not that the risk event could occur in any year (< 50%). • Collisions may occur year round, depending on flowering resources • High risk turbines	• Repeated loss of small number of individuals but no reduction in population viability.	Likely – further addressed below	Negligible	Negligible

a) Predict the impact on species living in, or likely to fly over, the proposed development site, including bat or bird strike and barotrauma.

Impacts that have the potential to occur to bird and bat species within the subject land during the operational phase of the project are associated with turbine strike, as outlined in Table 84 above.

The level at which turbine strike is likely to occur is difficult to predict prior to commissioning of turbines, and as such impacts are considered uncertain. A monitoring and adaptive management approach has been developed to ensure any impacts that may occur are realised as early as possible, mitigation measures are implemented (where possible) to minimise the potential for the impact to reoccur, and where relevant, calculate an offset requirement for the impacted entity.

As outlined in Table 84 above:

- For 12 at risk bird and bat species, it is considered more probable than not that a strike event could occur in any year (>50%).
- For 16 at risk bird and bat species, it is considered equally probable that a strike event could or could not occur in any year (50%).
- For two at risk bird species, it is considered less probable than not that a strike event could occur in any year (<50%).
- For one at risk bird species, it is considered that an event may occur only in unusual circumstances (less than 5 %).

When the consequence of predicted strike events is considered, all of the above at risk species are predicted to be subject to:

- Repeated loss of a small number of individuals but no reduction in population viability, or
- Moderate loss in numbers of individuals, leading to a minor reduction in population viability for between one and five years.

Generally, those with the highest risk of collision are more common raptor species, such as Wedge-tailed Eagles and Nankeen Kestrels, common high flying microbat species, as well as common flocking waterbirds that may congregate in areas of more permanent water. Although collision likelihood is higher, these populations are stable and unlikely to have substantial consequences in the long term. Other less common species, such as the Black Falcon and Superb Parrot, may have a less likelihood of strike, however the consequence of the potential loss of a few individuals is higher.

For Australasian Bittern, satellite tracking and changes in local densities indicate Australasian Bitterns undertake seasonal and dispersive movements between breeding and non-breeding habitats, and as local habitat suitability conditions change (Bitterns in Rice Project 2017, Department of the Environment and Energy 2019). Satellite tracking of the species recorded juveniles and adult males moving from the Riverina rice-growing areas inland, to coastal wetlands in South Australia, Victoria and New South Wales post-breeding season (Bitterns in Rice Project 2017). Wetland habitat, including breeding habitat, is not likely to be impacted by the project. Given the distribution of potential and known habitat south and north of the subject land and the likely local and seasonal movements, a portion of Australasian Bitterns using the wetlands between Victoria and Coleambally/Leeton areas may possibly fly through the subject land, however the potential occurrence and thus potential for collisions still considered low.

Whilst impacts to microbat species may occur as a result of turbine strike, it is considered unlikely that additional impacts will occur as a result of barotrauma. A paper published in December 2020 in the journal PLOS One, by Lawson et al, describes how mortality as a result of barotrauma is unlikely to occur

due to the areas where exposure to the level of pressure variation required to cause mortality are present only in the immediate vicinity of the turbine blades, and that flight paths required for bats to be exposed to these areas are highly improbable. As such, even a small change in flight path would result in the bat being hit by the blade or experiencing a much smaller pressure change. Furthermore, the magnitude of the low-pressures bats could experience when flying near wind turbines is approximately 8 times smaller than the pressure that causes mortality in rats, the smallest mammal for which data are available. The magnitude of the high-pressures that bats may experience are approximately 80 times smaller than the exposure level that causes 50% mortality in mice, which have a body mass similar to several bat species that are killed by wind turbines in the United States (Lawson et al 2020).

The study concludes that, if bats have a physiological response to rapid low- and high-pressure exposure similar to that of other mammals, that it is unlikely that barotrauma is responsible for a significant number of turbine-related bat fatalities, and that impact trauma is the likely cause of the majority of wind-turbine-related bat fatalities. (Lawson et al 2020)

b) Predict the rate and timing of impact per turbine per year for species likely to be affected.

The predicted rate and timing of potential impacts from turbine strike to at risk bird and bat species per turbine per year are outlined in Table 84 above. These predictions are based on the risk assessments completed/summarised in Sections 6.1 and 6.3 above.

c) Predict the consequences of impacts for the persistence of populations.

The predicted consequences of potential impacts from turbine strike to populations of at-risk bird and bat are outlined in Table 84 above. These predictions are based on the risk assessments completed/summarised in Sections 6.1 and 6.3 above.

d) Predict the cumulative impacts of the proposed development alongside existing wind farms, on species mortality, movement patterns and use of adjacent habitat.

As wind farms developments increase in NSW, and in particular the South West REZ, bird and bat species with the potential to move over larger distances can be subject to impacts at multiple wind farms (Biosis, 2006). Wind farms are proposed within 150 kilometres of the project. These are:

- Yanco Delta Wind Farm – adjacent to the subject land
    - Up to 208 wind turbines
- Argoon Wind Farm – adjacent to the subject land
    - Up to 106 wind turbines.
- Pottinger Wind Farm – 45 km south-east of Hay.
    - Up to 247 wind turbines.
- Bullawah Wind Farm – 50 km south-east of Hay.
    - Up to 170 wind turbines.
- Tchelery Wind Farm – 70km south-east of Balranald.
    - Up to 120 wind turbines.
- The Plains Wind Farm – 40 km north-west of Hay.
    - Up to 226 wind turbines.

- Keri Keri Wind Farm – 40 km south-east of Balranald.
    - Up to 170 wind turbines.
- Wilan Wind Farm – 40 km north-east of Balranald.
    - Up to 138 wind turbines.
- Baldon Wind Farm – 60 km south-east of Balranald.
    - Up to 162 wind turbines.
- The Plains Wind Farm – 40 km north-west of Hay.
    - Up to 226 wind turbines.

Each of these wind farms are considered to have the potential to result in some level of mortality to wide ranging aerial species, however there would be limited overlap in species populations for more sedentary species between these wind farms due to their distal locations in the landscape. There is however likely to be a somewhat substantial loss of species' habitats within the region if the numerous large-scale projects are constructed. This cumulative habitat loss will affect all species to some degree, although those most affected (i.e., those with habitat spanning all, or the majority of, the proposed developments) are also those species better able to adapt and utilise a wide range of unimpacted habitats across a region where native dominated habitats are prevalent, albeit in a historically generally degraded state.

The project will operate an estimated 200 turbines, over an area of approximately 7,256 hectares development corridor and 31,384 hectare subject land. If all of the above wind farms are approved and operate at their proposed capacities (i.e. numbers of turbines, estimated at 1, 773 in total) and are built at similar densities, the project would contribute approximately 11 % of the numbers of operational turbines and area covered by operation wind farm within approximately 150 kilometres. The project could therefore be considered to contribute a similar percentage to the potential cumulative impacts to bird and bat species in the region.

The majority of the species considered at risk of collision from the project are considered common, widespread and secure species and cumulative impacts would be unlikely to result in substantial impacts to local, regional or national populations. The exception being impacts to Wedge-tailed Eagles, predominantly juveniles and dispersing immature individuals within new ranges, and White Striped Free-tailed Bat, that are consistently impacted by wind farms in Australia. Additionally, Spotted Harrier, Superb Parrots, Black Falcon, and potentially Australasian Bittern, are listed as threatened in NSW and/or federally and cumulative impacts to these species could be more substantial.

Nomadic movements of Australasian Bittern and Black Falcon are likely to put populations at relatively frequent risk of cumulative impacts associated with turbine strike and avoidance of habitat adjacent to operational turbines across multiple operational wind farms. It could reasonably be expected that this risk would be greatest during the initial years of operation before birds have been able to habituate to the turbines in the landscape.

Detailed and adaptive management plans, such as BBAMP, will be required to be developed and implemented consistently to provide an effective monitoring program and strategy to manage and mitigate operational issues relating to the potential cumulative impacts from multiple sites. A coordinated effort will be required to ensure issues that may occur at one wind farm site, and which could be prevented at another, are consistently reported upon and mitigation strategies consistently applied.

e) Predict the likelihood and nature of impacts on aerial species living in, or likely to fly over, the proposed development site, including barriers to migratory pathways, and breeding, feeding and resting resources.

The predicted rate and timing of potential impacts from turbine strike to at risk bird and bat species per turbine per year are outlined in Table 84. These predictions are based on the CRM and risk assessments completed/summarised in Section 6.

f) Predict the impact of avoidance behaviour for migratory species relative to migration distances, and the availability of suitable habitat for breeding, feeding and resting over the migration route.

Analysis of nomadic and migratory species' flight paths relevant to the subject land is provided in Section 5, Section 6 and illustrated on Figure 13 and Figure 14. Further assessment is provided in Table 84.

The project is not expected to result in substantial avoidance behaviour in species undertaking longer distance nomadic or migratory flights due to these flights generally occurring over RSA height, or to species undertaking local-scale movements due to the layout of the project allowing sufficient blade-free areas allowing movement corridors through the operational wind farm.

g) Map the disturbance zone around wind turbines, and the significant landscape and habitat features within that zone, for species likely to be affected, e.g. hollow bearing trees and important habitat for migratory species.

The project's development corridor was assessed and mapped as the potential disturbance zone around operational wind turbines. Refer to Section 8.1 for direct impacts to landscape and habitat features. Flight paths and discussion of disturbance to migratory species is location within Section 5.2 and Section 6.

The zone of disturbance can be considered to comprise two separate parts, those being the RSA, and an area of air disturbance extending past the blade tip. Potential impacts to aerial species within the RSA are largely associated with blade strike and possibly barotrauma, the risk and likelihood of which has been assessed for bird and bat species in Section 5.2.1 and Section 6 of this BDAR.

Impacts associated with the area of air disturbance, past the end of the blade tips, are less clear but are likely associated with avoidance behaviour and barrier effect due to alteration of forces acting on aerial species, potentially leading to additional indirect habitat loss due to expected avoidance behaviour. It is expected that smaller species would be more likely to experience disturbance from smaller changes in air pressure (etc), and therefore experience disturbance further from the blade tips, when compared to larger species likely to be more tolerant of smaller changes, and thus experiencing disturbance closer to the tips of the blades.

Within the combined zone of disturbance, equating to the RSA and the additional area of air disturbance, habitat features likely to be utilised by aerial fauna include open grassy areas, scattered trees and intact saltbush and mallee vegetation supporting hollows, small dams and watercourses. All of these features are potentially utilised for foraging, roosting and breeding habitat (for some species).

As outlined above, the project has limited potential to result in impacts to habitat connectivity for some species potentially flying through the wind farm to access habitats as part of migratory movements or long-range foraging. However as noted, habitat connectivity is maintained surrounding the development corridor and the likelihood of regular migratory movements through the wind farm at RSA height is considered low.

8.3.5. Vehicle strikes

Nature and extent

The project has the potential to result in increased vehicle strikes during the construction and operational phase of the project as a result of increased vehicle moments, and in particular heavy vehicles, predominantly during construction. The existing pu blic roads, such as Kidman Way as well McLennons Bore Road and Carrathool Road currently act as a major and minor conduit respectively of heavy vehicle traffic in the region, and this may be increased as a result of the project. Further to increased traffi c on external roads, is the increased traffic movements within the site, which will be substantial during the construction phase of the project and will remain at levels higher than the current situation during operation. The increased vehicle movements ha ve the potential to impact on ground -dwelling and low - flying fauna, and will require mitigation to prevent impacts to a range of threatened and non -threatened species.

Duration

This impact would be ongoing but have the highest potential to occur during the construction stages. Potential impacts would be predominantly diurnal, but dawn/dusk is a common time for vehicle strike with mammal species, and there is the potential for collisions to occur at night, however vehicle movements will be greatly reduced.

Consequences

Non-threatened, ground dwelling fauna known to inhabit the general area, particularly macropods such as Emu, Eastern Grey Kangaroo and Red Kangaroo are notoriously prone to vehicle strike. Vehicle strike of macropods is likely to be an impact already in pl ace due to the existing road network and traffic levels, which may be exacerbated during construction.

Low flying ground foraging birds such as Grey -crowned Babblers, Red- rump parrots, Blue Bonnets, as well as potentially Superb Parrots when foraging along roadside corridors , are also prone to increased collision due to increase in traffic during construction due to foraging or flying close to road verges. Repeated vehicle impacts to threatened species such as Superb Parrots could cause an impact to local population, however the likelihood of repeated strikes is considered low.

Large raptor species, such as Wedge- tailed Eagles, when feeding on carrion along roadside edges, are also prone to strike due to their slow and often last minute, flight take off.

Plains-wanderer are known to be present within the subject land and could be subject to vehicle strike. If any strikes occur impacts to the local population may be substantial due to the low numbers and density of the population.

Amphibians (including Southern Bell Frog) and reptiles are the most threatened vertebrates by vehicle impacts. Reptiles will likely bask on the open, hot bitumen or gravel roads, as well as hunt at night for frogs, gecko and insects, which have themselves come out on the open road for warmth, particularly where roads and access tracks are in proximity to areas such as wetlands and wooded areas used for more frequent movement. Amphibian mortality from vehicle strike is likely to be more frequent during the summer, whereas reptile mortality is more likely to be more frequent in spring and at the end of the summer. Existing risk of vehicle strike occurs currently however, with a temporary increase in the number of vehicle movements particularly during construct ion, the risk of vehicle strike will increase in the short term.

It can reasonably be expected that the potential for vehicle strikes can be effectively managed th rough:

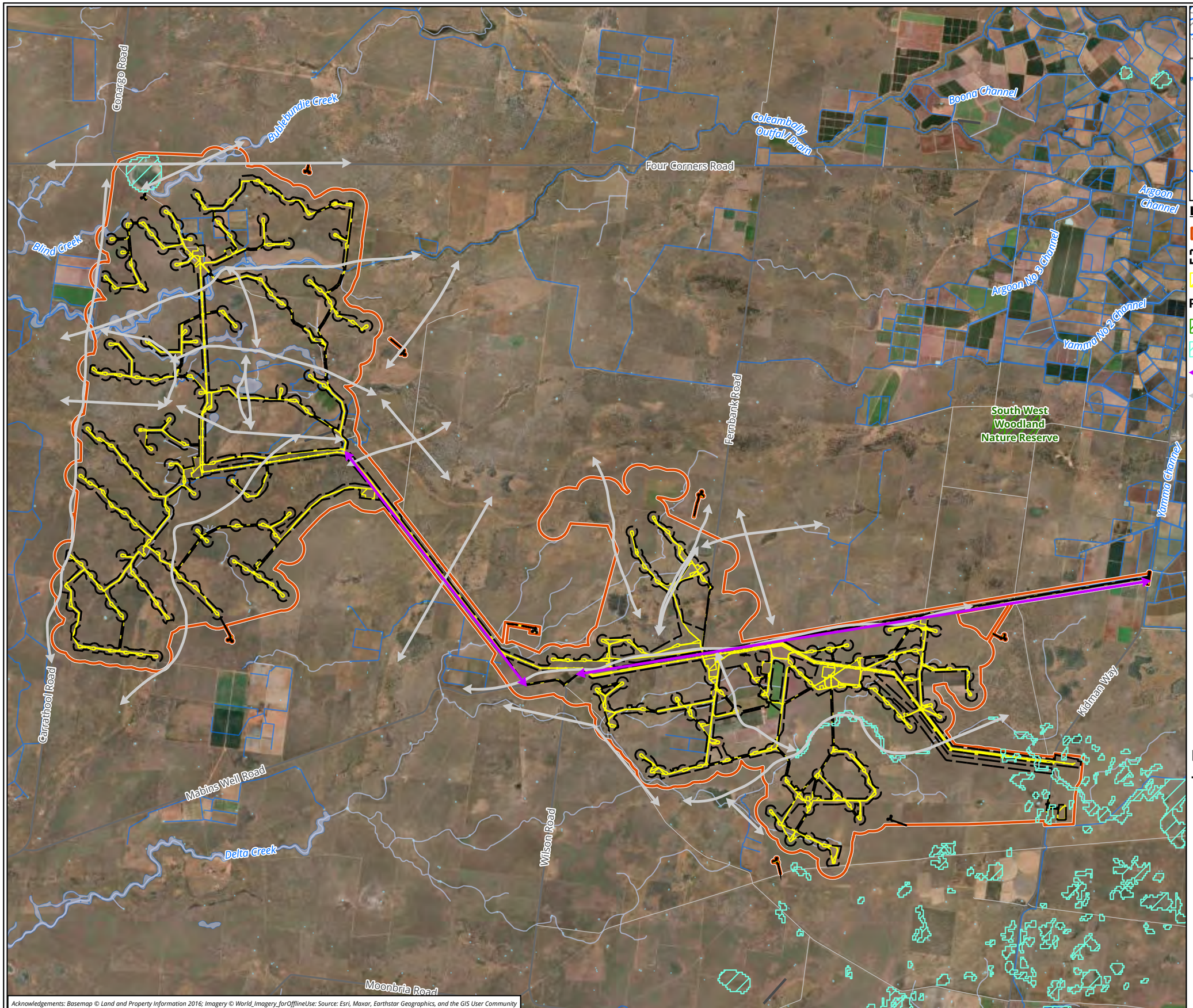
- Reduced speed limits and signage.
- Education on fauna species, particularly threatened species, at risk from vehicle strike.
- Minimising driving from construction or operational related vehicle from dusk – dawn.
- Driver awareness training of potential fauna to occur.
- Vehicle strike protocols, including contact numbers (e.g. WIRES) and steps to be undertaken in the event of a vehicle strike with an animal.
- Prompt carcass removal, if collision s do occur to prevent further potential collisions with scavengers.
- Monitoring of roads and collisions and mapping of any hotspots where increased mitigation may be required.
- Mapping of Plain s-wanderer habitat as part of the BMP and ensuring suitable mitigation is implemented where roads occur within or close to potential habitat for the species.

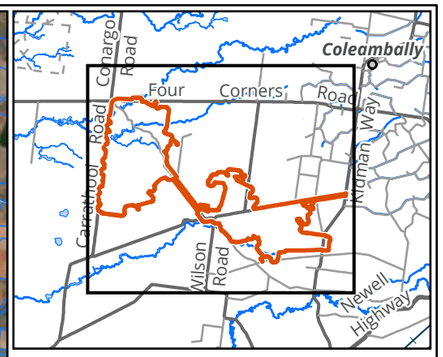
The project is not expected to result in any substantial or significant impacts associated with vehicle strikes in the long term.

Table 85 below details the threatened species considered potentially at risk from the project's impacts associated with vehicle strike, and subject to the above assessment, including those not specifically mentioned above.

Table 85 Threatened species considered in the vehicle strike impact assessment

Common name	Species name
Australian Bustard	*Ardeotis australis*
Bush Stone-curlew	*Burhinus grallarius*
Freckled Duck	*Stictonetta naevosa*
Major Mitchell's Cockatoo	*Lophochroa leadbeateri*
Plains Wanderer	*Pedionomus torquatus*
Southern Bell Frog	*Litoria raniformis*
Southern Whiteface	*Aphelocephala leucopsis*
Spotted Harrier	*Circus assimilis*
Superb Parrot	*Polytelis swainsonii*
Swift Parrot	*Lathamus discolor*
White-fronted Chat	*Epthianura albifrons*





Legend

- Subject land
- Development corridor
- Development footprint

Prescribed impacts

- National Park/Reserve
- Local wetlands
- Vehicle impacts
- Connectivity

Figure 20A Prescribed impacts - Overview

0 1 2 3 4 5

Kilometers
Scale: 1:130,000 @ A3
Coordinate System:
GDA2020 MGA Zone 55

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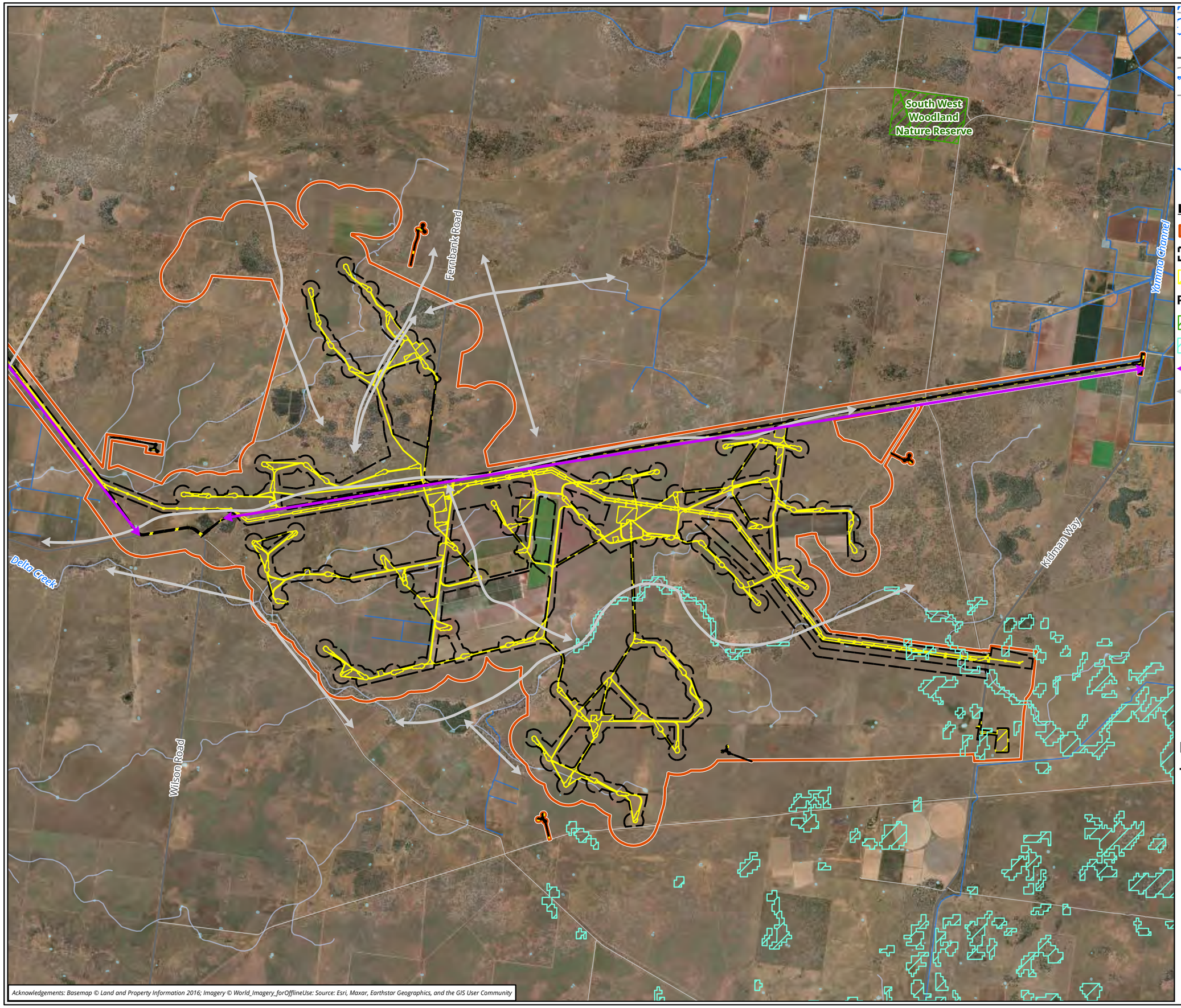

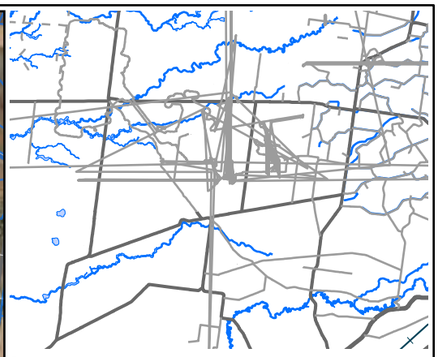

Legend

- Subject land
- Development corridor
- Development footprint

Prescribed impacts

- National Park/Reserve
- Local wetlands
- Vehicle impacts
- Connectivity

Figure 20A Prescribed impacts - Eastern area

0 1 2 3

Kilometers
Scale: 1:80,000 @ A3
Coordinate System:
GDA2020 MGA Zone 55

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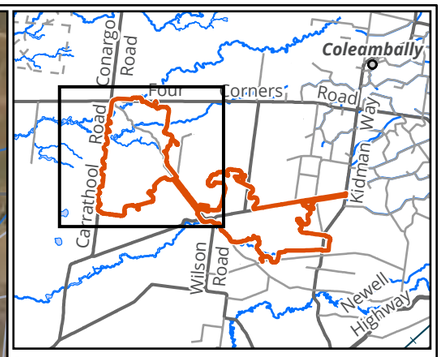

Legend

- Subject land
- Development corridor
- Development footprint

Prescribed impacts

- National Park/Reserve
- Local wetlands
- Vehicle impacts
- Connectivity

Figure 20A Prescribed impacts - Western area

0 1 2 3

Kilometers
Scale: 1:80,000 @ A3
Coordinate System:
GDA2020 MGA Zone 55

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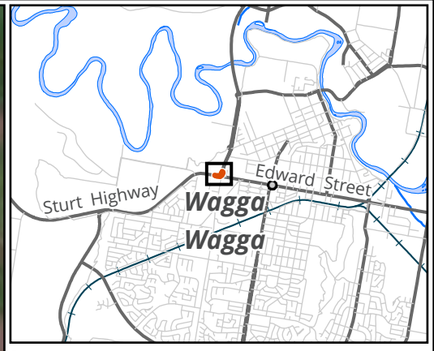

Legend

- Subject land
- Development corridor
- Development footprint

Prescribed impacts

- Local wetlands
- Connectivity

Figure 20A Prescribed impacts - Olympic Highway/Sturt Highway

0 50

Meters
Scale: 1:1,500 @ A3
Coordinate System:
GDA2020 MGA Zone 55

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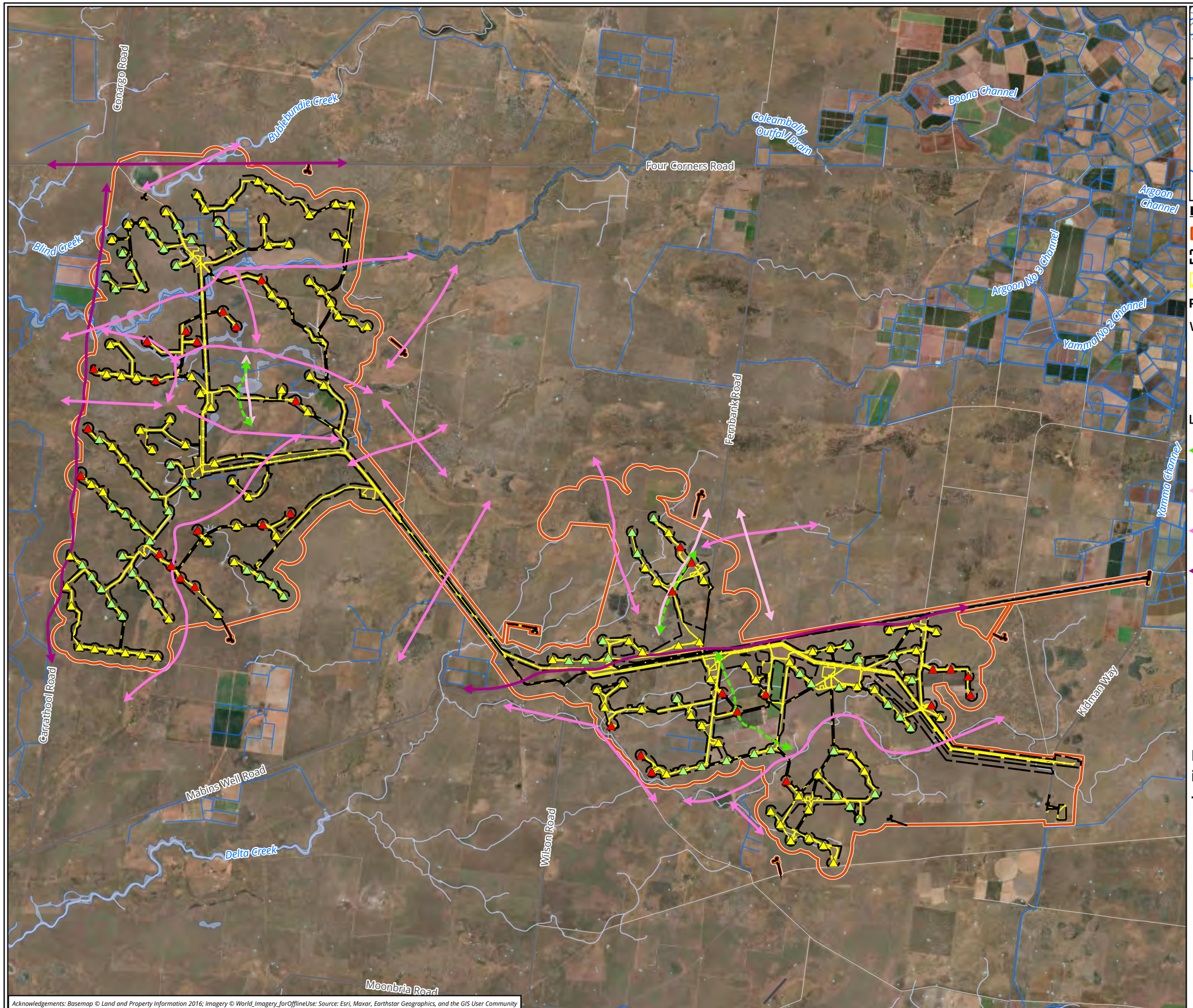

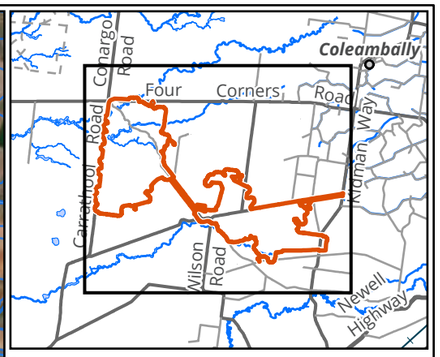

Legend

- Subject land
- Development corridor
- Development footprint

Prescribed impacts

Wind turbine constraint

- High
- Moderate
- Low

Local flight paths

- Minor pathway - Observed local at risk species
- Minor pathway - Woodland and waterbirds fliers
- Major pathway - Woodland and waterbirds fliers
- Major pathway - Woodland and waterbirds fliers
- Roadside pathway - Woodland and waterbirds fliers

Figure 20B Prescribed impacts (wind only) - Overview

0 1 2 3 4 5

Kilometers
Scale: 1:130,000 @ A3
Coordinate System:
GDA2020 MGA Zone 55

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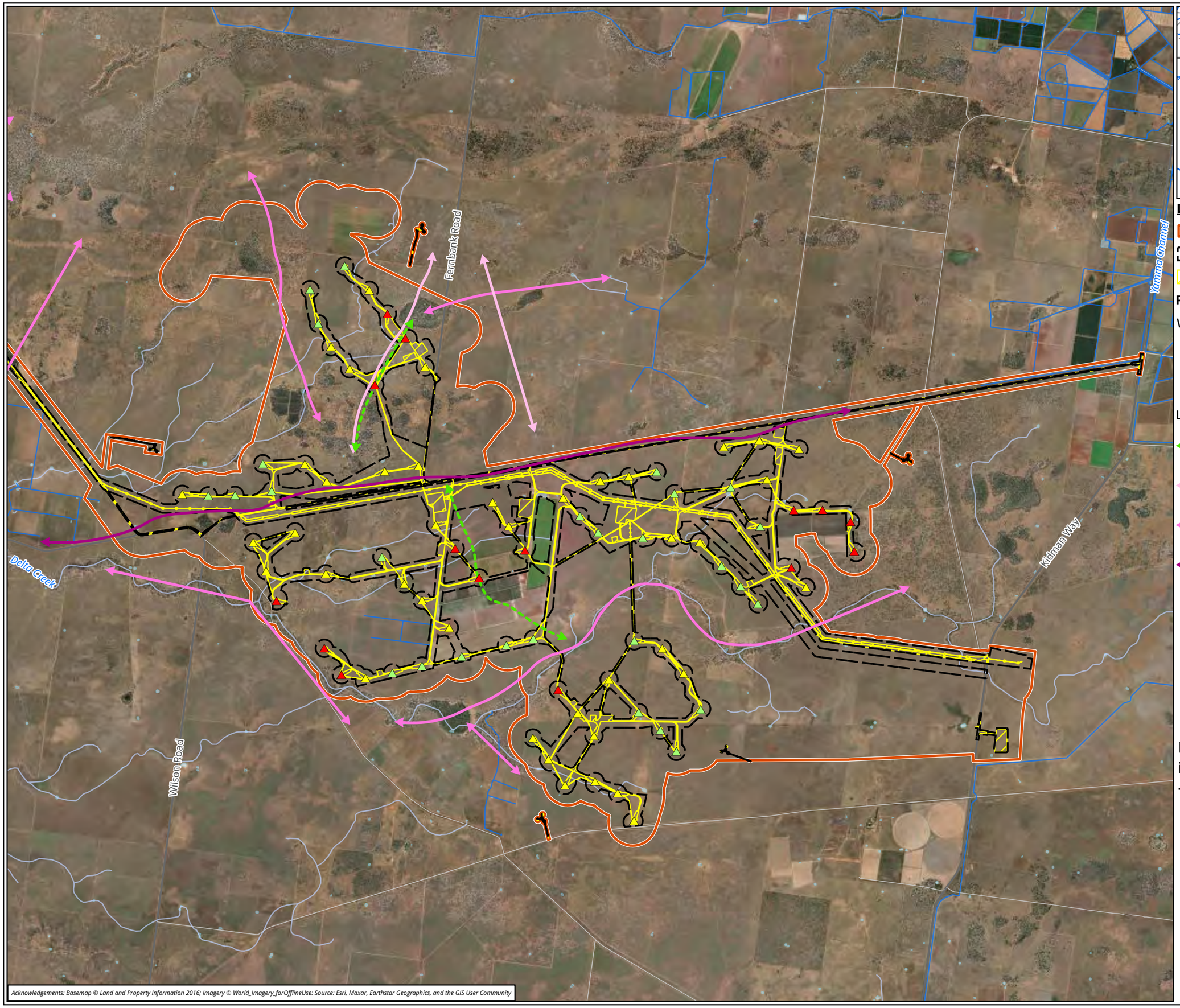

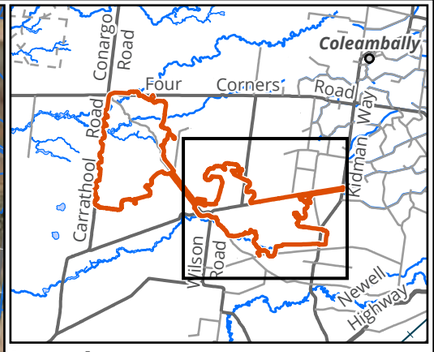

Legend

- Subject land
- Development corridor
- Development footprint

Prescribed impacts

Wind turbine constraint

- High
- Moderate
- Low

Local flight paths

- Minor pathway - Observed local at risk species
- Minor pathway - Woodland and waterbirds fliers
- Major pathway - Woodland and waterbirds fliers
- Roadside pathway - Woodland and waterbirds fliers

Figure 20B Prescribed impacts (wind only) - Eastern area

0 1 2 3

Kilometers
Scale: 1:80,000 @ A3
Coordinate System:
GDA2020 MGA Zone 55

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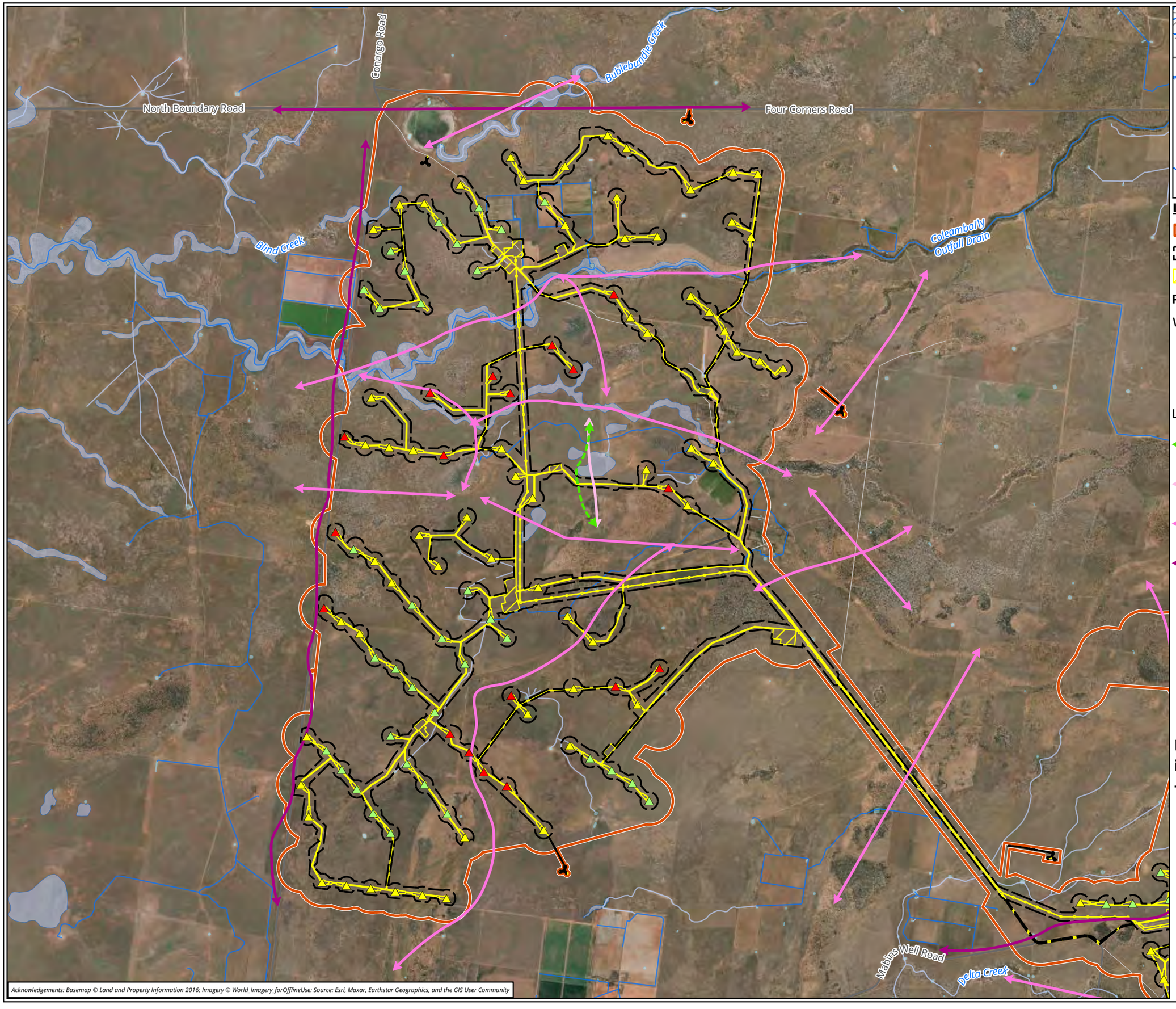

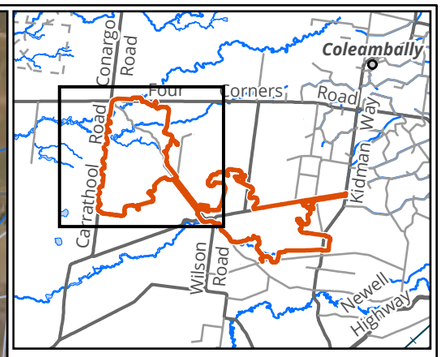

Legend

- Subject land
- Development corridor
- Development footprint

Prescribed impacts

Wind turbine constraint

- High
- Moderate
- Low

Local flight paths

- Minor pathway - Observed local at risk species
- Minor pathway - Woodland and waterbirds fliers
- Major pathway - Woodland and waterbirds fliers
- Roadside pathway - Woodland and waterbirds fliers

Figure 20B Prescribed impacts (wind only) - Western area

0 1 2 3

Kilometers
Scale: 1:80,000 @ A3
Coordinate System:
GDA2020 MGA Zone 55

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37263_Dinawan_BDAR_Wind_F18-24.aprx
Layout: 37263_Wind_F20B_Prescribed_Wind

8.4. Impacts to Groundwater Dependent Ecosystems (GDE)

GDEs are ecosystems that are partially or completely dependent on underground water, or the surface expression of this water, for their existence or health. These ecosystems include flora and fauna species and communities that are dependent on water discharge to the surface at a level where they can access, to persist in permanently wet environments, or to persist during times of extended low rainfall via the access to subsurface water reserves. The mapped GDEs intersecting the development corridor are typically associated with River Red Gum, Lignum and Canegrass wetland vegetation communities.

The project construction activities are not anticipated to intersect the regional water table. No material impacts to water quality objectives are anticipated as the water quality of runoff leaving the project is expected to be similar to the water quality of the receiving environment during discharge. No material impacts to groundwater are expected. Groundwater will form a source of non-potable water supply for the project; however, this is proposed to be temporary and consumed as part of an existing landowner entitlement linked to approved works.

8.5. Impacts considered uncertain

Operational impacts to bird and bat species associated primarily with collision risk and to a lesser extent potential barrier effects, are predicted as stringently as possible, however, are still considered uncertain at this stage. As such, a monitoring and adaptive management strategy has been developed for the project to ensure any negative effects are realised early, mitigated where possible, and offset if required. The monitoring and adaptive management strategy is summarised in Section 9.

8.6. Cumulative impacts

An assessment of proposed and current renewable and other projects within similar PCTs, habitats and sited in the South West REZ has been carried out to provide a summary of potential cumulative impacts to biodiversity (Table 86). Nineteen large scale renewable energy related projects in the South West REZ, all impacting upon similar PCTs, habitats and threatened species have been considered.

It is important to recognise that the South West REZ is currently a highly competitive landscape for renewable energy development and project outcomes will largely be determined by the NSW Government allocation of access rights to the limited transmission infrastructure present. For example, the NSW Government registration of interest for the South West REZ received 49 registrations, representing 34 gigawatts of electricity (more than 13 times the intended 2.5 gigawatts capacity) from potential generation and storage projects. Access to the South West REZ transmission lines will be managed by the NSW Government in accordance with the NSW Electricity Infrastructure Investment Act 2020 (EII Act). A competitive tender process for transmission “access rights” will be administered by AEMO Services (ASL). The mix of technologies and size of projects that will be built in the South West REZ will, to a large extent, be determined by the outcomes of this competitive auction process. This process would limit the scale of development within the South West REZ and means that the cumulative impacts required to build the South West REZ to its maximum capacity would be less than that predicted for the full extent of all projects currently proposed.

The Dinawan Energy Hub as a whole also includes the Dinawan Solar Farm currently under a separate assessment. Overall impacts related to the solar farm are currently under assessment, with a detailed description of potential biodiversity impacts provided within the Dinawan Solar Farm BDAR (Biosis, 2023).

Dinawan Solar Farm is currently within the RTS phase and a revised BDAR will be submitted as part of an amendment report that includes a reduction to the size of the development footprint .

Generally, impacts resulting from the project are largely consistent with impacts that are considered to occur at other nearby proposals, more so with those occurring within 50km or less.

The summary of biodiversity impacts from publicly available information was reviewed to gain an understanding of the main biodiversity impacts and how these may contribute to cumulative impacts when considering the development of the project.

Table 86 Cumulative Impacts

Project, description and location	Distance	Overview	Potential biodiversity impacts
Dinawan Solar Farm (RTS stage)	0 km	Includes construction and operation of 800 MW solar farm on approximately 2,000 ha.	Potential impacts to 1,783 ha of native vegetation, including six PCTs and two TECs. Weeping Myall and Natural Grasslands impacts are anticipated. Minor impacts to *Swainsona murrayana* and *Swainsona sericea*. Impacts to dispersal habitat for *Litoria raniformis,* however impacts to primary habitat has been minimised.
Project EnergyConnect (Approved project)	0 km	Includes construction and operation of 330 kV and 500 kV transmission line and Dinawan Substation.	38 PCTs directly impacted. 1,615.20 ha of native vegetation . 232.16 ha of TECs, including 101 ha of Weeping Myall . Loss of habitat of 74 ecosystem species. 20 candidate species impacted .
Argoon Wind Farm (Scoping stage)	1 to 5 km southeast	Up to 106 wind WTGs, battery storage facilities and associated infrastructure	18 PCTs potentially directly impacted including PCT 10, PCT 13, PCT15, PCt 24, PCT, PCT 45 and PCT46. Study area of 10,888 ha . Cumulative impacts to “at risk birds” .
Yanco Delta Wind Farm (Approved project)	1 to 5 km south	Includes construction and operation of 1.5 GW wind farm, including approximately 225 WTGs across 24,000 ha.	10 PCTs directly impacted. 173.4 ha of native vegetation . 88.3 ha of EPBC listed natural grassland TEC impacted . 29.69 ha of Weeping Myall TEC impacted . Loss of habitat of 14 threatened species. Impacts to 1.78 ha of Plains Wanderer habitat . Cumulative impacts to “at risk birds” .
Coleambally BESS	30 km north	Includes construction and operation of 100 MW capacity BESS across 4 ha	Impacts to 2.75 ha of PCT 16 Black Box woodland 2.86 ha of PCT 26

Project, description and location	Distance	Overview	Potential biodiversity impacts
(Approved project)			Weeping Myall woodland. Impacts to 0.45 ha of Superb Parrot breeding habitat .
Coleambally Solar Farm (Approved project)	30 km north	Includes 150 MW solar farm constructed on 570 ha formerly used to support irrigation cropping	Impacts to 0.74 ha of native vegetation including 0.66 ha PCT 16 Black Box woodland and 0.08 ha of PCT 26 Weeping Myall woodland .
Wanganella Wind Farm (EIS stage)	35 km north west	Construction, operation and decommissioning of a wind farm with an estimated capacity of 840 MW, up to 105 turbines and a maximum height of 270m (to blade tip), a 600 MW / 2400 MWh BESS, and temporary worker accommodation	Potential impacts to 11 PCTS, including Weeping Myall Woodlands (63 ha) and Natural Grasslands (1,752 ha). Potential impacts to Plains Wanderer habitat and species such Black Falcon, Pied Honeyeater and White -Fronted Chat.
Bullawah Wind Farm (Assessment stage)	38 km north west	Includes construction and operation of 1 GW wind farm, including approximately 170 WTGs across 33,000 ha.	Estimated impacts to 1012.6 ha of native vegetation including impacts to Weeping Myall Woodland and Natural grasslands . Cumulative impacts to “at risk birds” .
Boags Creek Solar Farm (EIS stage)	40 km north - east	300 MW solar farm, energy storage facility and associated infrastructure	Potential impacts to three PCTS, two TECs and five threatened species.
Booroorban (Saltbush) Wind Farm (EIS stage)	45 km west	Construction and operation of a 400 MW wind farm,including 70 wind turbines up to 280m in height, and a 600 MW / 1200 MWh BESS	Impacts to eight PCTs, including two TECs, Sandhill Pine woodland and Natural Grasslands. Potential impacts to 11 threatened flora and fauna species. Cumulative impacts to “at risk birds”.
Darlington Point Solar Farm (Approved project)	45 km north	Includes 275 MW solar farm (constructed) and 200 MW BESS (under construction) on 1,042 ha formerly used for grazing.	Impacts to PCT 45 Plains Grassland and impacts to PCT 16 Black Box woodland .
Woodland BESS (Approved project)	45 km north	Includes construction and operation of 200 MW BESS across 16 ha.	Potential impacts to five TECs and 17 threatened species .
Yarrabee Solar Farm (Approved project)	45 km south	Includes construction and operation of 900 MW solar farm and BESS on approximately 2,600 ha	Impacts to three PCTs, including one TEC. Impacts to two threatened species.
Devlins Bridge Wind Farm (EIS	50 km north - eas	Construction and operation of a wind farm with up to 94 wind turbines and	Potential impacts to 12 PCTS (390 ha), including five TECs. (175 ha). Potential

Project, description and location	Distance	Overview	Potential biodiversity impacts
stage)		associated infrastructure	impacts to 3 SAII species. Cumulative impacts to “at risk birds”.
Pottinger Wind and Solar Farm (Wind is an approved project, solar is at EIS stage)	50 km west	Includes construction and operation of 750 GW wind farm, 300 solar farm and 500 MW BESS., including approximately 108 WTGs across approximately 15,160 ha.	Impacts to 470 ha of native vegetation for the wind farm and 630 ha for the solar farm, including potential impacts to Weeping Myall Woodland and Natural Grasslands TECs. Cumulative impacts to “at risk birds” .
Currawarra Solar Farm (Approved project)	60 km south	Includes construction and operation of 195 MW solar farm and BESS on approximately 472 ha.	Impacts to three PCTs, including one TEC totalling 3.8 ha of native vegetation .
Tarleigh Park Solar Farm (Approved project)	75 km south	Includes construction and operation of 90 MW solar farm and BESS on approximarely 250 ha.	Impacts to three PCTs, including one TEC totalling 3.37 ha of native vegetation .
Tchelery Wind Farm (RTS stage)	>100km west	Includes construction and operation of 800 MW wind farm, including approximately 120 WTGs	Potential impacts to 16 PCTs, 4 TECs including Weeping Myall Woodland. Potential impacts to seven flora species and five fauna species known to occur. Cumulative impacts to “at risk birds” .
Baldon Wind Farm (Assessment stage)	>100 km west	Includes construction and operation of 1 GW wind farm, including approximately 162 WTGs across approximately 42,000 ha.	Potential impacts to 17 PCTs including Natural grassland TEC . Potential impacts to three threatened species, including Plains Wanderer . Cumulative impacts to “at risk birds” .
The Plains Wind Farm (Assessment stage)	>100km north west	Includes construction and operation of 1.8 GW wind farm, including approximately 226 WTGs across approximately 58,000 ha.	Potential impacts to 558 ha of native vegetation , including 15 PCTs and two TECs, including Weeping Myall Woodland. Potential impacts to Plains Wanderer habitat . Cumulative impacts to “at risk birds”.
Wilan Wind Farm (EIS stage)	>100 km west	Includes construction and operation of 800 MW wind farm, including approximately 138 WTGs	Potential impacts to 607 ha of native vegetation, including 12 PCTs. Potential impacts to two threatened flora species . Cumulative impacts to “at risk birds” .
Keri Keri Wind Farm (Assessment stage)	>100 km west	Includes construction and operation of 1 GW wind farm, including approximately 176 WTGs and 200 MW BESS.	Potential impacts to 2 ,625 ha of native vegetation , including nine PCTs and one TEC, and one threatened flora species. Cumulative impacts to “at risk birds”.

Project, description and location	Distance	Overview	Potential biodiversity impacts
Junction Rivers Wind Farm (Assessment stage)	>100 km west	Includes construction and operation of 750 MW wind farm, including approximately 96 WTGs	Impacts to 68.16 ha of native vegetation , including seven PCTS and two TECs. Cumulative impacts to “at risk birds”.

9. Mitigation and management of impacts

Residual impacts occur once all efforts have been made to avoid and minimise impacts through the design phase of the project. Mitigation of unavoidable impacts is the next step in the impact reduction hierarchy and includes commitments made by the Applicant to further minimise impacts to biodiversity.

Identification of measures to mitigate or manage impacts has been undertaken in accordance with the BAM (DPIE 2020a), including considerations such as:

- Techniques, timing, frequency and responsibility.
- Identification of measures for which there is risk of failure.
- Evaluation of the risk and consequence of any residual impacts.
- Documentation of any adaptive management strategy proposed.

Identification of measures for mitigating impacts related to:

- Displacement of resident fauna.
- Indirect impacts on native vegetation and habitat.
- Mitigating prescribed biodiversity impacts.
- Protecting threatened flora and fauna habitat, especially threatened flora populations identified within the subject land, but outside the development footprint.
- Details of the adaptive management strategy proposed to monitor and respond to impacts on biodiversity values that are uncertain.

The Applicant commits to implementing the mitigation measures listed in Amendment Report #2, and Table 87.

Table 87 Measures to mitigate and manage impacts

	Measures to mitigate and manage impacts	Action	Timing	Responsibility
	Direct and indirect impacts			
B1	Removal of native vegetation and TECs	• The project will look to avoid impacts to native vegetation and TECs through minimisation of clearing footprint during detailed design and preferentially locating infrastructure/plant/materials etc in areas of existing disturbance. • Prescriptions for mitigation of potential impacts of construction activities on retained native vegetation and habitat will be addressed in a site -specific CEMP and BMP sub-plan. The plan will include all measures outlined below: o Minimise vegetation clearance and disturbance, including impacts to standing dead trees and riparian zones. o Micro -siting of all construction related access roads, stockpiles, vehicle parking and site compounds should be located in areas that do not contain high condition native vegetation or fauna habitat. o Physically delineate vegetation to be cleared and/or protected on site and install appropriate signage prior to works commencing. o No-Go Zones should be erected during the construction phase at the extent of clearing works in patches of vegetation to ensure clearing limit is not exceeded and no vehicle or plant equipment movement occurs outside the clearing limit. These areas should be checked as part of the pre -clearing survey. o Protect trees in accordance with the requirements of Australian Standard 4970- 2009 for the Protection of Trees on Development Sites. o Do not damage tree roots unless absolutely necessary, and engage a qualified arborist where roots >50mm are impacted within the Tree Protection Zone. o Retain dead tree trunks, bush rock or logs in -situ unless they are in the development footprint and moving is unavoidable. Reposition material elsewhere on the site or approved adjacent sites. Dead wood and Coarse Woody Debris (CWD) should be lifted and placed into adjacent vegetation, not pushed. o Undertake pre -clearance inspections by a licenced ecologist of vegetation to ensure all no-go areas are appropriately fenced. o If any threatened species (flora or fauna) is discovered during the works, stop work immediately at the site of species identification and notify the onsite Manager. Work will	Prior to construction – during construction	Applicant / Principal contractor

	Measures to mitigate and manage impacts	Action	Timing	Responsibility
		only recommence once the impact on the species has been assessed and appropriate control measures provided. o If any damage occurs to vegetation outside of the impact area (as shown in the CEMP), notify the onsite Manager and Environmental Representative so that appropriate remediation strategies can be developed. • A biosecurity management plan will be prepared as part of the project's CEMP and will detail measures to prevent the spread of weeds and pathogens, and other biosecurity items into or out of the impact area upon implementation. • Secure biodiversity offsets in accordance with the NSW BOS.		
B2	Removal of fauna and flora habitat Removal of threatened fauna habitat	• The project will look to avoid removal of hollow -bearing trees and trees supporting nests during detailed design. • The CEMP will include a plan for pre -clearance surveys. Pre- clearance surveys will include: o Fauna general: ▪ Survey of all areas to be cleared prior to construction to identify and mark all fauna habitat to be impacted including hollow -bearing trees (HBTs) ▪ All HBTs to be removed will follow a two -stage removal process, including knocking of the tree to be removed 24 hours prior to removal. ▪ All fauna habitat to be removed will be surveyed by a suitably qualified ecologist, prior, during and after removal. ▪ Active nests will be avoided from clearing. If clearing is required, clearing cannot occur until young have fledged , or clearing supervised as per below. ▪ If native fauna is likely to be present, a licenced ecologist should inspect the removal and undertake fauna relocation. o Flora general: ▪ All vegetation to be removed is to be clearly marked for removal. ▪ No-Go fencing is to be erected along the clearing extent where partial clearing of a patch i s to occur. No- Go fencing is to be retained until the completion of the construction phase for each relevant stage. • If native fauna is encountered on site, stop work and allow the fauna to move away un -harassed. Engage a licenced ecologist if assistance is required to move fauna.	Prior to construction – during construction	Applicant / Principal contractor

	Measures to mitigate and manage impacts	Action	Timing	Responsibility
		Hollow dependent fauna • Further baselines surveys of a reas of expected high use for Superb Parrot are to be undertaken once the final development footprint has been determined at least one month prior to scheduled vegetation removal. • Pre-clearance surveys are to be undertaken to determine if these areas of habitat are being used by the species 24- 48 hours before vegetation removal. • Removal of hollow bearing trees to occur outside breeding season for Superb Parrot , September to November , and potentially prior to the main vegetation clearing program. It would be ensured that this would not result in the removal of potential nest trees more than one breeding season prior to the main vegetation clearing program. • Two-staged tree removal under ecologist supervision is required for the removal of all trees within potential Superb Parrot high use areas.		
		Threatened raptor species (incl. non-threatened at risk species) • All potential raptor nests within 200 metres of the finalised development footprint are to be mapped at least one month prior to vegetation removal. • Pre-clearance surveys are to be undertaken within one week of scheduled vegetation removal to determine whether nests are in use by threatened raptors, **or** non- threatened at risk raptors (See Section 6.2.3). • Clearing of raptor nests with juveniles present will not be undertaken. • Removal of potential nest trees could occur as early works, outside breeding season, and prior to the main vegetation clearing program. It would be ensured that this would not result in the removal of potential nest trees more than one breeding season prio r to the main vegetation clearing program. • Clearing of vegetation within 200 m of raptor nests with juveniles present will be avoided wherever possible . • Two-staged tree removal under ecologist supervision is required for the removal of all raptor nests.		
		Southern Bell Frog • Construction within waterbodies and irrigation channels if required will be preferentially undertaken when dry as far as practicable.		

	Measures to mitigate and manage impacts	Action	Timing	Responsibility
		• Engaging a qualified and licensed ecologist to be present during dewatering of farm dams is required, to undertake fauna relocation (e.g. turtles, frogs, etc.) into an appropriate nearby habitat. • Once dewatering is complete, dams are to be left for a minimum of 48 hours to allow species such as frogs and yabbies to naturally relocate. Where possible, dewatered dams should be left dry for a minimum of 1 week.		
		Plains Wanderer • Pre-clearance nocturnal surveys will be undertaken when vegetation removal is proposed within PCT 46, mapped potential habitat or impacted Important Mapped Areas. • BMP to include priorities and strategies to reduce predators such as foxes and weed ingress. • BMP to specifically map areas of Plains-wanderer habitat within the development corridor, comprising Mapped Important Areas and areas considered to support higher quality habitats for the species, and ensure these areas are considered in other relevant management plans, such as (but not limited to) Biosecurity Management Plan, Erosion and Sediment Control Plan, Traffic Management Plan (reduction of potential vehicle strike). • During final design, maximise connectivity opportunities where impacts to optimal habitat and Important Mapped Areas are predicted. • Additional and appropriate measures as a result of potential SAII impacts include an additional 40 ha (2.63 ha for Stage 1, and 36.53 ha for stage 2 impacts) of habitat to be managed for nature positive benefits, within a biodiversity stewardship site agreement, that is over and above credit obligations for the Plains Wanderer.	Prior to construction – during construction	Applicant / Principal contractor
		Other threatened species (MNES) • Pre-clearance surveys will be undertaken when vegetation removal is proposed during the breeding season of threatened species (for example between July – October for Southern Whiteface). • Survey results will trigger the implementation of mitigation measures to minimise impacts to breeding individuals, to be further detailed in the BMP.		
B3	Construction adjacent to identified threatened flora populations	**Swainsona murrayana, Swainsona sericea and Maireana cheelii Species** • Ensure No-Go Zones are established early and maintained throughout the life of the construction phase of the project.	Prior to construction – during construction	Applicant / Principal contractor

	Measures to mitigate and manage impacts	Action	Timing	Responsibility
		• Regular monitoring of the health of the retained population will be undertaken throughout the life of the project as guided by the BMP and, if identified, negative pressures acting on the population will be subject to management.		
B4	Indirect impacts on retained native vegetation, habitat and native species	• Project fencing will be designed so as not to create barriers to fauna movement, nor to funnel fauna species into dead ends. Egress points will be provided for fauna that do enter the project site (both construction and operational). • Ensure all works areas and access routes are clearly delineated and sign -posted from the outset of the project construction phase to avoid unauthorised/accidental access to retained areas . • Develop and implement specific erosion and sediment controls described in a CEMP, such as: o Minimising the area and duration of soil disturbance. o Progressively rehabilitate disturbed areas. o Temporary or permanent earth banks and silt fences. Trench blocks (i.e. trench/sack breakers) and compaction of backfilled soils to be used to prevent subsurface erosion. o Specific Erosion and Sediment Control Plans for waterway crossings. • All material stockpiles, vehicle parking and machinery storage, and other ancillary works are to be located within areas considered within the current assessment and not be located within retained vegetation outside the development footprint. • A waste management plan will be developed to ensure rubbish and construction waste are properly managed, and do not attract pest species. • Collection of firewood from within retained vegetation will be prevented through education of staff around the sensitive nature of woodland vegetation within the site and either a total fire ban within temporary construction camps, and within the operation al site, or if fires are permissible within the construction camp ensuring sufficient firewood constantly available. • Cleared vegetation, which may be mulched or stored for re -use on site, should be: o Stockpiled separately from topsoil in a manner which facilitates respreading or salvaging, avoids damage to adjacent live vegetation and does not impede wildlife. o Where possible, mulch produced from native vegetation should be reused for landscaping and site rehabilitation and spread <10cm deep to aid in retention of native seed bank. • Commit to undertaking ongoing pest animal control in conjunction with a local/regional pest control program (or providing a monetary contribution towards) , and relevant landowners, to ensure a strategic approach can be achieved.	Prior to construction – during construction	Applicant / Principal contractor

	Measures to mitigate and manage impacts	Action	Timing	Responsibility
B5	Reduced viability of adjacent habitat due to edge effects	• The CEMP will include a landscaping and rehabilitation management plan that will ensure areas of temporary disturbance are rehabilitated via best practice ecological restoration techniques. • Re-use felled vegetation (logs a nd tree -hollows) and other habitat features such as rocks/boulders to increase the habitat values of any retained and adjacent vegetation. • Any revegetation / rehabilitation or vegetation screening works within and/or contiguous with areas of native vegetation are to use locally sourced (local provenance) seed stock only. All species installed are to be locally indigenous and suitable and characteristic of the surrounding PCTs.	Prior to construction – during construction	Applicant / Principal contractor
B6	Reduced viability of adjacent habitat due to noise, dust or light spill	• The CEMP will include a plan to ensure: o Minimisation of the amount of time that noise, light and vibration impacts are occurring. o Ensure the smallest machinery that can complete the required works are used to reduce potential noise and vibration impacts. o Regularly train workers and contractors to use equipment in ways to minimise noise. o Site managers periodically check the site and nearby residences for noise problems so that solutions can be quickly applied. o All plant and equipment will be turned off when not in use. o Known b reeding habitat such as tree hollows and nests adjacent to works areas will be considered in noise management strategies . • The CEMP will include dust suppression to be undertaken as required using water sprays, water carts or other media on: o Unpaved work areas subject to traffic or wind. o Sand, spoil and aggregate stockpiles. o During the loading and unloading of dust generating materials. • Lighting will be designed in general accordance with Australian Standard 4282 -2019 Control of obtrusive effects of outdoor lighting. • Lighting will be designed so as not to shine onto adjacent retained vegetation and habitats where possible.	Prior to construction – during construction	Applicant / Principal contractor
B7	Transport of weeds and pathogens to/from the site to/from adjacent vegetation	• A biosecurity management plan will be prepared as part of the project's CEMP and will detail measures to prevent the spread of weeds and pathogens, and other biosecurity items into or out of the impact area upon implementation. • The plan will include prescriptions for regular monitoring and control of weeds.	Prior to construction – during construction	Applicant / Principal contractor

	Measures to mitigate and manage impacts	Action	Timing	Responsibility
B8	Adaptive management strategies proposed to monitor and respond to impacts on biodiversity values that are uncertain	• All plans will be progressively reviewed and updated through out operations. • All adaptive management strategy plans, including the BMP, will form part of an overarching Environmental Management Strategy (EMS).	Prior to construction – during construction - operation	Applicant / Principal contractor
		• Preparation of a BMP will ensure mitigation strategies are properly implemented during construction and operation of the project. o The BMP will be prepared by a qualified ecologist or consulting company in consultation with regulators including NSW DCCEEW (BCS). o The BMP will be implemented for all stages of the project (pre -construction, construction, operation and decommissioning). o Mitigation strategies included in the plan will include (but are not limited to): ▪ Permit system for the clearing of native vegetation. ▪ Installation of no -go zones and delineation of vegetation to be removed/retained. ▪ Pre-clearance procedures for vegetation to be removed. ▪ Unexpected finds procedure that includes strategies to minimise, mitigate and potentially offset unexpected impacts to threatened species not recorded during the preparation of the BDAR. ▪ Details of protection procedures for direct impacts on threatened flora. ▪ Requirements for revegetation or screening works including suitable species and requirements around local provenance and seed sources, and the re -use of felled vegetation and salvaged habitat features. ▪ Fencing requirements for No -Go Zones. ▪ Management requirements for stockpiles, vehicle parking, machinery storage, other ancillary works. ▪ Pest management requirements. ▪ An adaptive management strategy and timing of regular review/updates. ▪ Further detail as provided in Section 9.1.1 below. • The BMP will also provide detail on survey requirements prior to micro -siting of infrastructure components within the development corridor and provide criteria that must be met to ensure there are no increase to biodiversity impacts as a result of micro -siting during detailed design.	Prior to construction – construction – operation.	Applicant / Principal contractor

	Measures to mitigate and manage impacts	Action	Timing	Responsibility
B9		• A BBAMP will be prepared to measure any operational impacts on bird and bat species, and ensure suitable mitigation and adaptive management strategies are implemented. The plan will: o Address the prescribed impacts associated with blade strike impacts and include trigger levels to manage impacts during operation s. o Provide guidance and develop a framework for monitoring of impacts, including baseline and ongoing monitoring requirements, including for nesting sites on man - made structures. o Utilise survey data and complete statistical analysis of species, and develop triggers for number of species incidents. o Develop strategies on consultation with NSW DCCEEW (BC S) for reducing bird and bat collision risk. o Identify additional mitigation measures, further detailed in Section 9.1.2 below. If any amendments to the hub height are required, the CRM will be updated prior to construction and the revised results will be included in the BBAMP.	Prior to construction – construction – operation.	Applicant / Principal contractor
B10		• Preparation of a Groundwater and Soil and Water Management Plan (or similar) that will: o Describe measures that will be employed to minimise soil erosion and the discharge of sediment and other pollutants from the site during construction and operation of the project. o Describe how water will be managed to achieve compliance with consent and EPL licence conditions. o Establish responsibilities and reporting requirements. o Establish surface water quantity and quality monitoring requirements. o Establish trigger action response plans to enable progressive improvement.	Prior to construction – construction – operation.	Applicant / Principal contractor
	Prescribed impacts			
B11	Turbine strike and barriers to movements	• All turbines considered high risk, as initial shown in Section 6.3.3, or upgraded to high during adaptive management strategies, will be feathered at wind speeds below operational cut -in speeds as a form of proactive mitigation strategy to minimise the potential for turbine strike impacts. • Seasonal curtailment - During rare flood events , it is possible that habitat provided by larger ephemeral waterbodies may increase in area such that suitable habitat for 'at- risk' waterbirds occurs in close proximity to operational turbines. If this occurs, it is recommended that:	During construction - operation	Applicant / Principal contractor

	Measures to mitigate and manage impacts	Action	Timing	Responsibility
		o Monitoring of turbines within 500m of ephemeral waterbodies and creek lines increases during major flooding events . The criteria for what is considered a major flooding event would be determined during preparation of the BBAMP, but likely to be considered to be once extensive inundation of structures and roads occurs from prolonged rainfall within the locality. o Turbines may be curtailed to reduce the risk of turbine collision when suitable habitat occurs within 500m of a blade tip of a turbine during the flooding event . These areas will be identified within the final BBAMP. o End of curtailment would be determined via field survey confirmation that birdlife and habitat value had reduced significantly enough back to pre -flood conditions for operation of the turbines to not increase collision risk for ' at risk ' species. Further information is provided in Section 9.1.2. • Consideration of automated avian detection systems at high risk turbines to allow for detection of bird species and the triggering of curtailment of high risk turbines, such as the IdentiFlight avian detection system (IDF) , or other technologies, as a means of pre -emptively reducing any potential mortality events. Installation at the construction phase of the project, is expected to allow IDF to have captured enough data to be able to recogni se target species such as Wedge-tailed Eagle with a high level of confidence. Further information is provided in Section 9.1.2. • Consideration of SMART (Song Meter with Analysis and Remote Transfer) system by Wildlife Acoustics for microbats at turbines within 500m of ephemeral Blackbox dominated vegetation . • Pest animal control to reduce the occurrence of foxes, cats and dogs, likely to scavenge microbat carcasses, potentially skewing the results or searches. • Establishment of lighting systems that reduce insect (prey) attraction. • Minimising availability of raptor perches on infrastructure within close proximity to turbines and overhead powerlines. • Prompt animal carcass removal within 200m of a turbine (within 24 hrs of discovery) to minimise raptor scavenging opportunities and reviewed annually. • Annual reporting requiring accounting for all events over the preceding 12 months and reinvestigation of the effectiveness of the current mitigation strategy. • Where blade strike triggers are found to occur , implement adaptive management strategies as outlined in Section 9.1.2 below.		

	Measures to mitigate and manage impacts	Action	Timing	Responsibility
B12	Vehicle strikes	• Speed limit for construction vehicles along McLennons Bore Road, Fernbank Road, Wilsons Road and Goolgumbla Road, should be reduced to minimise increased risk of vehicle strike on fauna. • Speed limits within the subject land should be enforced for the life of the project. • Fauna species (particularly threatened species) susceptible to vehicle strike will be included in project inductions to increase knowledge of the wildlife occurring within the subject land. • A vehicle strike protocol, including details of local WIRES contacts will be created and made available to all staff. • Suitable speed limit reductions will be determined during preparation of the BMP. • Prompt carcass removal, if collision do occur to prevent further potential collisions with scavengers. • Monitoring of roads and collisions and mapping of any hotspots where increased mitigation may be required. • Mapping of Plain-wanderer habitat as part of the BMP and ensuring suitable mitigation is implemented where roads occur within or close to potential habitat for the species.	During construction - operation	Applicant / Principal contractor
B13	Construction in waterways & removal of dams	• Construction within waterbodies will be preferentially undertaken when dry. • During the micro siting process, where possible, construction in wet areas including dams, drainage lines and creek lines should be avoided. • Where avoidance or undertaking works when waterbodies are dry is not possible, all areas containing water, e.g. dams, must be surveyed as part of the pre-clearance and clearing survey outlined in the CEMP including: o Engaging a qualified and licensed ecologist to be present during dewatering of farm dams, to undertake fauna relocation (e.g. turtles, frogs, etc.) into an appropriate nearby habitat. o Once dewatering is complete, dams are to be left for a minimum of 48 hours to allow species such as frogs and yabbies to naturally relocate. Where possible, dewatered dams should be left dry for a minimum of 1 week.	Prior to construction – during construction.	Applicant / Principal contractor
B14	Fragmentation of movement corridors	• Investigate the establishment of Biodiversity Stewardship Sites in the immediate locality of the project to ensure local habitats outside the project are improved and conserved in perpetuity. • Ensure ongoing protection of roadside corridors as far as practicable and prevent indirect impacts through implementation of the BMP. • The following opportunities will be fully explored as a part of the detailed design:	Prior to construction – construction.	Applicant / Principal contractor

	Measures to mitigate and manage impacts	Action	Timing	Responsibility
		o Opportunities to further minimise the development footprint and clearing within important movement corridors for fauna. o Opportunities for post-works restoration of habitat connectivity within important movement corridors for fauna. o Areas subject to temporary disturbance will be rehabilitated using a native species planting schedule as much as practical considering any operational and safety constraints. o The total area exposed and cleared at any one time will be minimised and planned to allow for fauna movement during construction and periods of temporary disturbance		
B15	Impact to hydrological patterns	• Impacts to retained vegetation such as areas of Black Box woodland, from built up tracks, turbine hardstands, and other infrastructure altering hydrology on ephemeral floodplains, will be minimised through detailed design and implementing measures to ensure the flow of water maintains the frequent or semi-regular inundation patterns required to maintain vegetation health. • Hydrology modelling will be undertaken if it is determined that a risk of substantial changes to hydrological regimes could occur. • Wetlands mapped on the Wetlands of NSW dataset (NSW DCCEEW 2010a) are to be assessed in the preparation of the BMP and included in ongoing monitoring where there is a potential for longer-term indirect impacts from changes to hydrology to occur. • Adaptive management measures will be outlined in the BMP that ensure if impacts occur as a result of altered hydrology mitigation is implemented.	Prior to construction – construction – Post construction	Applicant / Principal contractor / Operator

9.1. Adaptive management strategy

Construction and operational management plans will all contain an adaptive management component. Adaptive management strategies will be receptive to any new and relevant data that may arise through ongoing assessment and monitoring and are key to the successful implementation of crucial objectives yet also allow flexibility to changing dynamics and ongoing feedback and results. This includes measures to monitor predicted and uncertain impacts which will trigger adaptive management actions and allow for effective and quick responses.

It is expected that an overall EMS would be developed with specific sub management plans that will entail an adaptive management strategy component. Those sub management plans in relation to biodiversity include but are not limited to a:

- Biodiversity Management Plan (BMP).
- Bird and Bat Adaptive Management Plan (BBAMP).

Adaptive management plans (or components of pans) will include the following key components:

- Framework and objectives.
- Baseline information.
- Monitoring methods, frequency and Before After Control Impact (BACI) design.
- Trigger-level and unacceptable impacts for further investigation and responsive adaptive management.
- Monitor and report on the effectiveness of impacts and trigger levels.
- Operational mitigation measures.
- Residual prescribed impacts, compensatory measures and additional offset calculation framework.
- Compliance management and summary.

9.1.1. Biodiversity Management Plan (BMP)

A BMP would be implemented demonstrating adaptive management strategies to ensure key milestones are achieved including the following project commitments:

- Protecting vegetation and fauna habitat outside the development footprint and managing the remaining remnant vegetation and fauna habitat within or surrounding the development corridor using improve and maintain principles, minimising indirect impacts, especially to known threatened flora species and potential fauna species such as Plains Wanderer, Southern Bell Frog and Superb Parrot.
- Demarcation of retained areas of vegetation and particularly important mapped areas or potential optimal habitat for Plains Wanderer .
- Fauna monitoring and management protocols including identification and reporting of fauna mortalities to the relevant BCS office.
- Collection of detailed baseline weed data and ensuring no increase of key emerging weeds or invasive pests.

- Commit to ongoing consultation on vertebrate pest control baiting programs working cooperatively with local landholders .
- Training and education awareness for all construction staff and operational staff on key threatened species, both flora and fauna, relevant to the region and project. This would include tool box talks and supplying information in break rooms on relevant species information.
- Mapping and identification of individual tree hollows and stick nests and developing measures to minimise impacts to these features.
- Pre-clearing protocols, including pre -clearing inspections, establishment of exclusion zones and on - ground identification of specific habitat features to be retained and/ or relocated.
- Monitoring of soil and water controls to prevent indirect impacts associated with water pollution to all waterways.
- Clear performance targets and monitoring criteria.
- Corrective actions.
- Timing and responsibilities.

A recommended outline of the BMP is provided below with further details demonstrated within the mitigation measures listed in Table 87.

- Introduction
  - Background
  - Management scope and objectives
- Planning requirements
- Construction and operational activities
- Habitat management
  - Flora and fauna values
  - Soils
  - Weeds and pests (i.e. key emerging weeds and priority weeds)
  - Baseline data
- Environmental mitigation measure
- Site specifics
  - Inductions
  - Erosion /sediment control
  - Retained vegetation and rehabilitation works
- Adaptive management
  - Performance criteria, triggers, and responses
- Compliance management

- Review and Improvement

The BMP will also provide detail on survey requirements prior to micro -siting of infrastructure components within the development corridor and provide criteria that must be met to ensure there are no increase to biodiversity impacts as a result of micro -siting during detailed design.

9.1.2. Bird and Bat Adaptive Management Plan (BBAMP) Framework

Framework and objectives

The overall objectives of the BBAMP are to provide an effective monitoring program and strategy to manage and mitigate operational issues relating to bird and bat impacts for the wind farm, to monitor and assess for impacts considered uncertain at the time of approval, and prescribe additional compensatory measures for residual prescribed impacts, if required. Additionally, the framework aims to provide certainty to the consent authority and stakeholders prior to approval that measures for minimising biodiv ersity impacts during operation have been clearly defined that address potential prescribed impacts that cannot be quantified prior to approval.

Guided by the collision risk assessment and turbine risk assessment, and additional baseline data to be collected from within the subject land, a detailed BBAMP will be developed prior to operation of the wind farm, in conjunction with relevant stakeholders, to confirm adaptive management measures around the potential for collision mortality, barrier effects and behavioural displacement of select resident, nomadic and migratory bird and bat species. A draft BBAMP will be submitted during RTS, and once more detailed designs and turbine locations are known.

The Applicant will commit to mitigation measures that must be underpinned by a rigorous monitoring program involving at least three years of carcass searches, including those undertaken by conservation detection dogs when available , and a robust Trigger Action Response Plan (TARP). The BBAMP will be finalised in consultation with D PHI and NSW DCCEEW prior to commissioning of any turbines, however a framework of the key elements of the Draft BBAMP is provided in Appendix 9.

Baseline information

The BBAMP will include the existing baseline data on threatened bird and bat species as well as any non -threatened species considered to be at risk of collision impacts ('at -risk' species) from the project . One of the key objectives for the collection of detailed baseline data is to gather adequate replicable information on the existing bird and bat species abundance and activity (site utilisation) prior to commencement of operation of the wind farm. This baseline data was collected across two years and eig ht seasons, and utilised to form risk assessments and CRM presented in this BDAR. This include s the setup of impact zones and control zones that will continue to be monitored pre commissioning of turbines, during construction and during operation for an agreed period of time. The data collected is utilised to detect changes in the species use of the site (including changes in activity patterns such as avoidance) post -commissioning and during operation of the wind farm, and allow for stringent mitigation mea sures to be implemented as, and when, they are required.

Investigations of the site utilisation patterns of bird and bat species within the subject land have been established as a Before -After -Control -Impact (BACI) assessment design. It is important that bird and bat surveys continue once the wind farm becomes operational and that the survey methods used prior to construction are replicated such that resul ts from before and after operation are appropriately comparable.

As such the bird and bat utilisation survey points established, and monitored to date, will continue to be used through the implementation phase of the BBAMP.

Following commissioning of turbines, ongoing monitoring would mirror the baseline surveys, across all seasons, for three to five years following commissioning of the wind farm , dependent upon individual turbine risk and adaptive management.

Trigger-level and unacceptable impacts for further investigation and responsive adaptive management

In order to effectively measure impacts to any at -risk populations or species during the operation phase of the development, and to actively re -assess the suitability of turbine curtailment strategies the development of alerts, trigger levels and adaptive mitigation response to a potential event is required.

Triggers for responsive management actions will apply where the number of collisions per annum represents a low, but uncertain potential to result in a negative effect on the local population of a species. This is a precautionary objective, as it will be i mplemented at levels substantially below numbers of collision mortality events that are considered likely to represent a significant impact on the viability of the overall population of any species.

A detailed decision framework will be included for triggers and mitigation associated with both the threatened and non -threatened at -risk species during the development of the BBAMP, and will be finalised prior to commissioning of turbines. The Draft BBAMP is provided in Appendix 9.

Monitor and report on the effectiveness of impacts and trigger levels

Purpose -trained dogs have been shown to be highly efficient at detecting carcasses (Mathews *et al.* 2013) and have been used for this purpose at a number of wind farms in in Australia. Using purpose -trained dogs obviates the need for formal transects to be established in the search zones as dogs use scent to detect carcasses and are permitted to roam to do so. Every dog would be fitted with a GPS tracking device while undertaking searches. GPS tracks will be downloaded and maintained for future reference and used for analyses of search effort and coverage. GIS maps showing routes taken by dogs will be made available to NSW DCCEEW on request. The use of trained dogs is the preferred method for searches and will be used, provided appropriately trained dogs and handlers are available. Dog handler(s) must have demonstrated capacity to identify bird and bat species of NSW. As far as practicable, a target of at least 50% of the required annual carcass searches will be undertaken by purpose- trained dogs.

However, if the use of dogs is not practicable or are unavailable for the project the alternative is to engage suitably trained ecologists or environmental officers. Observers will search by walking transects through the potential fall zone, in this case, an estimated 200 meter radius, and a repeated 100 meter pulse search. Searches will be undertaken by persons with demonstrated capacity to identify bird and bat species of NSW and relevant to the subject land. Transects will be spaced 6 meters apart, or as near to 6 meters as is practical, and observers will thus search the ground for 3 meters either side of each transect. Each observer will carry a hand -held GPS unit and record transects they walk. GPS tracks will be downloaded and maintained for future reference and used for analyses of search effort and coverage. GIS maps showing transects w alked and will be made available to NSW DCCEEW on request.

It is proposed that carcass searches be undertaken in accordance with the schedule in Appendix 9 pending adaptive management, triggers and introduction or amendments to mitigation measures.

It is considered that ensuring all turbines are regularly monitored, rather than focusing on a subset of turbines, will better suit adaptive management objectives of the BBAMP, including ensuring correct ongoing risk ratings for each operational turbine.

It is likely (but uncertain at present) that carcasses of bats and small birds will be scavenged quickly within the subject land. Carcass persistence trials will be undertaken during the course of the operational monitoring, and prior to its commencement, particularly to inform analyses required to extrapolate from numbers of carcasses detected to estimate total number of collisions. In order for the search regime to accommodate the likelihood of rapid scavenging, a relatively short period between initial searches is important.

Further details on carcass searches/monitoring, persistence trials, incidental finds and data analysis are included in the detailed BBAMP in Appendix 9 .

Carcass searches/monitoring and carcass persistence trials will also be completed in conjunction with searcher efficiency trials, of which two will be conducted per year for the first three to five years of monitoring. Searchers do not routinely find all carcasses, so it is necessary to ascertain the efficiency of searches in order to determine and apply appropriate correction factors for carcasses missed to inform estimation of total collision mortality for species of concern.

Operational mitigation measures

It is not feasible to foresee what potential factors might lead to an unexpectedly high level of collisions by any species, and therefore appropriate mitigation measures can be prepared only if a cause, or causes, of ecologically significant impacts on the relevant species is known. Additionally, flexibility in mitigation shall be designed to encourage the implementation of innovative and new technologies over the operational life of the wind farm where appropriate.

If a cause is not readily apparent, then investigation of the reason(s) for the impact must be undertaken prior to proposal of a mitigation strategy. Advice from NSW DCCEEW will be sought with regard to design and implementation of any such investigations and of an ultimate mitigation strategy, if required. NSW DCCEEW will be notified within two working days of determination by the wind farm operator or the contracted qualified ecologist that a trigger level or unacceptable impact for any species of concern is detected.

The BBAMP will detail considerations of mitigation measures to reduce the number of Tier 1, Tier 2 and Tier 3 impacts. Broadly, these will include general mitigation measures and specific trigger related mitigation, including but not limited to, those demonstrated in Appendix 9.

The need for adjustments to the mitigation strategy will be determined through regular monitoring on the efficacy of the current strategy (as prescribed in the BBAMP). Adjustments may include additional curtailment measures if an unacceptable number of strikes are found to occur, however the option to reduce the level of curtailment will also be prescribed, if sufficient evidence can be provided that it is safe to do so. Such evidence may include few, to no, recorded bird/ bat strikes at a given turbine, combined with a comparison to the results of a trial period of reduced curtailment. As such, turbines currently assessed as low risk of impact may become curtailed in the future, or those turbines currently considered to present a moderate risk of impacts may be removed from the curtailment strategy, or have curtailment strategies increased. All such changes would be guided by the monitoring and adaptive management processes outlined in the BBAMP.

Detailed monitoring on the efficacy of the mitigation strategies, including proactive mitigation and responsive management triggers, has been committed to by the Applicant , as is detailed herein. This includes a schedule of proposed carcass searches utilising trained sniffer dogs (when available) focusing on an intensive search period over the initial six months of operation (must include the first spring/summer season) whilst animals habituate to the presence of the turbines. This is then followed by regular ongoing searches of all turbines for

a period of three to five years, and then ongoing based on the results of the searches. Triggers have been developed and committed to, which based on the results of the carcass searches, will ensure that mitigation strategies (scaled based on the severity of the trigger) are promptly implemented and will arrest the occurrence of any unacceptable events (i.e. strikes). Mitigation strategies include the ongoing opportunities for alternative actions to turbine curtailment such as audible and ultrasonic noise broadcasting to create avoidance behaviour, or the use of radar to induce turbine shutdowns, with such technologies expected to develop greatly over the life of the project.

SMART curtailment

'Blanket curtailment' approaches although often successful in reducing bat fatalities, also result in a reduced energy generation capacity and often coincide with periods of high electrical demand thus rendering them potentially unsustainable in the long -term for many wind generation operations.

In an attempt to reduce bat fatalities while optimizing energy production, more tailored strategies can be developed to increase the time during which turbines can continue operation and power production relative to blanket operational mitigation approaches. 'Smart curtailment' approaches are being developed that use and combine information about real -time bat activity and environmental information, such as weather conditions, in order to guide curtailment decisions based on real- time risks to bats. Smart c urtailment provides wind energy facilities with a pathway for reducing bat fatalities whilst also reducing curtailment time when compared to blanket curtailment techniques thereby maximising energy production whilst minimising impacts to bats.

Studies trialling the approach overseas have achieved significant reductions in bat mortality without the need for blanket curtailment of turbines at lower wind speeds (Hayes et al. 2019). However, there are no comparable studies available for Australian wind farms. Furthermore, overseas studies have often been used in conjunction with automated bat call identification software, which is not currently available for Australian bat species. Automated identification allows bat calls to be identified to species level in real- time and in a consistent, repeatable and time- efficient way.

Recent technological advances have seen the release of smart curtailment systems that are considered applicable to the project . For example, the SMART (Song Meter with Analysis and Remote Transfer) system by Wildlife Acoustics, allows ultrasonic detectors to be mounted to the nacelles of turbines and files containing probable bat call information to be transmitted in real -time vi a modems and the cellular network to a database system where the information can then be analysed. The SMART system allows for use r defined alarms which match bat call parameters that can be directly input into curtailment decision -making processes in real -time. Technology such as the SMART system provides real potential for a tailored curtailment approach for the project that would provide operational flexibility in allowing turbines to continue producing energy when they might otherwise be curtailed based only on wind speed information.

When the smart curtailment acoustic monitoring system is engaged, real -time monitoring of microbat activity would allow turbines to be curtailed when bat activity reaches a pre -determined threshold. The SMART curtailment acoustic monitoring system can also be switched off when wind speeds reach thresholds above which bat activity (and therefore collision risk) are considered to be negligible. Under these circumstances, electricity generation would proceed with out intervention until wind speeds fall below th e pre -determined threshold. This approach has been the subject of a study by Hayes et al (2019) that found implementing a similar acoustic monitoring and remote curtailment system when wind speeds were below 7.9 m/s, without the use of blanket low wind speed curtailments, reduced bat fatalities by 85 %.

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Technologies such as the SMART system will be included in the BBAMP as possible mitigation strategies available to the operational project if an unacceptable level of impacts to bats was found to be occurring.

Automated avian detection systems

Technology related to smart curtailment systems for birds are also advancing at a rapid rate. Automated avian detection systems allow for detection of bird species and the triggering of curtailment of select turbines. The IdentiFlight avian detection system (IDF) was designed in the USA specifically to reduce Golden Eagle mortalities on wind farms, with testing suggesting that use of the system has achieved an 85 percent reduction in eagle fatalities at a wind farm site in Wyoming, USA (McClure et al. 2022).

The IDF system combines high-precision optical technology with artificial intelligence to detect raptors and other protected bird species within a 1 kilometre range. The IDF System tracks the movement of objects within its range, and quickly determines whether any objects are birds, and can learn to recognise key species of interest such as eagles. If a bird of interest is identified, the system begins to track the target, recording its position, predictive trajectory, and course probability relative to turbines in real time. Curtailment conditions are pre-determined, and if the target is predicted to cross into the rotor swept area of a turbine, the IDF Base Station issues a signal to the wind farm SCADA (supervisory control and data acquisition) system, which sends control signals to curtail relevant turbines to avert any collision. The system provides the visual and quantitative data needed to reduce or avoid collisions, but does not detect or document the collisions *per se*. This requires a carcass monitoring program, which is detailed above.

Unlike radar and other technological approaches to automated curtailment for birds, what distinguishes the IDF system is its ability to recognise different species and make curtailment decisions based on target species. Assessment of the effectiveness of the IDF system in Australia, at the Cattle Hill Wind Farm in Tasmania (Goldwind 2022), concluded that IDF significantly reduced eagle collisions at the site. Furthermore, the data collected from the IDF system has provided detailed monitoring information on avifauna activity, and valuable insights into the understanding of eagle behaviours. The volume and quality of information captured by IDF is considered far more comprehensive than what is possible using traditional bird survey methods conducted by human observers.

For the IDF system to work accurately, it requires a large volume of bird images to be collected and classified to build a convolutional neural network that allows the system to recognise target species accurately, and minimise false triggers. It is therefore not suitable as a reactive management approach, but a means of pre-emptively reducing any potential mortality events. If installed early in the construction phase of the project, by the time wind farm operations commence IDF is likely to have captured enough data to be able to recognize target species such as Wedge-tailed Eagle with a high level of confidence, and may also be able to group other bird species that have similar morphological characteristics based on their wingspan and dimensional data. The IDF curtailment prescription relevant to the site could also be adjusted as additional knowledge of eagle populations utilising the site is gained through the IDF system.

The commissioning stage is also likely to be the highest collision risk period for eagles, being the first time they will encounter the operational turbines, therefore having the IDF system (or its more advanced equivalent) tested and validated as fully operational by the time operations commence is almost certainly going to reduce future mortalities.

The effectiveness of the system is likely to vary between sites and performance will be dependent on site topography, vegetation, wind farm layout and the number of IDF towers able to be accommodated within the wind farm footprint. A detailed implementation plan would need to be developed to ensure that the system could work effectively for the project.

IDF is far from the only new and emerging technology available to operational wind farms to reduce potential bird and bat collisions. A recent peer -reviewed paper published by Orsted (an offshore wind energy developer) and DHI (a water software development and engineering firm) provides a catalogue and assessment of available monitoring technologies for flying birds and bats at offshore wind farms in operation, with a focus on managing the risk of collision (Skov et al. 2023). Whilst the focus of the paper relates to offshore wind farms, the technologies reviewed have application potential onshore, and for the project. The assessment includes a comparison of the multiple applications for the following technologies:

- Radar (2D and 3D).
- Digital camera .
- Accelerometer .
- Acoustic equipment .
- Large-scale survey platform and large -scale telemetry .

		Implementation			Density		Species				Avoidance			Collision	
Type	Equipment	Retrofit	Installation Complexity	Cost of equipment	Flux outside OWF[1]	Flux inside OWF[1]	Distribution and behaviour	Species id	Flight speed	Flight height	Macro avoidance	Meso avoidance	Micro avoidance	Collision rate	Shutdown
Radar	3D Radar[2]	●	▼	▼	▲▲	▲▲	▲	▼	▲▲	▲▲	▲▲	▲▲	▼	▼	▲
	2D Radar[2]	●	▼	●	▲▲	▲▲	▲	▼	▲▲	-	▲▲	▲▲	▼	▼	▲
	Radar coupled to camera[2]	●	▼	▼	▲▲	▲▲	▲▲	▲▲	▲▲	▲▲	▲▲	▲▲	▲▲	▲▲	▲▲
	Radar with fixed antenna[2]	●	●	●	●	●	▼	▲	●	-	▲	▲	▼	▼	●
Camera	Fixed camera[2]	▲	▲	▲	-	-	▼	▲	▼	-	▼	▼	▲▲	▲▲	●
	Dome with multiple fixed cameras	●	●	▼	-	-	▲▲	▲▲	▼	-	▼	▼	▲▲	▲▲	●
	Moving camera	▲	▲	●	-	-	▲▲	▲▲	▼	-	▼	▼	▲▲	▲▲	●
Other	Accelerometer as single sensor	▼	▼	▼	-	-	-	-	-	-	-	-	-	●	-
	Accelerometer coupled to camera	▼	▼	▼	-	-	-	-	-	-	-	-	-	▲	-
	Microphone[2]	▲	▲	▲▲	-	-	-	▲▲	-	-	-	-	-	-	●
Survey Platform	Ship-based surveys	-	-	▼	●	●	▲	▲▲	-	▲▲	▲▲	●	▼	▼	▼
	Aerial visual surveys	-	-	▼	▼	▼	●	▲▲	-	▲▲	▲▲	●	▼	▼	▼
	Aerial digital surveys	-	-	▼	▼	▼	●	▲▲	-	▲▲	▲▲	●	▼	▼	▼
	UAV/drone surveys	-	-	▼	▼	▼	●	▲▲	-	▲▲	▲▲	●	▼	▼	▼
Telemetry	Radio transmitters	▼	▼	●	▼	▼	▲▲	▲▲	▲▲	▲▲	▲▲	●	▼	▼	▼
	Satellite transmitters	▼	▼	●	▼	▼	▲▲	▲▲	▲▲	▲▲	▲▲	●	▼	▼	▼
	Archival tags	▼	▼	●	▼	▼	▲▲	▲▲	▲▲	▲▲	▲▲	▼	▼	▼	▼
	Acoustic telemetry	▼	▼	●	▼	▼	▲▲	▲▲	▲▲	-	●	▼	▼	▼	▼

Very good	▲▲
Good	▲
Average	●
Bad	▼
Not Available	-

Plate 1 **Scoring system applied in the assessment of monitoring technologies (Skov et al. 2023)**

Plate 1 provides an overview of the results of the comparison and provides insight into the suitability of the various technologies available depending on the desired application and mitigation requirements. The paper goes on to recommend the combination of technologies that best meet the aims of the mitigation. For example, if the mitigation objective were to shut down a turbine to prevent collision with a certain highly at-risk species, Skov et al (2023) recommend the following (Plate 2).

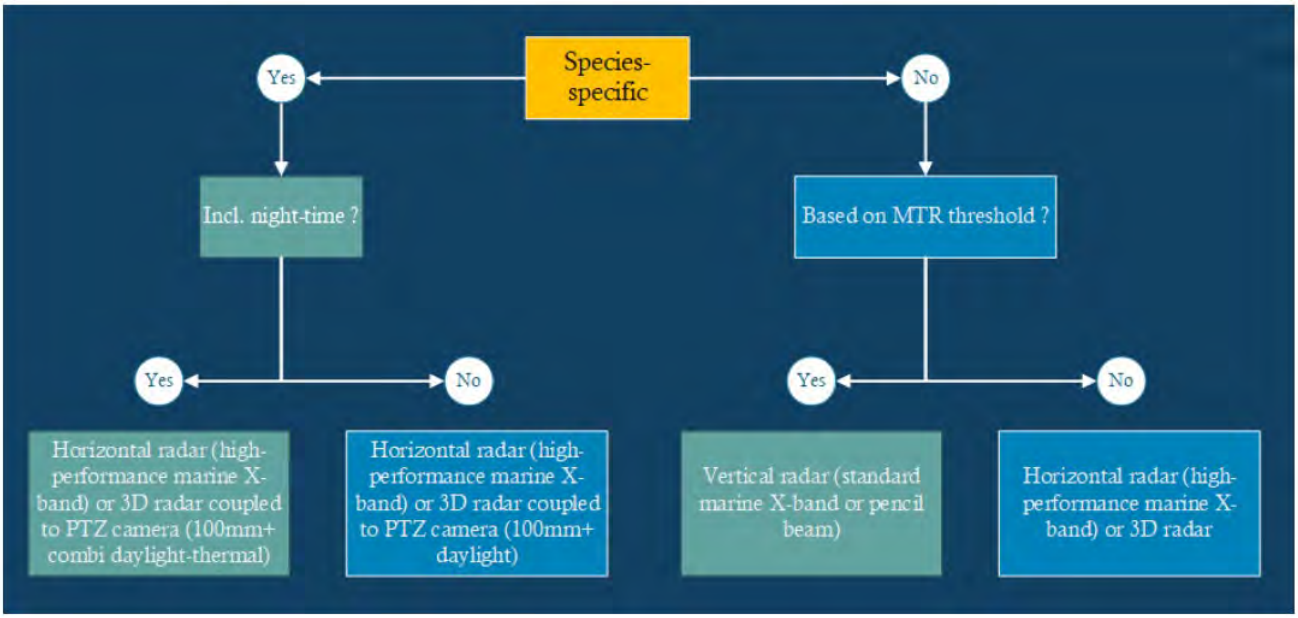

Plate 2 Recommended solution for turbine shutdowns (MTR is migration traffic rate, and relates to birds flying per hour, per kilometre).

The applicability and use of automated detection systems for the project requires further critical assessment, which will be undertaken during the finalisation of the BBAMP. However, assuming the site is suitable for installation of such technologies, automated detection systems may be a valuable method to avoid potential collisions for at-risk species. The effectiveness of any installed automated system would be monitored using carcass search methods as detailed above.

Further effective mitigation strategies that will be considered further as part of the BBAMP include pest animal control to reduce the occurrence of foxes, cats and dogs, likely to scavenge microbat carcasses, potentially skewing the results of searches, establishment of lighting systems that reduce insect (prey) attraction, and annual reporting requiring accounting for all events over the preceding 12 months and reinvestigation of the effectiveness of the current mitigation strategy. In the event of trigger level investigations being required, the Applicant has committed to increased carcass searches to determine the actual severity of the event, potential temporary turbine shutdowns (while the investigation is underway), re-assessment of existing low-wind speed curtailment strategy, and ultimately greater curtailment of turbines if unacceptable events are found to be re-occurring.

The Applicant is prepared to work with authorities to share data and continue to contribute to the growing body of literature around bird and bat collisions at operational wind farms. Operational monitoring and adaptive management will ensure that any unacceptable events that may occur are captured and mitigated, thus providing an ongoing feedback loop to further reduce the potential for the project to result in substantial operational impacts to bird and bat species and populations.

Seasonal curtailment

A key strategy to minimise the potential for at -risk waterbird and other nomadic species, such as Australasian Bittern, to collide with operational turbine blades is the implementation of increased monitoring during rare flood events .

Flooding events, such as th at observed within 2022 , may occur every 5 - 7 years, and it is possible that habitat provided by larger ephemeral creeklines and waterbodies may increase in area such that suitable habitat for at-risk waterbirds occurs in close proximity to operational turbines. Across the lifespan of the project currently, it is anticipated that these events could occur up to three times. During these events, it is proposed to;

- Increase monitoring of turbines within 500m of ephemeral waterbodies and creek lines during flooding events .
- Turbines may be curtailed to reduce the risk of turbine collision when suitable habitat occurs within 500m of a blade tip of a turbine during the flooding event.
- End of curtailment would be determined via field survey confirmation that birdlife and habitat value had reduced significantly enough back to pre -flood conditions for operation of the turbines to not increase collision risk for at risk species .

Finalisation of the BBAMP will include details of catchment -scale flood event monitoring requirements that would trigger additional monitoring of habitats in proximity to the project.

Optimised Smart curtailment

Optimised curtailment at wind farms uses thermal imaging, artificial intelligence, and operational data to move beyond blanket shutdown rules toward targeted, risk -based turbine control. Thermal cameras installed on monitoring selected turbines can record night -time airspace from before sunset to after sunrise throughout the bat season, capturing activity of microbats, birds, flying foxes, insects, and turbine blades. Video is uploaded to the cloud where AI and advanced machine vision detect objects, track individual animals across frames, and classify them by type. Activity is aggregated into 10 -minute bins and analysed alongside SCADA turbine data, enabling correlation between wildlife movement and turbine operating conditions. In addition to quantitative metrics, consolidated summary images from five -minute intervals provide visual insights into behaviour, flight paths, and interaction with rotor- swept zones, supporting ecological interpretation beyond raw counts.

Publicly available research on “smart” or “informed” curtailment indicates that combining real -time wildlife detection with turbine control algorithms can substantially improve both conservation and energy outcomes. Rather than applying fixed low -wind -speed shutdown thresholds across entire sites, AI -driven systems selectively pause individual turbines only during high -risk periods, such as peaks in microbat or flying fox activity. Although untested in an Australian environment, in North America, studies re port that optimised curtailment can reduce bat fatalities by approximately 80 –85% (EPRI, 2024)while cutting curtailment -related energy losses by up to 50% compared to traditional blanket restrictions. Integrating thermal monitoring with SCADA data therefore presents strong potential to enhance biodiversity protection while maintaining generation efficiency, offering a data -driven pathway to balance environmental compliance and commercial performance at modern wind farms .

Residual prescribed impacts and compensatory measures

Following implementation of required mitigation, additional offset requirements for prescribed impacts may be required to offset residual impacts in accordance with the BAM. This may be achieved via the retiring of credits or payment to the B iodiversity Conservation Fund. The amount of credits required to be offset would be calculated by the number of actual and modelled impacts, accounting for scavenger impacts, to individual species in a given year, multiplied by the biodiversity risk weighting (BRW) for the relevant species. This method is commensurate with Equation 3 (Section 10.1.3) of the BAM for calculating species credit requirements for flora species assessed by a count of the number of individuals, which is aligned with the calculation of offsets required for imp acts to individual bird and bat strikes. This method also captures the relevance of a current threatened listing for a species, and is in accordance with the expectations of BAM implementation for prescribed impacts (Section 8.6 of the BAM).

Where an unacceptable impact to a non -threatened 'at risk' species is encountered or estimated, following mitigation, then a like for like risk weighting may be applied from a similar threatened species i.e. – Wedge-tailed Eagle to Little Eagle, following consultation with NSW DCCEEW. Any credit generation required to offset residual prescribed impacts would be calculated during the annual reporting, which will also demonstrate that credits required for the preceding 12 months have been retired under the BOS.

Monitoring and adaptive management triggers for barrier effect impacts

Whilst the focus of the above section is on mitigation of the impacts associated with collision risk, it is acknowledged that there remains some potential for impacts associated with barrier effects for threatened and/or at -risk species. During operational monitoring, if there is a noted discernible statistical reduction or anomaly in abundance of an at -risk or threatened species, additional investigations into possible causes would occur. If it is determined that the operational wind farm was a key factor, additional assessments against key relevant Test of Significance criteria or Significant Impact Criteria would be used to quantify or measure the level of impact. If these assessments determined that an event resulting from barrier effects warranted addit ional mitigation, compensatory measures or species specific offsetting, these would be employed. This detail and decision framework is to be provided within the finalised BBAMP.

9.1.3. Mitigation cost estimates for significant impacts and management plans

Costs of mitigation as result of significant impacts from the project will be included in the BMP once final designs are known and post approval.

10. Impact summary

10.1. Direct and indirect impact to biodiversity values

The project is expected to impact upon the following biodiversity values:

- Nine native PCTs mapped as 18 separate vegetation zones, and s even scattered paddock trees.
- Two BC Act listed TECs– Weeping Myall woodland and Sandhill Pine Woodland.
- Two EPBCAct listed TEC –Weeping Myall woodland and Natural grasslands of the Murray Valley Plains
- Assumed habitat for threatened flora and Grey Snake species credit species .
- Small impacts to habitat for recorded threatened *Maireana cheelii* and two *Swainsona* species, *Swainsona murrayana* and *Swainsona sericea*.
- Small linear impacts and minor fragmentation of important mapped areas for Plain s wanderer, in conjunction with impacts to potential future habitat within dynamic grassland communities .
- Known forage and assumed breeding habitat for two fauna species credit species – Superb Parrot and Southern Bell Frog.
- Known and predicted habitat for a range of fauna ecosystem credit species.
- 30 species of bird and bat considered at risk of operational impact mainly associated with turbine strike.
- Potential impacts to seven scattered paddock tree s.

As detailed in the above section of this BDAR , the Applicant has undertaken significant efforts to avoid and minimise impacts to all biodiversity values present within the subject land, and the residual impacts to the above listed biodiversity values will continue to be minimised, mitigated and offset through the duration of the project.

No direct or indirect impacts are expected to occur as a result of the project to the Oolambeyan National Park or the South West Woodland Nature Reserve .

10.2. Serious and irreversible impacts

In accordance with Clause 6.7 of the BC Regulation an impact is to be regarded as serious and irreversible if it is likely to contribute significantly to the risk of a threatened species or ecological community becoming extinct because:

(a) Principle 1: It will cause a further decline of the species or ecological community that is currently observed, estimated, inferred or reasonably suspected to be in a rapid rate of decline.
(b) Principl e 2: It will further reduce the population size of the species or ecological community that is currently observed, estimated, inferred or reasonably suspected to have a very small population size.
(c) Principl e 3: It is an impact on the habitat of the species or ecological community that is currently observed, estimated, inferred or reasonably suspected to have a very limited geographic distribution.

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(d) Principal 4: The impacted species or ecological community is unlikely to respond to measures to improve its habitat and vegetation integrity and therefore its members are not replaceable.

Three species considered to meet the above principles, two of which may be impacted by the project:

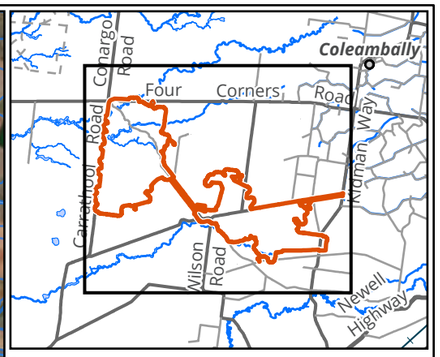
- Plains Wanderer *Pedionomus torquatus* .
- Claypan Daisy *Brachyscome muelleroides.*

Detailed SAII assessment is provided in Appendix 5. A summary of the results of the SAII is provide below in Table 88.

Table 88 SAII Summary

SAII entity	Summary of assessment
Claypan Daisy *Brachyscome muelleroides*	*Brachyscome muelleroides* has been surveyed for throughout the development footprint in September and November 2022, 2023 , 2024, and 2025, and has not been recorded. Limited spatial gaps in survey effort do occur in areas based on more recent design refine ments , as well as flooding impacts . However, overall, the amount of survey undertaken is representative to the size and requirements of each vegetation zone where habitat for this species is present. It is considered highly unlikely, given survey effort of microhabitats undertaken to date, that species will be recorded within the development footprint. Due to survey gaps, up to 0. 93 ha of habitat is assumed present, but this considered to be very precautionary and inflated, based on the gaps occurring in similar habitat that has been surveyed, with no records to date. In terms of avoidance, detailed constraints assessment modelling of biodiversity valu es was undertaken to ensure areas of high biodiversity value, and therefore most likely habitat, were avoided as much as possible. This includes areas within the development corridor considered potential habitat including within seasonally damp situations such as shallow depression sand around the margins of swamps, lagoons and claypans, on heavy grey cracking clays to lighter clay loam soils, in grassland and grassy woodla nd. This has resulted in multiple revisions of the development footprint as demonstrated in Section 7. This species prefers seasonally moist grey gilgaied soils on the floodplains within PCTs such as PCT 45 and PCT 46, which occur within the development corridor . Potential indirect impacts will be managed through mitigation measures which are outlined in Section 8.2, which includes but not limited to detailed BMP, pre -clearance surveys, adaptive management and unexpected finds procedures.
Bindweed *Convolvulus tedmoorei*	*Convolvulus tedmoorei* has been surveyed for throughout the development footprint despite being impacted by flooding in spring 2022, with surveys conducted in September 2022, 2023 and 2024, as well as July 2025, and has not been recorded. N o records have been observed , and no known records occur within the broader locality. It is considered highly unlikely, given survey effort of microhabitats undertaken to date, that species will be present within the development footprint. No further detailed assessment is required given surveys did not record this species. In terms of avoidance, detailed constraints assessment modelling of biodiversity valu es was undertaken to ensure areas of high biodiversity value, and therefore most likely habitat, were avoided as much as possible. This includes areas of grey clay soils as far as practicable. This has resulted in multiple revisions of the development foot print as demonstrated in Section 7. This species prefers grey clay soils on the floodplains of the Darling and Murrumbidgee Rivers within PCTs such as PCT 17,PCT 24, PCT 26, PCT 45 and PCT 46, which all within the development corridor . Although not considered present, i ndirect impacts to areas of suitable habitat will be managed through mitigation measures which are outlined in Section 8.2, which includes but not limited to detailed BMP, pre -clearance surveys, adaptive management and unexpected finds

SAII entity	Summary of assessment
	procedures.
Plains Wanderer ***Pedionomus torquatus***	Throughout the development of the project layout, design decisions have been implemented to avoid impacts to Plains Wanderer habitat from a very early stage. This includes the avoidance of areas of Important Mapped Habitat as far as practicable , and restricting development to only 2.55 ha of the important mapped area. In total, there is 648 ha of important mapped area in the subject land, and 14.8 hectares within the development corridor. In total, the development footprint equates to 0. 39% and the development corridor equates to 2.3 % of the total area of mapped important habitat within the subject land . All of the 2.55 ha of direct impact relates to road upgrades and transmission line infrastructure proposed along Goolgumbla Road , an existing public road , or upgrades to existing farm access tracks that intersect with mapped important habitat . Due to the dynamic nature of the grasslands critical to this species, areas within the subject land may be suitable for this species in the future, however, the most optimal areas have been avoided within the development footprint as far as practicable. Supplementary surveys undertaken in April 2023 did not detect this species , however, one individual was incidentally recorded when flushed from habitat within the northwest of the subject land in Spring 2024. A 300m exclusion zone has been implemented within this area. Based on extent of occurrence, the area of occupancy and carrying capacity, the overall subject land could potentially support four pairs of birds. Additional surveys for Plains Wanderer focused on identifying grasslands outside of NSW DCCEEW Mapped Important Areas that nonetheless contained similar structural characteristics to these areas. At the time of surveys in April 2023, limited areas of the grasslands observed were considered optimal within the development corridor, including the nearby Mapped Important Areas, where minimal areas contained optimal habitat structure. This is considered an effect of the dynamic nature of Riverine grasslands responding to above average rainfall conditions and flood events in Spring 2022, which created above average grass coverage generally through the broader locality. In addition to the important mapped areas, within the subject land an area of 276 ha of potential habitat has been estimated, and includes an approximate area of 167.48 ha within the development corridor, and within the development footprint, a total of 39.16 ha. These areas have been identified as potential habitat for the purposes of SAII assessment in accordance with the TBDC, and focus on areas containing an open structure, herb -rich inter -tussock spaces and presence of cryptogamic crust within PCT 26 DNG and PCT 46, that overlapped where Swainsona species were found present through all survey periods. Indirect impacts associated with disruption or abiotic process, the loss of functionally important species, and/or exacerbation of fragmentation and isolation are considered unlikely to be substantial as a result of the project. Credits resulting from residual impacts will be retired as part of the project with additional and appropriate measures provided in Table 87 to account for impact to other potential SAII entity habitat.



Legend

- Subject land
- Development corridor
- Development footprint
- Assessment area
- Plains-wanderer (Biosis mapped habitat)
- Plains-wanderer - Important Mapped Habitat (BAM DCCEEW, 2020)

Threatened fauna species records (Biosis)

- Plains-wanderer - *Pedionomus torquatus*

Threatened flora species polygon

- *Brachyscome muelleroides*

Figure 21 Serious and irreversible impacts (SAII) - Overview

0 1 2 3 4 5

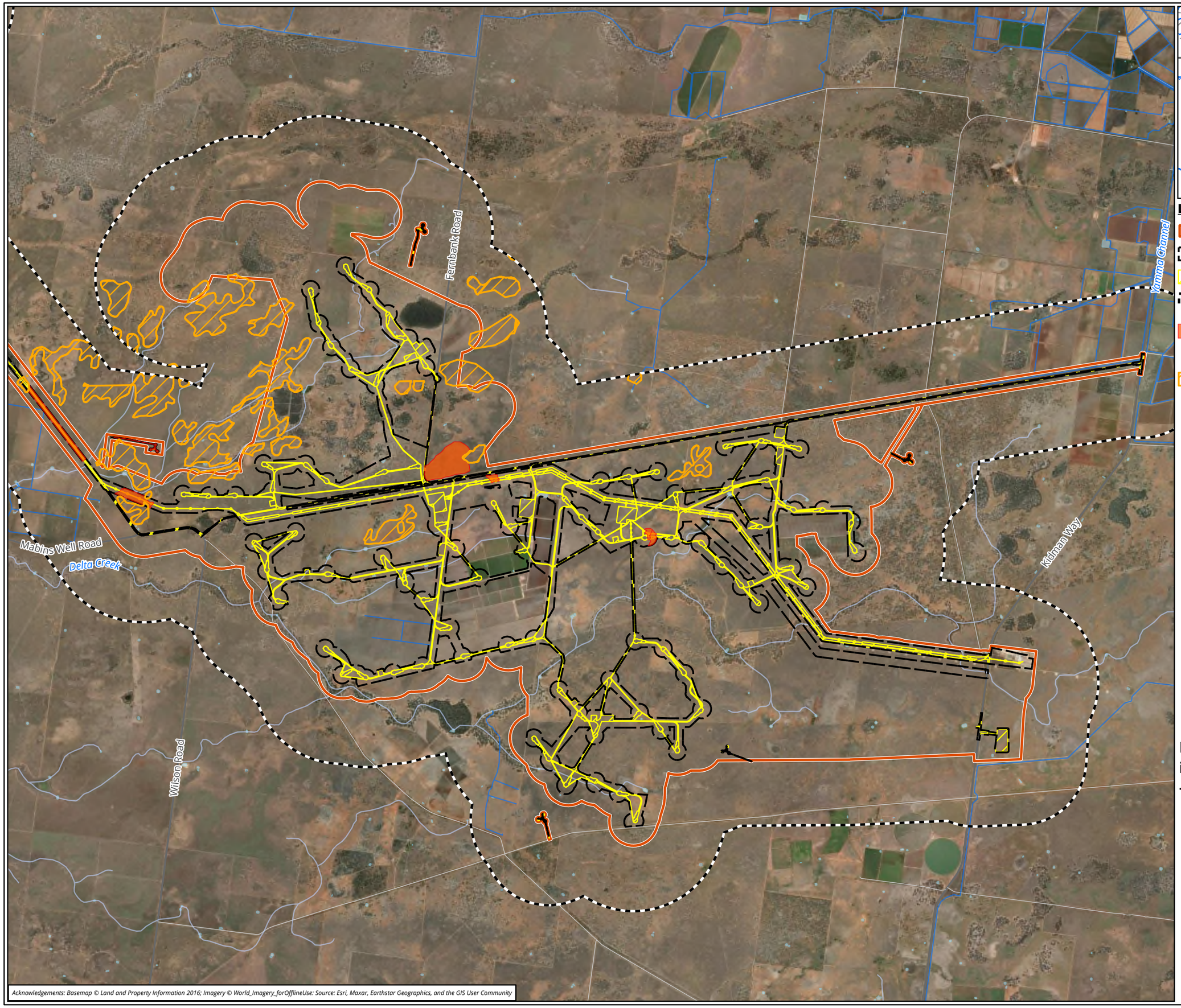
Kilometers
Scale: 1:130,000 @ A3
Coordinate System:
GDA2020 MGA Zone 55

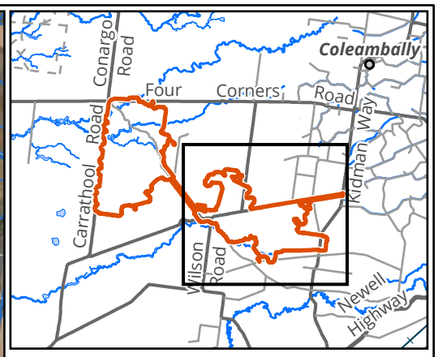
N

biosis

Matter: 37263, Date: 09 February 2026,
GIS: JB, Checked by: MP, Last edited by: jbeckius
Location: P:\37200s\37263\Mapping\
37263_Dinawan_BDAR_Wind_F18-24.aprx
Layout: 37263_Wind_F21_SAII

Acknowledgements: Basemap © Land and Property Information 2016; Imagery © World_Imagery_forOfflineUse: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community





Legend

- Subject land
- Development corridor
- Development footprint
- Assessment area
- Plains-wanderer (Biosis mapped habitat)
- Plains-wanderer - Important Mapped Habitat (BAM DCCEEW, 2020)

Figure 21 Serious and irreversible impacts (SAII) - Eastern area

0 1 2 3

Kilometers
Scale: 1:80,000 @ A3
Coordinate System:
GDA2020 MGA Zone 55

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Matter: 37263, Date: 09 February 2026,
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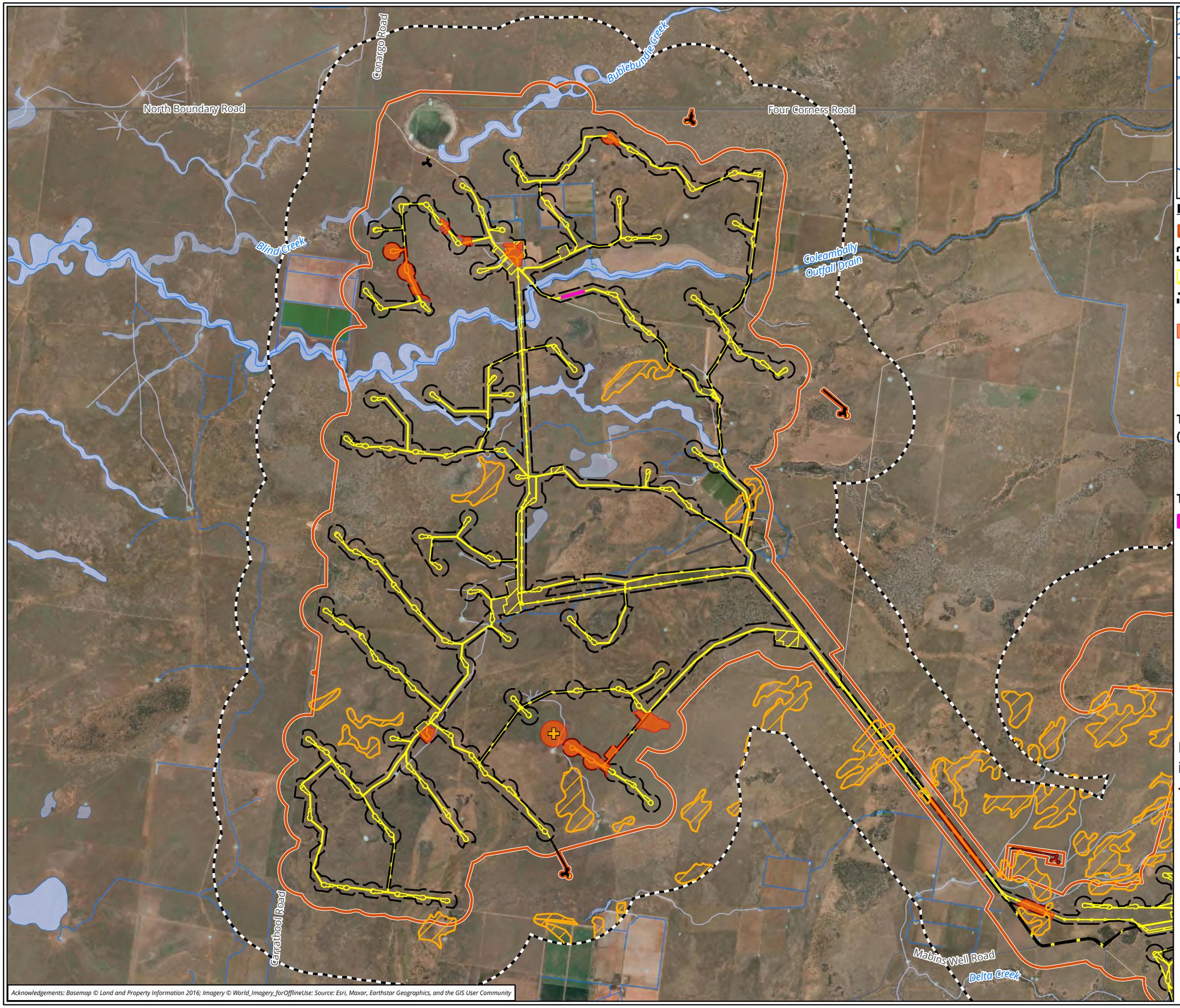

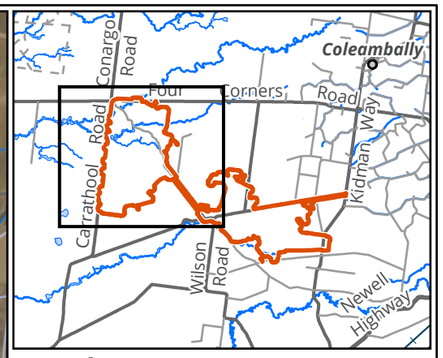

Legend

- Subject land
- Development corridor
- Development footprint
- Assessment area
- Plains-wanderer (Biosis mapped habitat)
- Plains-wanderer - Important Mapped Habitat (BAM DCCEEW, 2020)

Threatened fauna species records (Biosis)

- Plains-wanderer - *Pedionomus torquatus*

Threatened flora species polygon

- *Brachyscome muelleroides*

Figure 21 Serious and irreversible impacts (SAII) - Western area

0 1 2 3

Kilometers
Scale: 1:80,000 @ A3
Coordinate System:
GDA2020 MGA Zone 55

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biosis

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37263_Dinawan_BDAR_Wind_F18-24.aprx
Layout: 37263_Wind_F21_SAII

10.3. Identification of impacts requiring offset, not requiring offset and areas not requiring assessment

The following section provides information on the project's impacts requiring offset, not requiring offset and areas not requiring assessment. Each category is displayed on Figure 22.

10.3.1. Impact requiring offset

Impacts to native vegetation (ecosystem credits)

As outlined in Section 9.2.1 of the BAM, the assessor must determine an offset for all impacts of proposals on PCTs that are associated with a vegetation zone that has a vegetation integrity score of:

- ≥15, where the PCT is representative of an EEC or a CEEC.
- ≥17, where the PCT is associated with threatened species habitat (as represented by ecosystem credits) or represents a vulnerable ecological community.
- ≥20, where the PCT does not represent a TEC and is not associated with threatened species habitat.

The offset requirement for the project was calculated using the BAM Calculator. Table 89 provides a summary of the ecosystem credit offsets required for impacts from the project .

Table 89 Offsets required (ecosystem credits) – Total development footprint, as per Bam-C

Vegetation zone	Impact (ha)	VI score	NSW TEC	EPBC TEC	HBTs	Credit requirement
PCT 10_moderate	0.19	29.2	No	No	Yes	2
PCT 13_moderate	3.96	70.6	No	No	Yes	122
PCT 13_thinned	7.82	69.2	No	No	Yes	237
PCT 15_moderate	2.54	75.7	No	No	Yes	84
PCT 15_thinned	1.10	67.1	No	No	Yes	32
PCT 17_mod_good	0.76	84.2	No	No	No	28
PCT 17_moderate	1.33	83.5	No	No	No	49
PCT 26_DNG	343.19	20.3	No	No	No	3,483
PCT 26_intact	116.77	67.1	Weeping Myall Woodland	Weeping Myall Woodland	No	3,916
PCT 26_sparse	328.77	46.2	Weeping Myall Woodland	No	No	7,598
	11.94	46.2	Weeping Myall Woodland	Weeping Myall Woodland	No	276
PCT 28_low	47.62	57.1	Sandhill Pine woodland	No	Yes	1,360
PCT 28_moderate	1.11	73.8	Sandhill Pine woodland	No	Yes	41
PCT 45_mod_good	2.26	65.1	No	Natural grasslands of	No	92

Vegetation zone	Impact (ha)	VI score	NSW TEC	EPBC TEC	HBTs	Credit requirement
				Murray Valley Plains		
PCT 45_Intersection	0.83	100	No	Natural grasslands of Murray Valley Plains	No	52
PCT 46_moderate	72.62	90.6	No	Natural grasslands of Murray Valley Plains	No	4,112
PCT 46_Intersection	0.34	100	No	Natural grasslands of Murray Valley Plains	No	21
PCT 160_mod_good	4.97	79	No		No	147
						21,652

Impacts to threatened species and their habitat

As outlined in Section 9.2.2 of the BAM , an offset is also required for the impacts of the project on the habitat of species credit species. Table 90 provides a summary of the species credit offsets required for impacts from the project .

Table 90 Offsets required (species credits)

Species	Impact	Vegetation zone	Area (ha)	Biodiversity risk weighting	Credit requirement
Swainsona murrayana	Direct Assumed	Direct PCT 26 DNG –2.76 ha PCT 26 intact – 0.27 ha PCT 26 sparse –2.73 ha PCT 46 moderate – 3.45 ha Assumed PCT 26 DNG –0.97 ha PCT 26 Intact – 0.20 ha PCT 26 sparse- 1.12 ha PCT 28 low – 0.06 ha PCT 46 moderate – 2.37 ha	13.95	2	409
Swainsona sericea	Direct Assumed	Direct PCT 26 DNG –1.98 ha PCT 26 intact – 0.15 ha PCT 26 sparse –2.85 ha PCT 46 moderate – <0.1 ha	9.71	2	244

Species	Impact	Vegetation zone	Area (ha)	Biodiversity risk weighting	Credit requirement
		Assumed PCT 26 DNG –0.97 ha PCT 26 Intact – 0.20 ha PCT 26 sparse- 1.12 ha PCT 28 low – 0.06 ha PCT 46 moderate – 2.37 ha			
Maireana cheelii	Direct Assumed	Direct PCT13_moderate – 0.29 ha PCT13_thinned - 0.14 ha Assumed PCT 26 DNG –0.29 ha PCT 26 Intact – 0.20 ha PCT 26 sparse –1.12 ha PCT 46 moderate - 0.93 ha	2.98	Maireana cheelii	93
Austrostipa wakoolica	Assumed	PCT 17 moderate – 0.68 ha PCT 26 Intact – 0.23 ha PCT 26 sparse –0.68 ha	1.58	2	52
Brachyscome muelleroides	Assumed	PCT 46 moderate – 0.93 ha	0.93	3	63
Brachyscome papillosa	Assumed	PCT 46 moderate – 1.74 ha	1.74	2	79
Lepidium monoplocoides	Assumed	PCT 26 DNG –0.29 ha PCT 26 Intact – 0.20 ha PCT 26 sparse- 1.12 ha	1.61	2	36
Leptorhynchos orientalis	Assumed	PCT 26 DNG –0.29 ha PCT 26 Intact – 0.20 ha PCT 26 sparse- 1.21 ha PCT 46 moderate - 0.93 ha	2.54	2	78
Pilularia novae-hollandiae	Assumed	PCT 13 moderate – 2.29ha PCT 13 thinned – 3.77 ha PCT 15 moderate - 1.49 ha PCT 15 thinned – 1.10 ha PCT 17_moderate – 0.71 ha PCT 26 DNG –6.22 ha PCT 26 Intact – 0.35 ha PCT 26 sparse- 8.42 ha PCT 45 mod_good – 0.27 ha PCT 45 Intersection – 0.83 ha PCT 46 moderate - 44.90 ha	70.71	3	2,706

Species	Impact	Vegetation zone	Area (ha)	Biodiversity risk weighting	Credit requirement
		PCT 46 Intersection – 0.34 ha			
Sclerolaena napiformis	Assumed	PCT 26 DNG –1.26 ha PCT 26 Intact – 0.40 ha PCT 26 sparse- 2.24 ha PCT 46 moderate - 3.12 ha	7.03	2	219
Swainsona plagiotropis	Assumed	PCT 26 DNG –0.97 ha PCT 26 Intact – 0.20 ha PCT 26 sparse- 1.12 ha PCT 46 moderate - 2.37 ha	4.67	2	150
Grey Snake	Assumed	PCT 10 moderate PCT 13 moderate PCT 13 thinned PCT 15 moderate PCT 15 thinned PCT 17 mod_good PCT 17 moderate PCT 160 mod_good	22.68	2	830
Plains Wanderer	Direct	Important mapped area	2.55	3	138
Superb Parrot	Direct/ Prescribed	100m buffer of associated PCTs that contain suitable hollows PCT 10 moderate – 0.19 ha PCT 13 moderate – 3.56 ha PCT 13 thinned – 7.82 ha PCT 15 moderate – 2.54 ha PCT 15 thinned – 1.10 ha PCT 17 moderate – 0.27 ha PCT 26 DNG –8.40 ha PCT 26 intact – 1.56 ha PCT 26 sparse –7.54 ha PCT 28 low –0.04 ha PCT 28 moderate – 0.21 ha PCT 45 mod_good – 0.15 ha PCT 46 moderate – 2.86 ha PCT 160 moderate – 0.01 ha	36.66	2	1,013
Southern Bell Frog	Direct/ Prescribed	200m buffer of habitat and associated PCTs in accordance with relevant guidelines.	83.63	2	1,961

Species	Impact	Vegetation zone	Area (ha)	Biodiversity risk weighting	Credit requirement
		PCT 13 moderate – 0.55 ha PCT 13 thinned – 2.00 ha PCT 15 thinned – 1.07 ha PCT 17 mod_good – 0.49 ha PCT 26 DNG –28.73 ha PCT 26 intact – 8.09 ha PCT 26 sparse –29.93 ha PCT 28 Low –0.77 ha PCT 45 intersection – 0.64 ha PCT 46 moderate – 9.53 ha PCT 46 Intersection – 0.34 ha PCT 160 mod_good – 1.48 ha			
Southern Myotis	Direct/ Prescribed	PCT 13 moderate PCT 13 thinned	2.41	2	83

Species polygons for the above species credit species impacted by the project are illustrated in below. Figure 22

Impacts to scattered trees

Offsets are required for the clearing of Class 2 and Class 3 paddock trees.

Table 91 Offsets required (scattered trees)

PCT	Class	Contains hollows	No. of trees	Credit required
PCT 13 Black Box - Lignum woodland wetland	2	No	1	1
	3	Yes	2	2
PCT 26 Weeping Myall open woodland	2	No	4	3
TOTAL				**6**

10.3.2. Impacts not requiring offset

As outlined in Section 9.2.1 of the BAM, offsets are not required for impacts to vegetation zones that have a vegetation integrity score of ≥17, where the PCT is associated with threatened species habitat (as represented by ecosystem credits) or represents a vulnerable ecological community.

Indirect impacts do not require offsetting and are subject to detailed mitigation and management to improve and maintain vegetation within criteria set in the BMP and BBAMP.

10.3.3. Impacts not requiring assessment

As outlined in Section 9.3 of the BAM, areas within the subject land that do not contain native vegetation do not need to be assessed for ecosystem credits. Areas of land mapped as Category 1 Exempt land under the LLS Act also do not require assessment und er the BAM.

Areas of land that do not contain native vegetation must still be assessed for threatened species habitat and prescribed biodiversity impacts in accordance with the BAM.

The project will impact upon approximately 149.44 hectares of land that does not contain native vegetation, that occurs on Category 1 – Exempt land.

10.3.4. Staged offsetting

The development corridor and development footprint has been broken up into three stages to facilitate the staged retirement of the project's biodiversity credit liability. Spark Renewables will confirm the offset staging plan with DPHI prior to the commencement of construction. This is discussed further in Section 11.

Table 92 Offsets required (ecosystem credits) – Enabling Works

Vegetation zone	Impact (ha)	Credit requirement
Ecosystem credits		
PCT 26_DNG	24.91	253
PCT 26_intact	1.18	40
PCT 26_sparse	8.99	208
PCT 45_Intersection	0.83	52
PCT 46_Intersection	0.34	21
Total		574
Species credits		
Swainsona murrayana	0.01	1
Pilularia novae-hollandiae	3.48	96
Southern Bell Frog	6.49	105

Table 93 Offsets required (ecosystem credits) – Stage 1

Vegetation zone	Impact (ha)	Credit requirement
Ecosystem credits		
PCT 13_thinned	2.52	76

Vegetation zone	Impact (ha)	Credit requirement
PCT 17_mod_good	0.32	12
PCT 17_moderate	0.50	18
PCT 26_DNG	107.03	1,086
PCT 26_intact	22.63	759
PCT 26_sparse	111.67	2,581
PCT 45_mod_good	2.24	91
PCT 46_moderate	1.34	76
Total		4,699
Species credits		
Swainsona murrayana	0.78	13
Austrostipa wakoolica	1.23	38
Pilularia novae-hollandiae	9.78	246
Grey Snake	3.35	121
Southern Bell Frog	28.26	546
Superb Parrot	4.7	125
Scattered trees		
PCT 13	2	2
PCT 26	1	1

Table 94 Offsets required (ecosystem credits) – Stage 2

Vegetation zone	Impact (ha)	Credit requirement
Ecosystem credits		
PCT 10_moderate	0.19	2
PCT 13_moderate	3.96	122
PCT 13_thinned	5.3	160
PCT 15_moderate	2.54	84
PCT 15_thinned	1.1	32
PCT 17_mod_good	0.43	16
PCT 17_moderate	0.83	30
PCT 26_DNG	211.24	2,144
PCT 26_intact	92.96	3,118
PCT 26_sparse	219.97	5,084
PCT 28_low	47.62	1,360
PCT 28_moderate	1.11	41
PCT 45_mod_good	0.01	92

Vegetation zone	Impact (ha)	Credit requirement
PCT 46_moderate	71.28	4,112
PCT 160_mod_good	4.97	147
Total		16,377
Species credits		
Swainsona murrayana	13.16	396
Swainsona sericea	9.71	244
Austrostipa wakoolica	0.35	144
Brachyscome muelleroides	0.93	63
Brachyscome papillosa	1.74	79
Lepidium monoplocoides	1.61	36
Leptorhynchos orientalis	2.54	78
Maireana cheelii	2.98	93
Pilularia novae-hollandiae	57.45	2,362
Sclerolaena napiformis	7.03	219
Swainsona plagiotropis	4.67	150
Grey Snake	19.33	708
Plains-wanderer	2.55	138
Southern Bell Frog	48.88	1,310
Southern Myotis	2.41	83
Superb Parrot	31.96	888
Scattered Trees		
PCT 13	1	1
PCT 26	3	2

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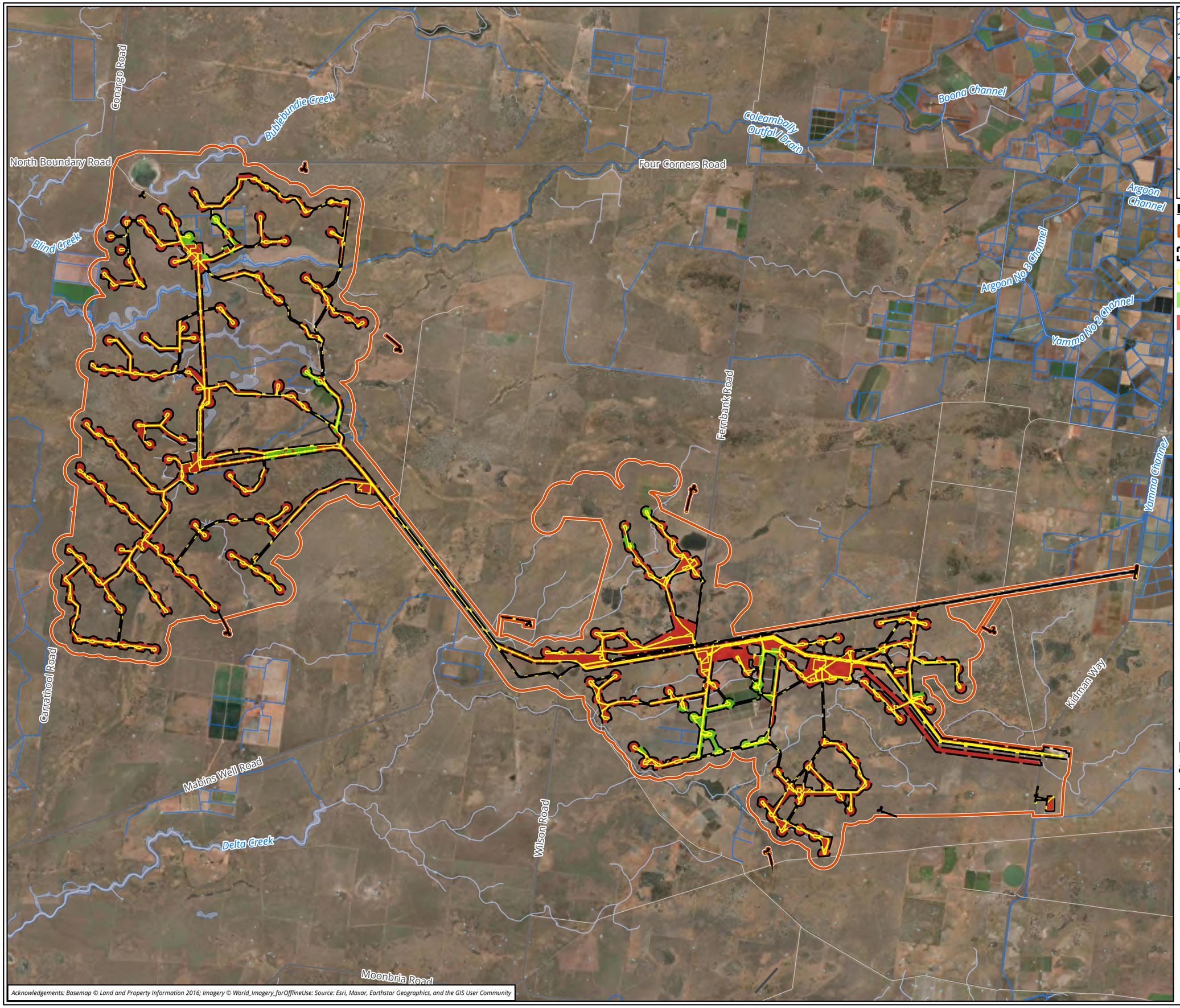

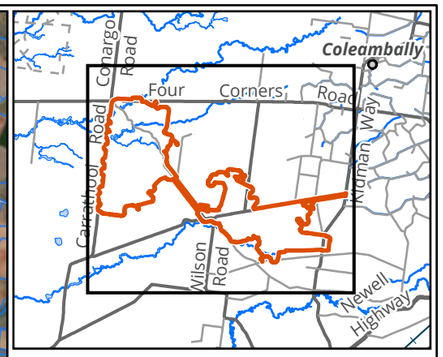

Legend

- Subject land
- Development corridor
- Development footprint
- Impacts not requiring offset
- Impacts requiring offset

Figure 22 Impacts requiring and not requiring offsets - Overview

0 1 2 3 4 5

Kilometers
Scale: 1:130,000 @ A3
Coordinate System:
GDA2020 MGA Zone 55

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Matter: 37263, Date: 06 February 2026,
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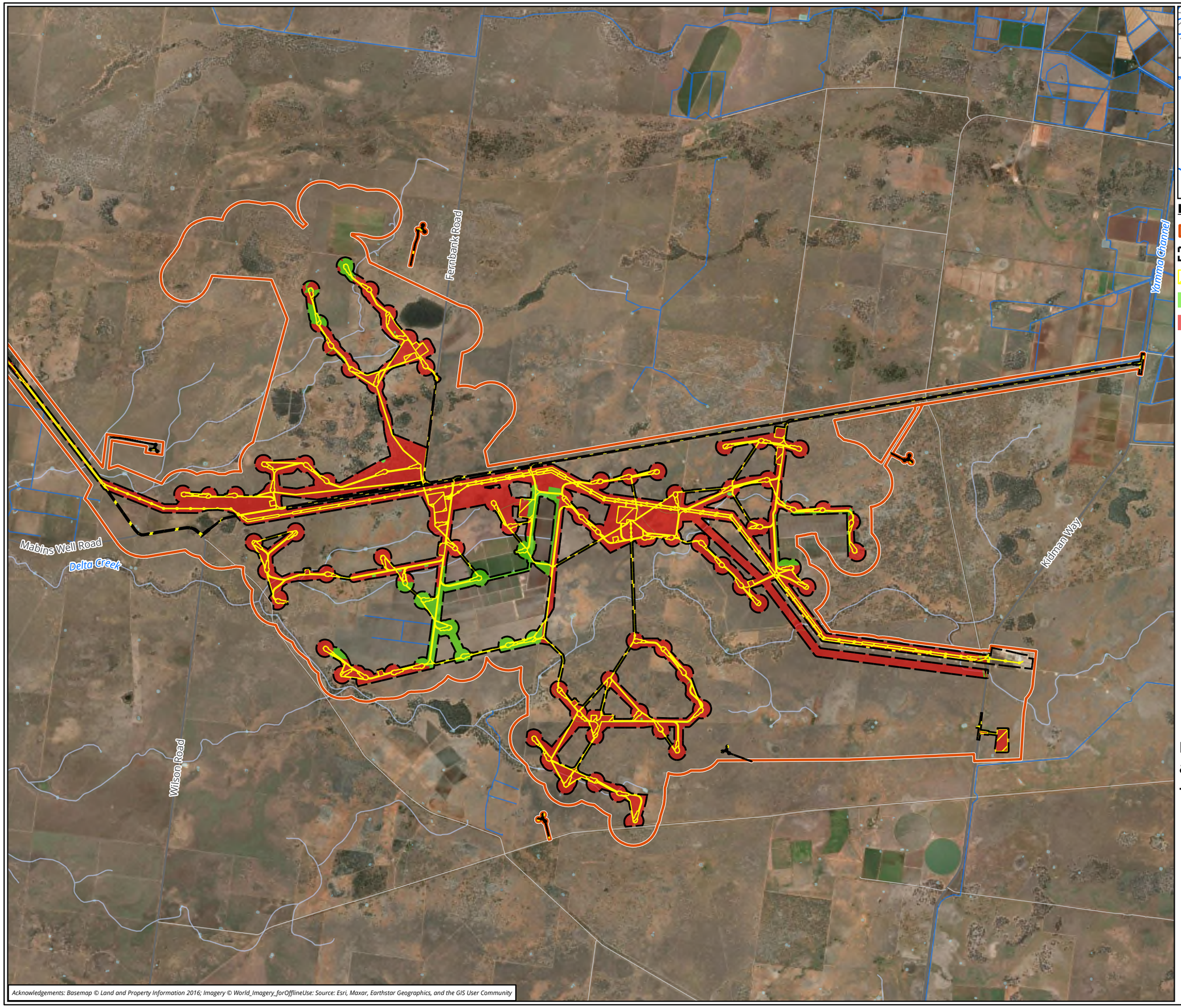

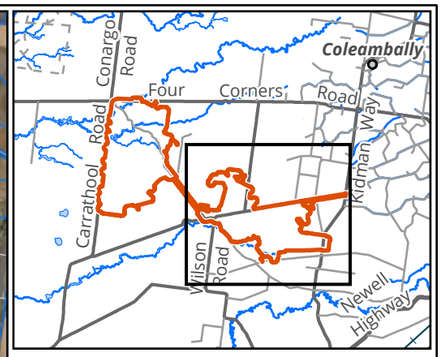

Legend

- Subject land
- Development corridor
- Development footprint
- Impacts not requiring offset
- Impacts requiring offset

Figure 22 Impacts requiring and not requiring offsets - Eastern area

0 1 2 3

Kilometers
Scale: 1:80,000 @ A3
Coordinate System:
GDA2020 MGA Zone 55

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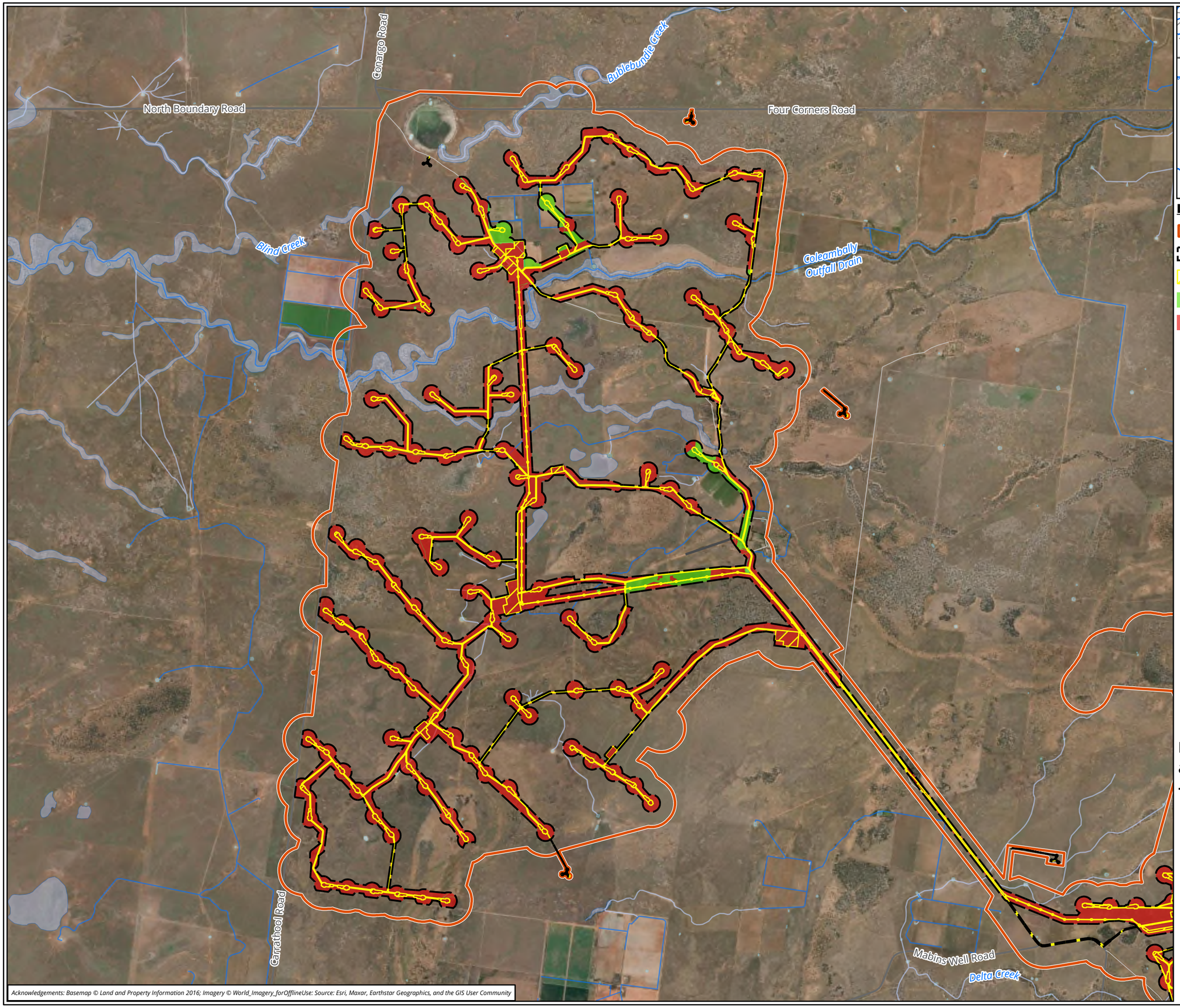

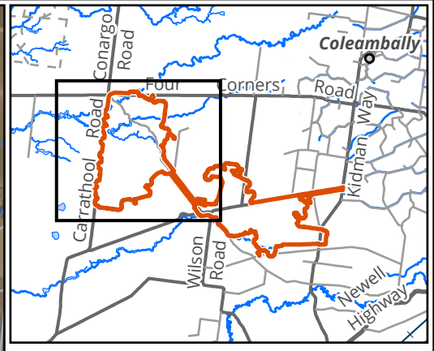

Legend

- Subject land
- Development corridor
- Development footprint
- Impacts not requiring offset
- Impacts requiring offset

Figure 22 Impacts requiring and not requiring offsets - Western area

0 1 2 3

Kilometers
Scale: 1:80,000 @ A3
Coordinate System:
GDA2020 MGA Zone 55

N

biosis

Matter: 37263, Date: 06 February 2026,
GIS: JB, Checked by: MP, Last edited by: jbeckius
Location: P:\37200s\37263\Mapping\
37263_Dinawan_BDAR_Wind_F18-24.aprx
Layout: 37263_Wind_F22_Offset

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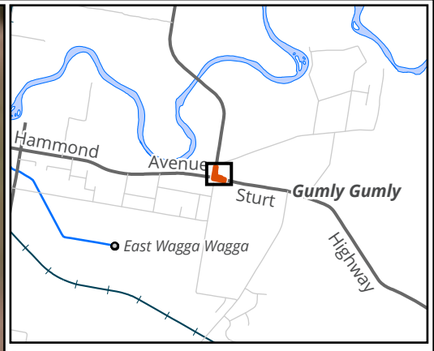

Legend

- Subject land
- Development corridor
- Development footprint
- Impacts not requiring offset

Figure 22 Impacts requiring and not requiring offsets - Sturt Highway/Eunony Bridge Road

0 50 N

Meters
Scale: 1:1,000 @ A3
Coordinate System:
GDA2020 MGA Zone 55

biosis

Matter: 37263, Date: 07 May 2025,
GIS: JB, Checked by: MP, Last edited by: jbeckius
Location: P:\37200s\37263\Mapping\
37263_Dinawan_BDAR_Wind_F18-24.aprx
Layout: 37263_Wind_F22_Offset_P5-8

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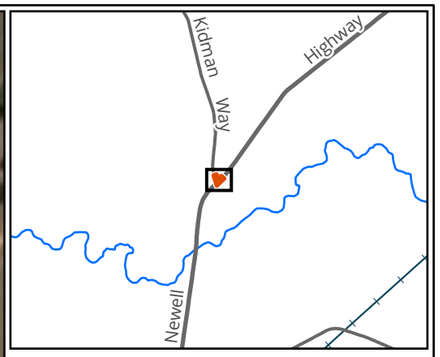

Legend

- Subject land
- Development corridor
- Development footprint
- Impacts not requiring offset

Figure 22 Impacts requiring and not requiring offsets - Newell Highway/Kidman Way

0 50

Meters
Scale: 1:2,000 @ A3
Coordinate System:
GDA2020 MGA Zone 55

N

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Matter: 37263, Date: 07 May 2025,
GIS: JB, Checked by: MP, Last edited by: jbeckius
Location: P:\37200s\37263\Mapping\
37263_Dinawan_BDAR_Wind_F18-24.aprx
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Legend

- Subject land
- Development corridor
- Development footprint
- Impacts not requiring offset

Figure 22 Impacts requiring and not requiring offsets - Byrnes Road/West Bomen Road

0 50

Meters
Scale: 1:1,500 @ A3
Coordinate System:
GDA2020 MGA Zone 55

N

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Matter: 37263, Date: 07 May 2025,
GIS: JB, Checked by: MP, Last edited by: jbeckius
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Layout: 37263_Wind_F22_Offset_P5-8

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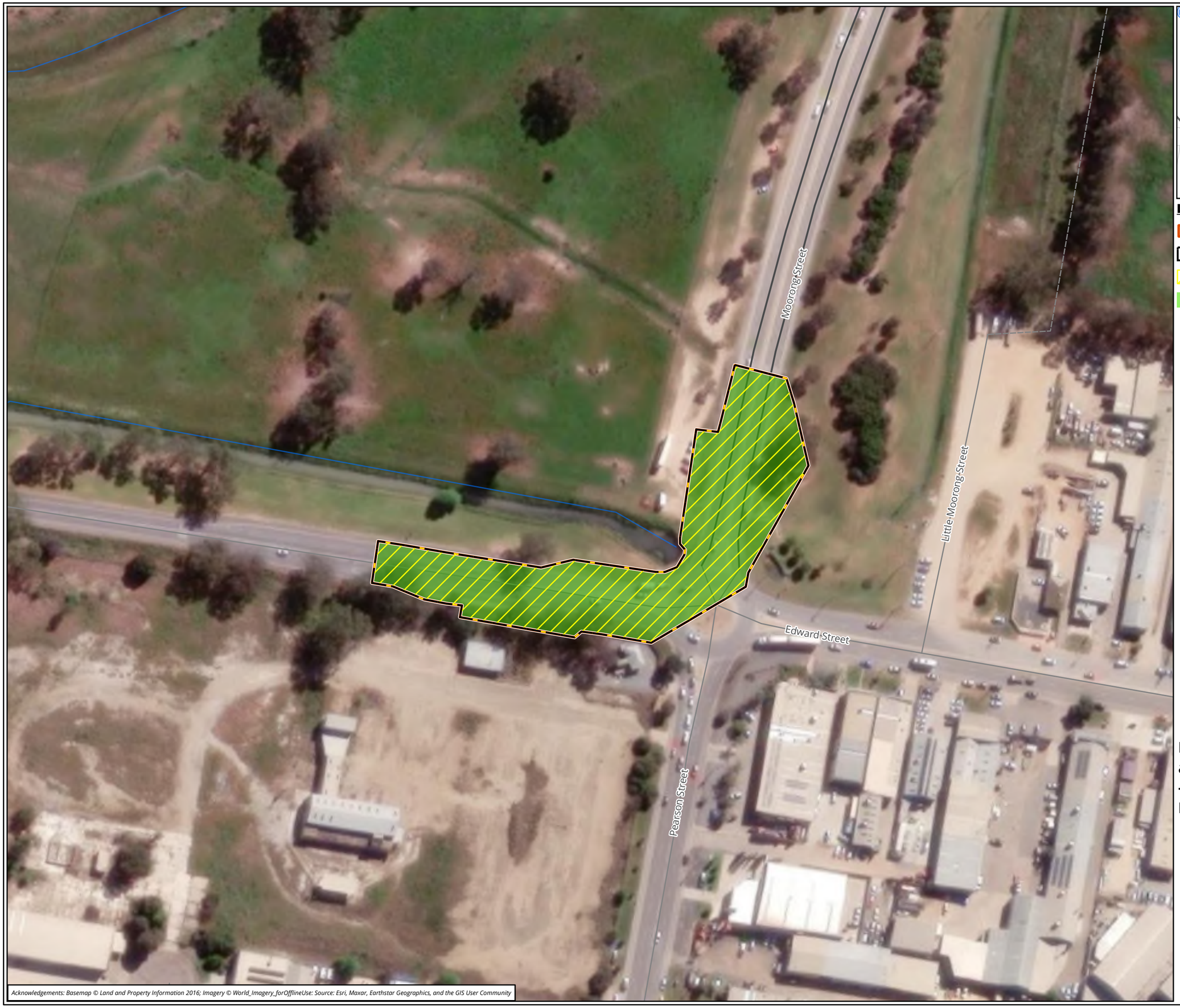

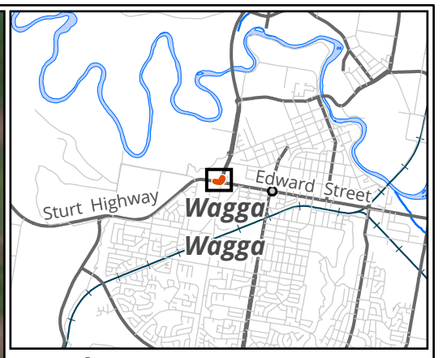

Legend

- Subject land
- Development corridor
- Development footprint
- Impacts not requiring offset

Figure 22 Impacts requiring and not requiring offsets - Olympic Highway/Sturt Highway

0 50

Meters
Scale: 1:1,500 @ A3
Coordinate System:
GDA2020 MGA Zone 55

N

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GIS: JB, Checked by: MP, Last edited by: jbeckius
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11. Biodiversity offset strategy

11.1. Overview

In order to secure the biodiversity offset liability expected to be required for the project's residual unavoidable impacts, Spark Renewables has commenced investigations into the establishment of local Biodiversity Stewardship Sites.

Five properties have been subject to desktop and on-ground assessment to determine their suitability for establishment of Biodiversity Stewardship Sites, and to generate offset credits suitable for the project's requirements, these properties are as follows:

- Offset area one – Approx. 4200 ha area to the north-west of the wind farm subject land.
- Offset area two – Approx. 2100 ha area to the north of the wind farm subject land.
- Offset area three – Approx. 1100 ha area to the north of the solar farm subject land.
- Offset area four – Approx. 3400 ha area to the south of the wind farm subject land.
- Offset area five – Approx. 950 ha area near the centre of the wind farm subject land.

Additionally, a sixth site is currently under early stage feasibility which is also located to the north of McLennons Bore Road and within local proximity to the subject land. Assessment is also being undertaken on areas excised and avoided within the Dinawan Solar Farm subject land, which contains highest quality habitats that have been avoided by that project.

11.2. Offsetting obligations and options

As outlined above in Table 89 through to Table 94, the project is expected to require offsets for residual unavoidable impacts and subsequent credit liabilities. The tables above demonstrate the total liabilities based on the development footprint as a whole, as well as total liabilities for Stage 1 and Stage 2.

Additionally, the Dinawan Wind Farm is under assessment in conjunction with the Dinawan Solar Farm, with credit liabilities generated for both. In order to adequately demonstrate the availability of credits in the currently assessed and potential stewardship sites, a total credit for both developments (including the revised development footprint for Dinawan Solar Farm), and credits potentially available is shown in Table 97. Additionally, a further summary is provided to demonstrate the residual credits and credits available at potential stewardship sites based on Stage 1 only for both Dinawan Wind Farm and Stage 1 and Stage 2 for the Dinawan Solar Farm.

To secure the above offset liability Spark Renewables has three broad options, which include:

- Payment to the Biodiversity Conservation Fund (the Fund) managed by the Biodiversity Conservation Trust (BCT).
- Purchase of credits from the open market.
- Establishment of a Biodiversity Stewardship Site(s) to generate credits for offsetting the project specifically.

Each of these options has some potential benefits and drawbacks, which are briefly outlined below.

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Option 1: Payment to the Biodiversity Offset Fund managed by the BCT

Satisfying an offset obligation by paying to the Biodiversity Offset Fund (the Fund) has the major benefit of being an expedited and unambiguous way for a proponent to meet their obligations. However, it does include increased costs associated with the 'Ri sk premium', and an administrative cost per credit added on top of the costs to source/generate the credits, calculated by the BCT. As such, Payment to the Fund is considered likely to be the most expensive option available to a proponent, however it requi res the least amount time and effort in offset security, which can both be substantial (e.g., compared to establishing a Stewardship Site).

Option 2: Purchase credits from the open market

Biodiversity credits exist in an open market -based system whereby an owner of a Biodiversity Stewardship Site, who has generated a range of biodiversity credits, lists their credits in an online database for proponents with a credit obligation to interroga te and enter into price negotiations with relevant credit holders. As an open market, the price of credits is set by supply and demand factors as well as requirements for credits generated at a Biodiversity Stewardship Site to be sold for at least the mini mum portion each credit contributes to the management costs of that site (Part A cost, further detailed below). Initial credit sales must all go to funding the management actions required to be undertaken at the Biodiversity Stewardship Site (the costing o f which is termed the 'Total Fund Deposit' [TFD]), however once the TFD has been fully satisfied, any future credit sales are generally direct profit to the credit owner.

Potential benefits from procuring credits from the open market include a potential increase in offsetting options when applying the 'Like -for -Like' rules included in the BAM, and then further again with the 'Like for Like Variation Rules', as well as the a bility to negotiate with sellers on price, potentially with multiple credit holders. Drawbacks include an ongoing general paucity of credits available on the market (which is particularly relevant to projects with large credit obligations), sellers setting a high price and being unwilling to negotiate, timeframes associated with negotiations, timeframes associated with procurement of a range of credit types (where required), timeframes to process sales, and additional credit 'transfer' and 'retirement' fees.

Option 3: Establish a Biodiversity Stewardship Site

Establishment of a Biodiversity Stewardship Site (or multiple sites) with the intention of generating credits to satisfy the project's offset obligation is considered likely to be the most suitable option available to Spark Renewables for the project. This is due to the expected quantum of offsets that will be required for the project, and the associated cost of securing those offsets through either the open credit market or via payment to the Fund. The suitability of this option is however dependent on sec uring land that is both suitable for the establishment of a Biodiversity Stewardship Site and supports PCTs/habitats considered Like - for -Like with those impacted by the project.

The major benefit of establishing a Biodiversity Stewardship Site to offset the project's impacts is the expected substantial reduction in the cost of offset security. The price of biodiversity credits on the open market (and those secured by the BCT via the Fund) is made up of two parts:

- Part A (compulsory) – the cost associated with implementing the required management actions at the Biodiversity Stewardship Site where the credits are generated (equivalent to the TFD); and
- Part B (optional) – the cost to the landholder associated with the establishment of the offset site (i.e., cost recovery, and lost opportunity costs), and most significantly, the landholder's profit margin.

Under the situation where a proponent establishes a Biodiversity Stewardship Site to offset the impacts of their project, the Part B (optional) portion of the offset credits would generally be greatly reduced by excluding the profit margin, and any other n on-essential cost recovery items. The price of the credits would therefore only comprise the Part A (compulsory) cost, or in other words the minimum dollar value required to generate the credits through on site protection and management of habitat. This exclusion (or reduction) of the Part B cost, generally results in substantial cost savings when compared to the price of credits on the open market, and/or the price paid to the Fund.

Drawbacks associated with the establishment of Biodiversity Stewardship Sites are associated with the large areas of land required to generate sufficient offset credits (generally between five to eight times the area of native vegetation impacted at the de velopment site), sterilisation of the land for virtually all future uses other than in -perpetuity biodiversity conservation (some managed low- impact grazing may be allowable), and the ongoing requirement to manage the site to ensure the management actions, outlined in the Biodiversity Stewardship Site Management Plan, are implemented to the required standard.

One further drawback is the time required to establish a Biodiversity Stewardship Site and generate the credits required to offset a project's liability, and hence it is beneficial that Spark Renewables has commenced investigations into suitable sites, during the current EIS phase of the project.

11.3. Local offset feasibility

Assessments undertaken to date of offset suitability over the five above listed properties (the subject properties) are detailed below.

Background research

Desktop review of background information was undertaken to provide ecological context to the subject properties and items to consider during further assessment, including:

- BioNet Atlas of NSW Wildlife for BC Act listed threatened entities.
- Protected Matters Search Tool for EPBC Act matters of national environmental significance.
- Vegetation mapping including:
  - Riverina State Vegetation Type Mapping (SVTM) (DPIE 2016).
  - Biosis PCT mapping undertaken across the broader development site to date.
- Establishment of a Stewardship Site case for the project in the BAM Calculator and assessment of predicted threatened species.
- Research into factors influencing the boundaries of the potential Biodiversity Stewardship Sites such as areas to be excluded via review of Land and Property Information easements spatial layers, MinView searches, current cadastral databases, land zoning, and research into any existing offset obligations.

Field investigation

Field investigations of the subject properties were completed by two experienced Biosis ecologists, over five days (24-26 July and 01-02 August 2023)

- Rapid ground -validation of mapped vegetation to preliminary PCTs and broad scale mapping of ecological condition states.
- Determination of high -level expected management issues/actions required to be undertaken to generate the biodiversity credits if a Biodiversity Stewardship Site is established. Including assessment of any management issues considered substantial enough to preclude areas from being entered in a Biodiversity Stewardship Site.
- Collection of floristic plot data (BAM plots) used for calculation of credit generation potential.
- Assessment of areas of potential habitat for threatened species that could generate 'species credits', and/or confirmation of existing species records.

More detailed field investigations at two subject properties, sites two and four, have commenced in spring 2024.

Credit calculations and suitability assessment

Following completion of the field investigations, analysis of the data collected was undertaken to:

- Map and calculate the areas of vegetation zones.
- Calculate the estimated number of biodiversity credits generated by the subject properties through entry of vegetation zone areas and relevant BAM plot data into the online BAM Credit Calculator.
  - Where required, BAM plot data collected across the subject properties was supplemented with data collected during the preparation of this BDAR.
- Complete a suitability assessment, based on Offset Trading Group (OTG), to determine which areas of the subject properties would be best suited to generate credits that could be used to offset the impacts of the projects.

Results

Background research

Desktop review of background information found a range of suitable PCTs as being mapped across the subject properties and existing records of target species credit species, which have the potential to generate offset credits for the project. These items were ground validated with further detail provide below.

Desktop assessment into factors influencing the areas of each of the subject properties which can be entered into a Biodiversity Stewardship Site, such as the presence of utilities and assets and associated easements, mining leases, Crown Lands and other c onsiderations such as existing conservation obligations, also found a range of items present across the subject properties. Such items generally require exclusion from a Biodiversity Stewardship Site, and as such coinciding areas of mapped vegetation and h abitats cannot generate offset credits.

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Table 95 provides the details of the factors influencing the potential boundaries of future Biodiversity Stewardship Sites at each of the subject properties, and provides an estimated percentage reduction in total area available for biodiversity credit generation (compared to the full extent of mapped vegetation and habitats on each site).

Table 95 Results of desktop research into factors influencing the Biodiversity Stewardship Site areas and boundaries

Biodiversity Stewardship site	Approx. area	Utilities from Dial Before You Dig searches	Mining leases	Crown lands	Other considerations	Percentage reduction in credit generation
Offset area one	4203 ha	• Essential Energy easement present within the site along southern boundary adjacent to North Boundary Road.	• None present.	• A number of Crown l and road easements occur in a grid pattern through the site.	• Nil	• 5% reduction for utility asset maintenance corridors and Crown roads buffers.
Offset area two	2131 ha	• Essential Energy underground earth/wires, poles and (assumed) overhead powerlines along Pooginook Road along site's western boundary, crossing through north- western lots away from the roadway. • Telstra cabling along Pooginook Road, unlikely to occur within or influence the site.	• None present.	• A Crown land road easement occurs through the centre of the site running in an east/west direction.	• Nil	• 5% reduction for utility asset maintenance corridors and Crown roads buffers.
Offset area three	1119 ha	• Transgrid communication cable in/adjacent to Kidman way, unlikely to occur within or influence the site. • Essential Energy underground earth/wires, poles and (assumed) overhead powerlines along Cadell Road along site's western boundary and Kidman Way along the site's south -eastern boundary. • Telstra cabling along Mclennons Bore Road, unlikely to occur within or influence the site. • Telstra cabling along Kidman Way appears to occur within the site.	• None present.	• Crown lands road easements occur along the northern, western and southern boundaries of the site and encroach slightly into the site.	• Nil	• 5% reduction for utility asset maintenance corridors and Crown roads buffers.

Biodiversity Stewardship site	Approx. area	Utilities from Dial Before You Dig searches	Mining leases	Crown lands	Other considerations	Percentage reduction in credit generation
Offset area four	3365 ha	• Essential Energy underground earth/wires, poles and (assumed) overhead powerlines occur through the central portion of the site from Mabins Well Road in the southern portion of the site, and Carrathool Road along the site's western boundary. • Telstra cabling / infrastructure along Mabins Well Road and Carrathool Road may occur within the site. • Telstra cabling / infrastructure occurs within the central portion of site in Lots 22 and 28 DP756311, and Crown Land road easements.	• None present.	• A number of Crown l and roads easements occur within the northern and southern portions of the site.	• A number of areas of Category 2 – Sensitive Regulated Land occur within the property assumed to represent historic and/or current conservation agreements or set - asides etc. these areas have been excluded from the potential BSA areas.	• 5% reduction for utility asset maintenance corridors and Crown roads buffers. • 633 ha434 excluded for assumed conservation areas.
Offset area five	967 ha	• Essential Energy poles and (assumed) overhead powerlines occur through the north -western potion of the site	• None present.	• Crown land road easements occur in the north and south of the site running in an east/west direction.	• Nil	• 5% reduction for utility asset maintenance corridors and Crown roads buffers.

Field investigation, Credit calculations and suitability assessment

Field investigations confirmed the presence of nine different PCTs across the five subject properties, details of which are provided in Table 96 below. Ecological condition was found to range from good to low and derived native grasslands.

Table 96 PCTs confirmed present within the subject properties

PCT	Offset Trading Group (OTG)	Offset area one	Offset area two	Offset area three	Offset area four	Offset area five
10 River Red Gum – Black Box woodland wetland	Inland Riverine Forests <50% cleared				X	
13 Black Box – Lignum woodland wetland	Inland Floodplain Woodlands ≥50% to 70% cleared	X	X	X		X
15 Black Box open woodland wetland with chenopod understorey	Inland Floodplain Woodlands ≥50% to <70% cleared			X		
16 Black Box grassy open woodland wetland	Inland Floodplain Woodlands ≥50% to <70% cleared		X	X		X
17 Lignum shrubland wetland	Inland Floodplain Shrublands ≥50% to <70% cleared	X	X	X	X	
26 Weeping Myall open woodland	Weeping Myall Woodland TEC	X	X	X	X	X
28 White Cypress Pine open woodland	Sandhill Pine Woodland TEC		X		X	
44 Forb-rich Speargrass – Windmill Grass – White Top grassland	Riverine Plain Grasslands ≥70% to <90% cleared					X
164 Cotton Bush open shrubland	Riverine Chenopod Shrublands <50% cleared				X	

Threatened species habitat was assessed and habitat was recorded for species expected to require offsets as a result of the project, with Silky Swainson -pea record ed on the area five property, as well as Southern Bell Frog on the area two property. Paired and juvenile Superb Parrots were also observed. Further assessment and targeted surveys would be required to determine the presence of the target threatened species across the subject properties.

Management actions that would be required to be undertaken following the establishment of a Biodiversity Stewardship Site across the subject properties were found to include fairly standard requirements such as; weed control, fence removal for fauna passag e, fence installation/maintenance for stock exclusion, access track closures and maintenance, removal of dumped farm refuse and scrap building material, etc. None were found to be of significant concern in terms of preventing a BSA from being established over (portions of) the sites.

The offset credits that could potentially be generated at each property were assessed using BAM plot data collected across the subject properties, supplemented with relevant data collected from the BDAR. Table 97 provides the areas of each PCT and OTG recorded across the subject properties along with an estimate of the potential credits that could be generated (considering the exclusions detailed in Table 95). It should be noted that offset credit generation potential is considered an estimate only and further detailed assessment and collection of additional plot data is required to confirm the numbers presented herein. However, the data in Table 97 provides a good indication of the amount of offsets each property would be able to provide, which match those expected to be required by the project.

Table 97 Summary of OTGs and PCTs mapped and potential credit generation across the subject properties (including consideration of solar and wind credit requirements)

Type	Stage / Property	Inland Riverine Forests <50% (PCT 10)	Inland Floodplain Woodlands ≥50% to 70% (PCT 13, 15, 16)	Inland Floodplain Shrublands <50% (PCT 24, 160)	Inland Floodplain Shrublands ≥50% to <70% (PCT 17)	Riverine Plain Woodlands ≥90% (PCT 26 DNG)	Weeping Myall Woodland TEC (PCT 26 non-DNG)	Sandhill Pine Woodland TEC (PCT 28)	Natural Grasslands CEEC (PCT 44, 45, 46)	Riverine Chenopod Shrublands <50% (PCT 164)	Stage / Property total
BSA	Offset area one	0	86	0	43	15022	138	0	0	0	15289
BSA	Offset area two	0	2507	0	264	4304	1805	307	0	0	9188
BSA	Offset area three	0	1077	0	66	1160	3149	0	146	0	5598
BSA	Offset area four	119	0	0	373	6825	1766	564	0	259	9907
BSA	Offset area five	0	244	0	0	1520	1498	0	29	0	3289
BSA	**Totals**	**119**	**3914**	**0**	**747**	**28830**	**8356**	**871**	**174**	**259**	**43272**
Wind impacts	Stage 1 and Enabling	0	76	0	30	1339	3588	0	240	0	5273
Wind impacts	Stage 2	2	398	147	46	2144	8202	1401	4037	0	16377
Wind impacts	**Total**	**2**	**474**	**147**	**76**	**3483**	**11790**	**1401**	**4277**	**0**	**21650**

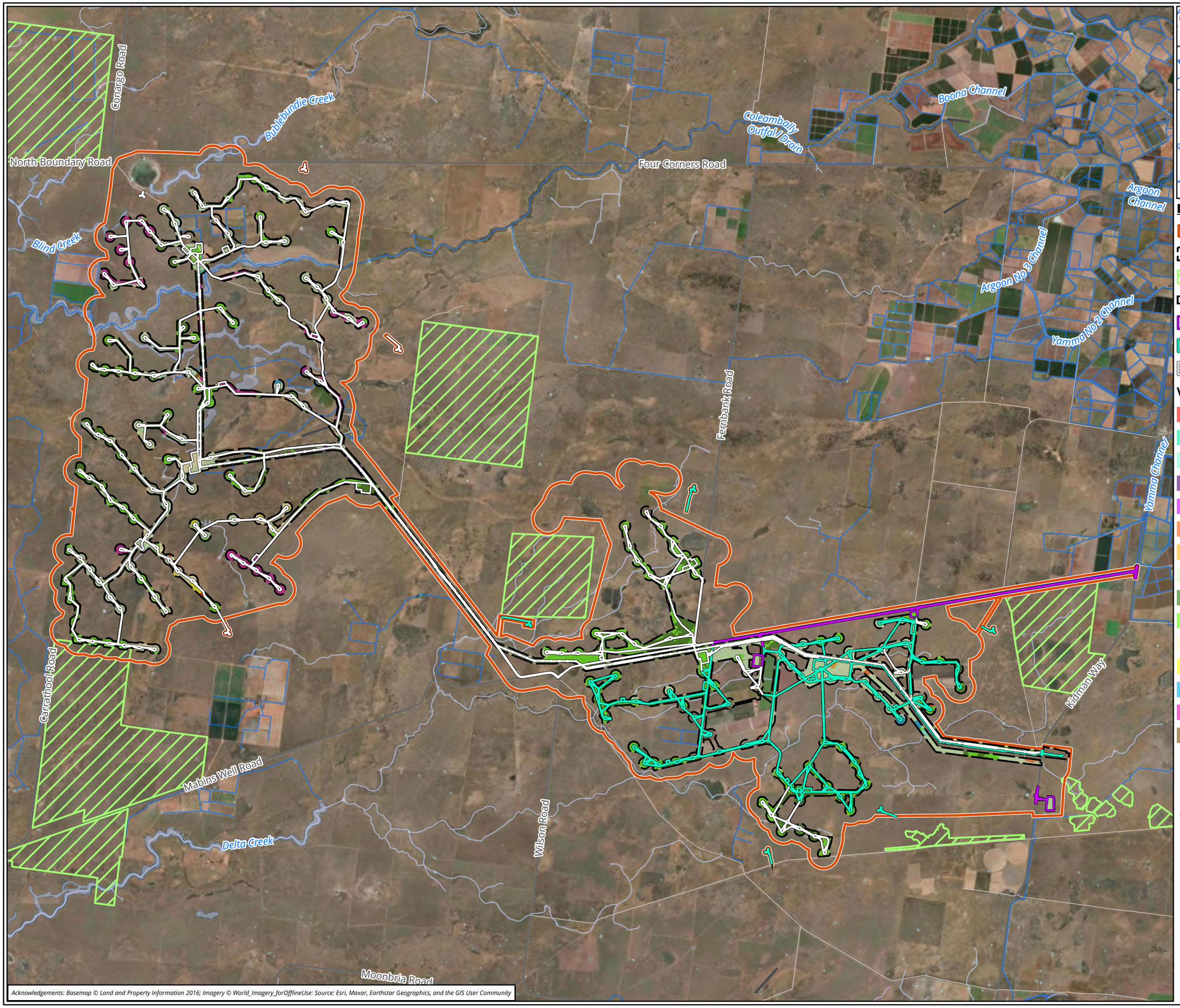
11.4. Offset staging plan

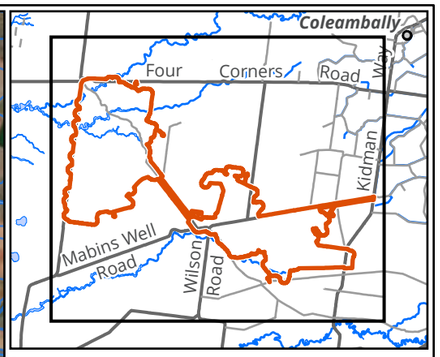
As outlined in Section 1.1.2, the project has been broken up into three stages to facilitate the development and staged retirement of the project's biodiversity credit liability. Prior to works commencing in each area, the biodiversity offset associated with that area will be secured. This is demonstrated in Table 97 above and Table 98 below.

Table 98 Summary of offset staging plan

Vegetation zone	Credit requirement	Enabling works	Stage 1	Stage 2
PCT 10_moderate	2	-	-	2
PCT 13_moderate	122	-	-	122
PCT 13_thinned	237	-	76	160
PCT 15_moderate	84	-	-	84
PCT 15_thinned	32	-	-	32
PCT 17_mod_good	28	-	12	16
PCT 17_moderate	49	-	18	30
PCT 26_DNG	3,483	253	1,086	2,144
PCT 26_intact	3,916	40	759	3,118
PCT 26_sparse	7,874	208	2,581	5,084
PCT 28_low	1,360	-	-	1,360
PCT 28_moderate	41	-	-	41
PCT 45_mod_good	92	-	91	1
PCT 45_Intersection	52	52	-	52
PCT 46_moderate	4,112	-	76	4,036
PCT 46_Intersection	21	21	-	-
PCT 160_mod_good	147	-	147	147
Total	**21,652**	**574**	**4,699**	**16,377**

Spark Renewables will confirm the offset staging plan with DP HI prior to the commencement of construction.





Legend

- Subject land
- Development corridor
- Indicative stewardship sites

Development footprint

- Early Works
- Stage 1
- Stage 2

Vegetation zone

- VZ1 - 10_Moderate
- VZ2 - 13_Moderate
- VZ3 - 13_Thinned
- VZ4 - 15_Moderate
- VZ5 - 15_Thinned
- VZ6 - 17_Mod_Good
- VZ7 - 17_Moderate
- VZ8 - 26_DNG
- VZ9 - 26_Intact
- VZ10 - 26_Sparse_Canopy
- VZ11 - 28_Low
- VZ12 - 28_Moderate
- VZ13 - 45_Mod_Good
- VZ15 - 46_Moderate
- VZ17 - 160_Mod_Good

Figure 23 Staging and stewardship site boundaries - Overview

0 1 2 3 4 5

Kilometers

Scale: 1:130,000 @ A3

Coordinate System: GDA2020 MGA Zone 55

N

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Matter: 37263, Date: 06 February 2026,
GIS: JB, Checked by: MP, Last edited by: jbeckius
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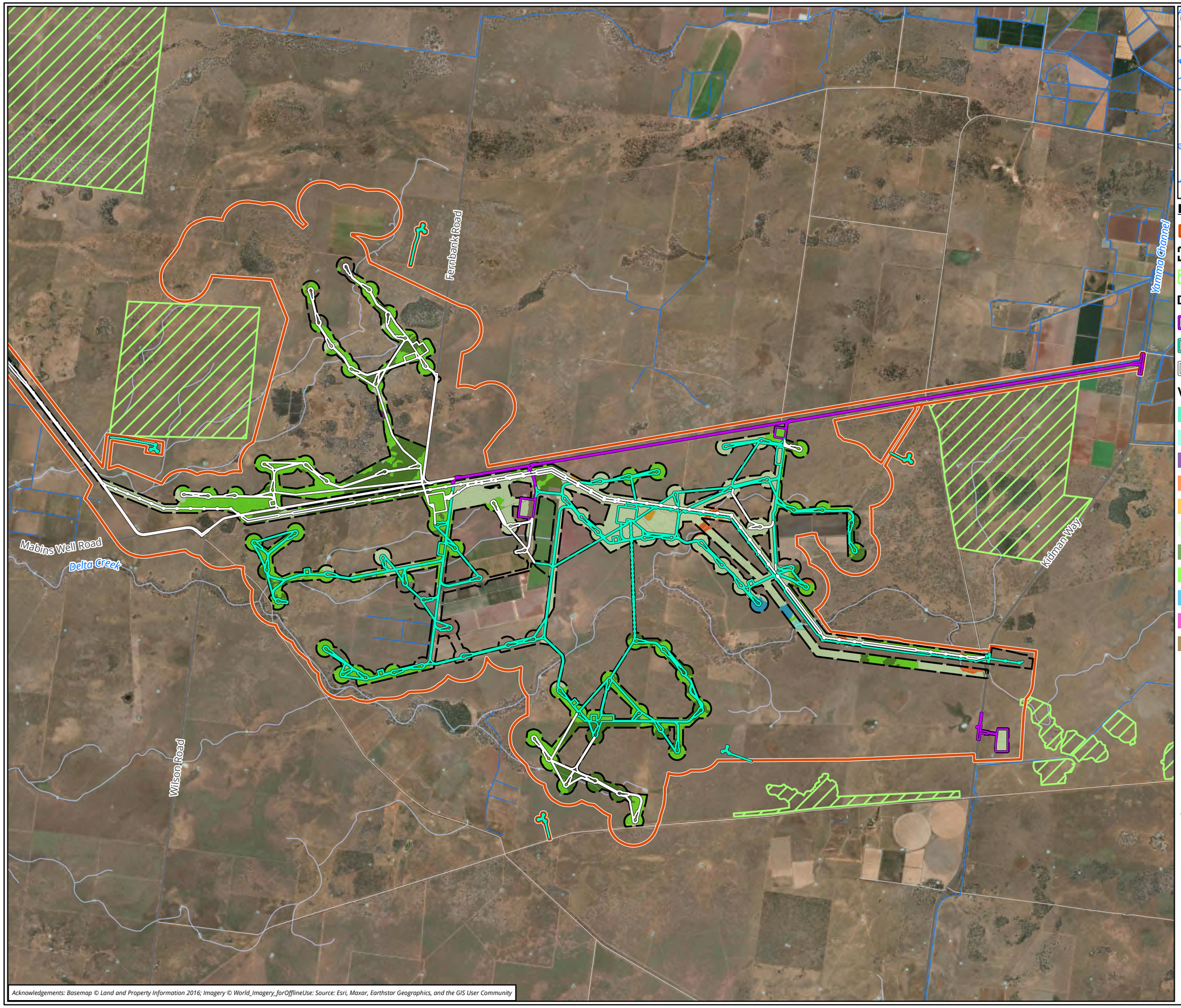
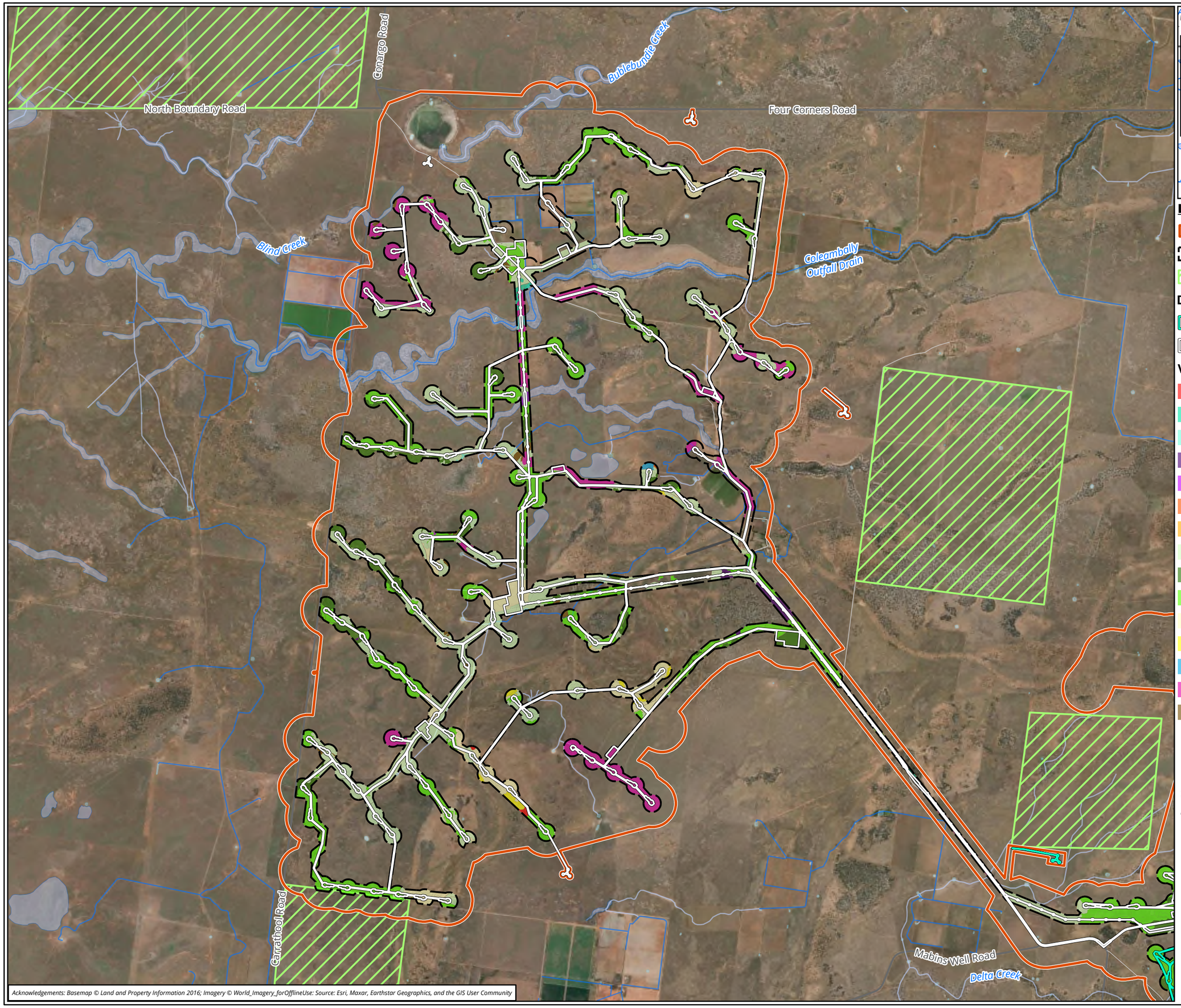


Figure 23 Staging and stewardship site boundaries - Eastern area



Legend

- Subject land
- Development corridor
- Indicative stewardship sites

Development footprint

- Stage 1
- Stage 2

Vegetation zone

- VZ1 - 10_Moderate
- VZ2 - 13_Moderate
- VZ3 - 13_Thinned
- VZ4 - 15_Moderate
- VZ5 - 15_Thinned
- VZ6 - 17_Mod_Good
- VZ7 - 17_Moderate
- VZ8 - 26_DNG
- VZ9 - 26_Intact
- VZ10 - 26_Sparse_Canopy
- VZ11 - 28_Low
- VZ12 - 28_Moderate
- VZ13 - 45_Mod_Good
- VZ15 - 46_Moderate
- VZ17 - 160_Mod_Good

Figure 23 Staging and stewardship site boundaries - Western area

0 1 2 3

Kilometers
Scale: 1:80,000 @ A3
Coordinate System:
GDA2020 MGA Zone 55

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biosis

Matter: 37263, Date: 06 February 2026,
GIS: JB, Checked by: MP, Last edited by: jbeckius
Location: P:\37200s\37263\Mapping\
37263_Dinawan_BDAR_Wind_F18-24.aprx
Layout: 37263_Wind_F23_Staging

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12. Assessment against EPBC Act and FM Act

12.1. Environment Protection and Biodiversity Conservation Act 1999

The EPBC Act is the Australian Government's key piece of environmental legislation. The EPBC Act applies to developments and associated activities that have the potential to significantly impact on Matters of National Environmental Significance (MNES) prot ected under the Act. Under the EPBC Act, activities that have potential to result in significant impacts on MNES must be referred to the Commonwealth Minister for the Environment and Water for assessment.

On the 12 July 2023, a delegate of the Federal Minister for the Environment and Water, determined the Dinawan Wind Farm was a controlled action under section 75 of the EPBC Act with the following controlling provisions:

- Listed threatened species and communities .

Supplementary SEARs were issued following the controlled action declaration.

Table 99 Response to Submissions EPBC Bilateral Assessment Information

Biodiversity requirements	Relevant section where addressed
Attachment D BCS Bilateral Assessment information and data requirements	
1.1 Include descriptions and maps of the operational and construction footprints of the project that relate to MNES.	Figure 24 outlines all MNES related data alongside the development corridor and development footprint. Impacts specific to MNES are detailed and summarised within Section 12.1.
1.2 Include descriptions and maps of staging and timing of the action that may impact on MNES.	The project's proposed stage plan is outlined in Section 11.4.
1.3 Contain maps of the subject land boundary showing the final proposal and disturbance footprint with regards to MNES.	Figure 24 outlines all MNES related data alongside the development corridor and development footprint. Impacts specific to MNES are detailed and summarised within Section 12.1.
1.4 Be submitted with GIS shapefiles of all maps that relate to MNES.	All MNES related spatial data has been re -submitted with the amended BDAR.
2 Ensure that the 'Establishing the site context' of BAM 2020 (Section 3) have been fully met in the BDAR in relation to MNES.	All aspects of the site context relating to MNES were assessed (refer to Section 2) , including but not limited to: • Mapped vegetation associated with EPBC Act listed TECs. • Wetlands of international importance (Ramsar wetlands) and wetlands listed under the Directory of Important Wetlands (DoIW). • Connectivity of habitat including to NP WS areas.

Biodiversity requirements	Relevant section where addressed
3.1 Demonstrate that field-based survey effort meets BCS survey guidelines and, where available, Commonwealth survey guidelines.	All survey efforts meet the BCS survey guidelines and can be reviewed in Section 4.3.1. All species were able to be surveyed in accordance with relevant BCS guidelines, no additional methodologies under the EPBC Act were required to meet survey effort under the bilateral agreement.
3.2 Demonstrate supporting databases (e.g. NSW BioNet Vegetation Classification, NSW BioNet Threatened Biodiversity Data Collection, NSW BioNet Atlas, Commonwealth Species Profile and Threats Database search results) have been accessed and used.	Supporting databases were used to inform the BDAR. A list of databases used is located within Section 1.5. Supporting databases were used in section 2.1.1 to assist with PCT presence. Databased were used in Section 3.1 to assist with PCT identification. In Appendix 2, species were assessed to determine previous known occurrence (if any) within 10km of the subject land.
3.3 Demonstrate published peer-reviewed literature has been accessed and used.	Peer reviewed literature has been accessed and used . A list of the literature used is present ed in the References and throughout the BDAR.
3.4 Demonstrate local data has been accessed and used (if relevant).	No appropriate local benchmark data was used in the preparation of this BDAR.
3.5 Demonstrate all EPBC Act-listed threatened species and communities have been appropriately mapped in accordance with the relevant Commonwealth listing advice.	All EPBC Act listed threatened species and communities have been mapped in accordance with relevant commonwealth listing advice in Section 3 and 4.
3.4 Demonstrate important populations and critical habitat, as defined in Approved Listing Advice, Approved Conservation Advice and Recovery Action Plans, has been considered.	Important populations and critical habitat, as defined in Approved Listing Advice, Approved Conservation Advice and Recovery Action Plans has been considered with all relevant information found in Appendix 6 and summarised within Table 101.
3.6 Include a list of all EPBC Act listed threatened species and communities that occur on the subject land, or in the vicinity (including species that are 'ecosystem credits' in BAM).	All EPBC Act listed threatened species and communities occurring on the subject land can be found in Section 12.1.2, and summarised within Table 101.
3.7 Include a discussion, with data and analysis where any species and communities identified by the Department of Climate Change, Energy, the Environment and Water (DCCEEW) referral documents have been ruled out as occurring on or near the subject site.	Relevant information on species and communities identified by Commonwealth DCCEEW can be found in Section 12.1.
4.1 Demonstrate that all feasible alternatives and efforts to avoid and minimise impacts on EPBC Act listed threatened species and communities (including direct, indirect and prescribed impacts) have been made, including an analysis of alternative: **a) designs and engineering solutions.** **b) modes or technologies** **c) routes and locations of facilities** **d) sites within the subject site** **e) any other site constraints in determining the location and design of the proposal (such as bushfire protection requirements, flood planning levels, servicing constraints, etc).**	Section 7 of the BDAR outlines and demonstrates the extensive avoid and minimise steps undertaken as part of the project from the onset of the design phase, including but not limited to design and engineering steps, modes and technologies to be utilised an d routes and locations of facilities. MNES have been considered from the outset of this assessment as high constraint biodiversity values requiring consideration in all avoidance and minimisation of impact decisions. Specific avoidance consideration for MNES is included in Table 101.

Biodiversity requirements	Relevant section where addressed
4.2 Discuss and justify all feasible measures to avoid, mitigate and/or manage impacts on EPBC Act listed threatened species and communities (including direct, indirect and prescribed impacts) including: **a) techniques, timing, frequency and responsibility.** **b) identify measures for which there is risk of failure.** **c) evaluate the risk and consequence of any residual impacts.** **d) any adaptive management strategy proposed to monitor and respond to impacts.**	Section 7 of the BDAR outlines and demonstrates the extensive avoid and minimise steps undertaken as part of the project from the onset of the design phase. Section 9 outlines all mitigation and management commitments to be undertaken as part of the projec t. Table 87 outlines and states all measures to mitigate and manage impacts including but not limited to techniques, timing, frequency and responsibility of actions, measures for where there is risk of failure, risk and consequence of any residual impacts and adaptiv e management strategies.
5.1 Identify the residual adverse impacts likely to occur to each EPBC Act listed threatened species and/or community after the proposed avoidance and mitigation measures are taken into account.	Table 101 outlines MNES entities at risk of impact.
5.2 Justify and provide evidence for the predicted level of impact, with reference to the Commonwealth's 'Significant Impact Guidelines 1.1 - Matters of National Environmental Significance'3 and DPIE's 'Guidance to Assist a Decision- Maker to Determine a Serious and Irreversible Impact'4	All MNES species at risk of impact by the project were assessed in accordance with the EPBC MNES Significant Impact Guidelines within Appendix 6.
5.3 Provide a summary table with the following information: **a) Name of EPBC Act listed entity.** **b) Nature & consequence of impact (direct/indirect).** **c) Duration of impact (e.g. construction, operation, life of project).** **d) Quantum of impact.** **e) Consequence of impact (local, state & national scales).** **f) Impacts requiring offsetting? (Significant or not).**	Table 101 outlines MNES species at risk of impact, including: a) Name of EPBC Act listed entity. b) Nature & consequence of impact (direct/indirect). c) Duration of impact (e.g. construction, operation, life of project). d) Quantum of impact. e) Consequence of impact (local, state & national scales). f) Impacts requiring offsetting? (Significant or not).
5.4 Provide data and justification where any EPBC Act-listed threatened species or communities to be considered in the BDAR are considered to be at low risk of impact during the assessment.	Table 101 include s detailed summaries of potential impact s to MNES species within the subject land, including outlining species at low risk of impact.
6.1 Identify any MNES that have not been offset using the BAM.	All MNES species with proposed impacts are listed as threatened under the BC Act and as such, will be offset under the bilateral agreement. Refer to Section 13.
6.2 Detail how impacts requiring offset correlate to the MNES impacts.	All MNES species with proposed impacts are listed as threatened under the BC Act and as such, will be offset under the bilateral agreement. Refer to Section 13.

Biodiversity requirements	Relevant section where addressed
6.3 Include details of the PCTs that need to be offsetting and the number and type of ecosystem credits required for impacts to MNES.	All MNES species with proposed impacts are listed as threatened under the BC Act and as such, will be offset under the bilateral agreement. Refer to Section 13.
6.4 Include details of threatened species that need to be offset and the number of species credits required for impacts to MNES.	All MNES species with proposed impacts are listed as threatened under the BC Act and as such, will be offset under the bilateral agreement. Refer to Section 13.
6.5 Demonstrate that the BAM has been correctly used (and BAM calculator) to identify the number and class of biodiversity credits that need to be offset to achieve a standard of 'no net loss' of biodiversity.	All MNES species with proposed impacts are listed as threatened under the BC Act and as such, will be offset under the bilateral agreement. Refer to Section 13.
6.6 Include any details of ecological rehabilitation and/or biodiversity conservation actions proposed for offsetting.	Detail surrounding the offset strategy for the project is outlined within Section 13.
6.7 Identify any other offsetting approach proposed, such as land-based offsets, retiring credits by payment into the Biodiversity Conservation Fund and/or through supplementary measures.	All MNES species with proposed impacts are listed as threatened under the BC Act and as such, will be offset under the bilateral agreement. Refer to Section 13.
6.8 Provide a summary table with the following: **a) Threatened species/communities listed under the EPBC Act.** **b) PCTs associated with the ecosystem credit species/ecological community (if applicable).** **c) Area of impact (ha).** **d) Credits required.** **e) Offsetting approach.** **f) Reference (EIS/BDAR).**	Detail surrounding the offset strategy for the project is outlined within Section 13.
7.1 Consider all relevant Commonwealth guidelines and policy statements that are appliable to the action and listed threatened species and/or communities, including but not limited to: **a) International environmental obligations.** **b) Recovery Plans.** **c) Approved Conservation Advice.** **d) Threat Abatement Plans.**	All commonwealth guidelines and policy statements applicable to MNES with the potential to be impacted were reviewed and referenced within Appendix 6 .
7.2 Include an assessment for each EPBC Act listed threatened species and/or community, that has been adequately informed by applicable Commonwealth guidelines and/or policy statements. For example, the interaction between the proposed action and important populations or critical habitat identified in policy documents and/or the interaction between the	Table 101 include s detailed summaries of potential impact to MNES species within the subject land including but not limited to important populations and critical habitat.

Biodiversity requirements	Relevant section where addressed
proposed action and threatening processes or recommended conservation actions outlined in Commonwealth policies and plans.	

12.1.1. Project assessment against the EPBC Act

The project is being assessed under the bilateral agreement addressing the matters outlined in Schedule 4 of the Environment Protection and Biodiversity Conservation Regulation 2000 (EPB C Regulation). As such, an assessment of the likelihood of occurrence of nationally listed biota occurring in the impact area and determination of significant impact likely to result from the project has been undertaken (Appendix 2). An assessment of significant impact s under the EPBC Act in accordance with the Significant Impact Guidelines (CoA 2013) was undertaken for threatened MNES biota (Appendix 6). Assessments of significant impacts on threatened species and ecological communities presented here are limited to biota recorded or identified as having a medium or higher likelihood of occurrence in the impact area and that may be impacted by constructi on and/or operation of the project, as well as those referenced in S upplementary SEARs.

The controlled action decision specifies listed threatened species and ecological communities as controlling provisions. Impacts associated with World Heritage properties and National Heritage places are outside the scope of this assessment, and Ramsar wetlands are not considered as they are not assessed to be controlling provisions. MNES within the subject land are detailed within Table 100 below.

All MNES protected under the triggered controlling provisions are potentially relevant . The supplementary SEARs issued22 August 2023 by Cth DCCEEW consider that there is likely to be a significant impact on the following species or communities :

- Plains Wanderer – Critically Endangered.
- Natural Grasslands of the Murray Valley Plains – Critically Endangered
- Weeping Myall Woodlands – Endangered.

Additional to this, the following species are identified as potentially being at risk of impact:

- Winged Peppercress *Lepidium monoplocoides* - Endangered
- Sand-hill Spider Orchid *Caladenia arenaria* – Endangered
- Turnip Copperburr *Sclerolaena napiformis* – Endangered
- Spear Grass *Austrostipa wakoolica* – Endangered
- Claypan Daisy *Brachyscome muelleroides* – Vulnerable
- Chariot Wheels *Maireana cheelii* – Vulnerable
- Slender Darling Pea *Swainsona murrayana* – Vulnerable
- Red Darling Pea *Swainsona plagiotropis* – Vulnerable
- Major Mitchell's Cockatoo (eastern) *Lophochroa leadbeateri leadbeateri* – Endangered
- Australasian Bittern *Botaurus poiciloptilus* – Endangered
- Australian Painted Snipe *Rostratula australis* – Endangered
- Superb Parrot *Polytelis swainsonii* – Vulnerable

- Southern Whiteface *Aphelocephala leucopsis* – Vulnerable
- Painted Honeyeater *Grantiella picta* – Vulnerable
- Diamond Firetail *Stagonopleura guttata* – Vulnerable
- Blue-winged Parrot *Neophema chrysostoma* – Vulnerable
- Corben's Long -eared Bat *Nyctophilus corbeni* – Vulnerable
- Southern Bell Frog *Litoria raniformis* – Vulnerable.

A list of biodiversity related MNES considered likely to be , or be at some risk of being , significantly impacted by the project is provided in Table 100, with detailed assessments included as Appendix 6. This assessment determined the MNES outlined below as having the potential for significant impact from the project :

- Plains Wanderer – Critically Endangered.
    - Significant impact likely.
- Superb Parrot – Vulnerable.
    - Significant impact possible .
- Natural Grasslands of the Murray Valley Plains – Critically Endangered
    - Significant impact likely.
- Weeping Myall Woodlands – Endangered.
    - Significant impact likely.

Assessments have been undertaken in accordance with the Significant Impact Guidelines 1.1 - Matters of National Environmental Significance (CoA 2013) within Appendix 6. All relevant EPBC Act listed species and ecological communities, and listed migratory species considered herein are listed in Table 100 and Table 101, along with a summary of the evidence used to conclude whether a significant impact is likely or unlikely to occur as a result of the project .

12.1.2. MNES within the subject land

A summary of all MNES recorded, or considered to have the potential to occur, within the development footprint and development corridor is provided in Table 100.

Table 100 MNES within the subject land

Matter of NES	Project specifics	Potential for significant impact
Threatened species	The Controlled Action decision identified the proposed action (i.e. the project) as likely to have a significant impact on the following species: • Plains Wanderer The Controlled Action decision identified the following species as being at risk of impact: • Winged Peppercress • Sand-hill Spider Orchid • Turnip Copperburr • Spear Grass • Claypan Daisy • Chariot Wheels • Slender Darling Pea • Red Darling Pea • Major Mitchell's Cockatoo • Australasian Bittern • Australian Painted Snipe • Superb Parrot • Southern Whiteface • Painted Honeyeater • Diamond Firetail • Blue-winged Parrot • Corben's Long-eared Bat • White-throated Needletail Although not mentioned within the controlled action decision, Southern Bell Frog has also been included. 17 EPBC listed threatened species above are considered to have a known, potential or uncertain impact as a result of the project. Those entities are highlighted in bold above. All other potential threatened species are considered to have a low likelihood of occurrence due to limited or absent suitable habitats in the subject land.	The following species were determined to be potentially at risk of significant impact, and require assessment under the EPBC Act . • Plains Wanderer • Winged Peppercress • Turnip Copperburr • Chariot Wheels • Spear Grass • Claypan Daisy • Mossgiel Daisy • Slender Darling Pea • Red Darling Pea • Major Mitchell's Cockatoo • Australasian Bittern • Australian Painted Snipe • Superb Parrot • Southern Whiteface • Painted Honeyeater • Diamond Firetail • Southern Bell Frog • Corben's Long-eared Impacts to White-throated Needle tail and Blue-winged Parrot have been considered to be low or negligible, due to westerly distribution limits or vagrancy respectively. Impacts to Sand-hill Spider Orchid are considered negligible due to lack of suitable microhabitats and geographical limitations.
Threatened ecological communities	Direct and indirect impacts are considered to occur to two listed TECs • Weeping Myall Woodland • Natural Grasslands of the Murray Valley Plains No other EPBC listed TECs occur within the subject land .	Of all entities assessed, the following are considered to have a significant impact resulting from the project: • Weeping Myall Woodland • Natural Grasslands of the Murray Valley Plains

Matter of NES	Project specifics	Potential for significant impact
Migratory species	The Controlled Action decision did not identif y the proposed action as likely to have a significant impact on migratory species . Background searches identified the following migratory species as having potential to occur in the subject land: • *Actitis hypoleucos* • *Apus pacificus* • *Calidris acuminata* • *Calidris ferruginea* • *Calidris melanotos* • *Charadrius veredus* • *Gallinago hardwickii* • *Gelochelidon nilotica* • *Haliaeetus leucogaster* • *Hirundapus caudacutus* • *Hydroprogne caspia* • *Limosa limosa* • *Merops ornatus* • *Motacilla flava* • *Numenius madagascariensis* • *Legadis falcinellus* • *Tringa nebularia*	There is limited suitable habitat within the subject land for migratory shorebird species, particularly those that are largely associated with tidal mudflats or coastal beaches and estuaries. Migratory species that may occur in inland areas such as Latham's Snipe and Glossy Ibis, may occasionally utilise any natural drainage systems, depressional wetlands or farm dams in the subject land during suitable conditions. Impacts to these areas are likely to be minimal, with the project design largely avoiding any impacts to wetland habitats. Fork-tailed Swift were observed during BUS, and an assessment of this species has been undertaken. Despite collision risk associated with the project , all other migratory species are considered to be not significantly impacted.
World or National Heritage Places	No world heritage places or national heritage places were identified as occurring within the subject land or within 10 km of the subject land.	There are no national or world heritage places within or near the subject land. The project is unlikely to result in any direct or indirect impacts to national or world heritage.
Wetlands of international importance (Ramsar sites)	There are no Ramsar wetland areas within or near the subject land. The subject land is 200 -300 kilometres upstream from the nearest Ramsar site at Hattah -Kulkyne Lakes (Ramsar site 16), 400-500 kilometres upstream from the Riverland (Ramsar site 29) and Banrock Station wetland complex (Ramsar site 63), and 500 -600 kilometres upstream from the Coorong, and lakes Alexandrina and Albert wetland (Ramsar site 25).	The project is not expected to incur any significant impacts, or modifications to the natural drainage systems including watercourses and lake areas within the subject land or surrounding landscape.

Further detailed assessment of the potential presence of MNES within the subject land, avoidance efforts and assessment of potential impacts are included in Table 101, Section 12.1.3 to Section 12.1.7, Appendix 2 and Appendix 6.

Table 101 Detailed summary of MNES with potential for impact within the subject land

MNES	DCCEEW consideration	Important populations / Critical habitat	Updated likelihood of occurrence based on assessment	Potential impacts	Summary of MNES occurrence, avoidance efforts, potential impact (amended design)	SIC self-assessment undertaken / result (Appendix 6)
Weeping Myall woodlands	Likely to be significant impacted	As an Endangered Ecological Community, all occurrences are considered 'Important'.	Recorded within development footprint.	Yes - **Offsets for residual significant impacts required**	Most dominant vegetation community with the broader locality and development footprint, in three various condition zones. All PCT 26 Intact (116.77 ha) and some patches of the PCT 26 sparse (11.94 ha) meet, or are predicted to meet, the MNES criteria. Although a large amount of intact Weeping Myall has been prioritised for avoidance, due to the removal of approximately 128.71 ha of Weeping Myall TEC that is known or likely to meet the MNES criteria under the EPBC Act, in conjunction with cumulative impacts within the region, it is a considered a significant impact on the TEC.	Significant impact likely. on criteria 1 of SIC – Reduce the extent of an ecological community Detailed assessment provided in Appendix 6.
Natural Grasslands of the Murray Valley Plains	Likely to be significant impacted	As an Critically Endangered Ecological Community, all occurrences are considered 'Important'.	Recorded within development footprint.	Yes - **Offsets for residual significant impacts required**	Impacts to known areas of this community have been avoided where possible and restricted to smaller isolated patches or fringing areas of larger more connected patches. Total impacts associated with this TEC are approximately 76.06 ha. Potential areas of vegetation that will have patches commensurate with this TEC within the subject land equate to approximately 5,699 ha. It is estimated in the Riverina that approximately 61,000 ha remain in the region. Based on an impact are a of 76.06 ha, the project has potential to remove approximately 1.4 % and 0.13% of the predicted extent of this TEC within the subject land and broader region respectively. Although areas of this TEC have been avoided, and restricted to more linear impacts in nature, given the overall amount of impact and potential for cumulative impacts, it is likely that significant impacts would occur to this TEC.	Significant impact likely. Detailed assessment provided in Appendix 6.
Plains-Wanderer	Likely to be significant impacted	As a Critically Endangered listed species, all populations are considered 'Important Populations'. The national recovery plan for this species (DoE 2016) states habitat critical to the survival of this species includes: • Any regions where the species is likely to occur, and • Any newly discovered locations that extend the likely range of the species.	Known to occur. Important mapped habitat within subject land	Yes - **Offsets for residual significant impacts required**	The Plains Wanderer is known to occur throughout the broader locality historically, with the Riverina considered a strong hold for the species. Due to the dynamic nature of the grassland habitats and condition states therein, a key focus during project des ign was the avoidance of likely suitable habitat at a landscape scale. Specifically, due to the cryptic nature of this species and critically endangered listing, avoidance of suitable habitat and mapped important areas were incorporated early into project designs. This included avoiding and minimising impacts to areas of lower tussocky grasslands such as PCT 46, as well as areas of important mapped habitat and associated buffers. Approximately 2. 55 ha of important mapped area will be impacted and offset . Additionally, potential habitat totalling 39.16 ha will also be impacted. Within the subject land , approximately 648 ha of important mapped area occurs, as well as an estimated 276 ha of potential habitat. Potential habitat may fluctuate due to the dynamic nature of grassland communities in the Riverina , as noted in s ite surveys undertaken in November 2022 (impacted by flooding) as well as March 2023 and April 2023. Surveys were conducted via nocturnal transects as well as acoustic detection. One Plains Wanderer individual was incidentally recorded in October 2024 within PCT 46 fringing areas of PCT 26 DNG , and coincidently, in close proximity to important mapped areas. A 300m buffer no go area was applied and design amended to avoid impacts to this buffer and potential home range. Direct impacts equate to approximately 4.5 % of	Significant impact possible due to criteria 2 of SIC. Reduce the area of occupancy of the species Detailed assessment provided in Appendix 6.

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MNES	DCCEEW consideration	Important populations / Critical habitat	Updated likelihood of occurrence based on assessment	Potential impacts	Summary of MNES occurrence, avoidance efforts, potential impact (amended design)	SIC self-assessment undertaken / result (Appendix 6)
					potentially suitable habitat within the subject land and mapped important areas equate to 0.4%.	
Brachyscome muelleroides	Low risk of significant impact	An important population is considered to occur at Morundah Station. Critical habitat not defined. Therefore considered areas necessary for long-term maintenance, genetic diversity and long term evolutionary development, reintroduction of populations or recovery of the species.	Surveyed. Unlikely to be present. Assumed present where survey coverage not adequate	Unlikely	Targeted surveys for *Brachyscome muelleroides* have been carried out throughout the development footprint in September 2022, 2023, 2024, 2025 and November 2022, 2023, 2024, 2025. Reference populations of this species were checked prior to surveys. This species has not been recorded despite flooding impeding some access however sufficient survey for the species was completed. In terms of avoidance, detailed constraints assessment and modelling of biodiversity values was undertaken to ensure areas of high biodiversity value, and therefore most likely habitat for this species, were avoided as much as possible (including within seasonally damp situations such as shallow depression sand around the margins of swamps, lagoons and claypans, on heavy grey cracking clays to lighter clay loam soils, in grassland and grassy woodland). This has resulted in multiple revisions of the development footprint as demonstrated in Section 7. This species prefers seasonally moist grey gilgaied soils on the floodplains with PCTs such as PCT 45 and PCT 46, which occur within the subject land. Although not detected in surveys to date across a large portion of the development footprint, spatial gaps in survey effort due changing designs has resulted assuming presence across 0.93 ha. It is considered highly unlikely this species is present and will be impacted based on survey effort to date within and outside the amended development footprint. Potential indirect impacts will be managed through mitigation measures which are outlined in Section 9, which includes but not limited to detailed BMP, pre-clearance surveys, adaptive management and unexpected finds procedures.	Significant impact unlikely Detailed assessment provided in Appendix 6.
Brachyscome papillosa	Low risk of significant impact	Important populations not defined. Therefore considered key source populations either for breeding or dispersal, for maintaining genetic diversity, near the limit of the species range. Critical habitat not defined. Therefore considered areas necessary for long-term maintenance, genetic diversity and long term evolutionary development, reintroduction of populations or recovery of the species.	Surveyed. Unlikely to be present. Assumed present where survey coverage not adequate	Unlikely	Targeted surveys for *Brachyscome papillosa* have been carried out throughout the development footprint in September 2022, 2023, 2024, 2025 and November 2022, 2023, 2024, 2025. Reference populations of this species were checked prior to surveys. This species has not been recorded. In terms of avoidance, detailed constraints assessment and modelling of biodiversity values was undertaken to ensure areas of high biodiversity value, and therefore most likely habitat for this species, were avoided as much as possible. This has resulted in multiple revisions of the development footprint as demonstrated in Section 7. Although not detected in surveys to date across a large portion of the development footprint, spatial gaps in survey effort due changing designs has resulted assuming presence across 1.74 ha. It is considered highly unlikely this species is present and will be impacted based on survey effort to date within and outside the amended development footprint. Potential indirect impacts will be managed through mitigation measures which are outlined in Section 9, which includes but not limited to detailed BMP, pre-clearance surveys, adaptive management and unexpected finds procedures.	Significant impact unlikely Detailed assessment provided in Appendix 6.

MNES	DCCEEW consideration	Important populations / Critical habitat	Updated likelihood of occurrence based on assessment	Potential impacts	Summary of MNES occurrence, avoidance efforts, potential impact (amended design)	SIC self-assessment undertaken / result (Appendix 6)
Lepidium monoplocoides	Low risk of significant impact	As an Endangered listed species, all populations are considered 'Important Populations'. Critical habitat not defined. Therefore considered areas necessary for long-term maintenance, genetic diversity and long term evolutionary development, reintroduction of populations or recovery of the species.	Surveyed. Unlikely to be present. Assumed present where survey coverage not adequate	Unlikely	Targeted surveys for *Lepidium monoplocoides* have been carried out throughout the development footprint in September 2022, 2023, 2024, 2025 and November 2022, 2023, 2024, 2025. Reference populations of this species were checked prior to surveys. This species has not been recorded. In terms of avoidance, detailed constraints assessment and modelling of biodiversity values was undertaken to ensure areas of high biodiversity value, and therefore most likely habitat for this species, were avoided as much as possible. This has resulted in multiple revisions of the development footprint as demonstrated in Section 7. Although not detected in surveys to date across a large portion of the development footprint, spatial gaps in survey effort due changing designs has resulted assuming presence across 1.61 ha in which microhabitats could occur. It is considered highly unlikely this species is present and will be impacted based on survey effort to date within and outside the amended development footprint. Potential indirect impacts will be managed through mitigation measures which are outlined in Section 9, which includes but not limited to detailed BMP, pre-clearance surveys, adaptive management and unexpected finds procedures	Significant impact unlikely Detailed assessment provided in Appendix 6.
Sclerolaena napiformis	Low risk of significant impact	Seventeen important populations have been identified: 11 in Victoria and six in New South Wales. Five of which occur in the Jerilderie/Conargo locality, in the broad vicinity of the subject land. In NSW, the species occurs in Knotty Spear-Grass *Austrostipa nodosa* and Windmill Grass *Chloris truncata* tussock grasslands on grey to red-brown cracking clays and clay loams.	Surveyed. Unlikely to be present. Assumed present where survey coverage not adequate	Unlikely	Targeted surveys for *Sclerolaena napiformis* have been carried out throughout the development footprint in September 2022, 2023, 2024, 2025 and November 2022, 2023, 2024, 2025. This species has not been recorded. In terms of avoidance, detailed constraints assessment and modelling of biodiversity values was undertaken to ensure areas of high biodiversity value, and therefore most likely habitat for this species, were avoided as much as possible (including within seasonally damp situations such as shallow depression sand around the margins of swamps, lagoons and claypans, on heavy grey cracking clays to lighter clay loam soils, in grassland and grassy woodland). This has resulted in multiple revisions of the development footprint as demonstrated in Section 7. This species prefers grassland PCTs such as PCT 46, and derived areas of PCT 26 which occur within the subject land. Although not detected in surveys to date across a large portion of the development footprint, spatial gaps in survey effort due changing designs has resulted assuming presence across 7.03 ha. It is considered highly unlikely this species is present and will be impacted based on survey effort to date within and outside the amended development footprint. Potential indirect impacts will be managed through mitigation measures which are outlined in Section 9, which includes but not limited to detailed BMP, pre-clearance surveys, adaptive management and unexpected finds procedures.	Significant impact unlikely Detailed assessment provided in Appendix 6.

MNES	DCCEEW consideration	Important populations / Critical habitat	Updated likelihood of occurrence based on assessment	Potential impacts	Summary of MNES occurrence, avoidance efforts, potential impact (amended design)	SIC self-assessment undertaken / result (Appendix 6)
Austrostipa wakoolica	Low risk of significant impact	As an Endangered listed species, all populations are considered 'Important Populations'. Critical habitat not defined. Therefore considered areas necessary for long-term maintenance, genetic diversity and long term evolutionary development, reintroduction of populations or recovery of the species.	Surveyed. Unlikely to be present. Assumed present where survey coverage not adequate	Unlikely	Targeted surveys for *Austrostipa wakoolica* have been carried out throughout the development footprint in November 2022, 2023, 2024 and 2025. In terms of avoidance, detailed constraints assessment and modelling of biodiversity values was undertaken to ensure areas of high biodiversity value, and therefore most likely habitat for this species, were avoided as much as possible. This included known habitats such as lignum swamp in brown loam with box and mallee, creek banks in grey silty clay, mallee and lignum sandy loam flat, open cypress pine forest on low range in sandy soil and a low rock rise fenced -off from stock for about 18 months (DECCW, 2014). This species can be associated with PCT 17 and PCT 26 and has been assumed present in these zones. For PCT 26, this species has only been assumed in areas within this zone that are subject to more frequent periodic flooding for its habitat to maintain wet conditions. Avoidance has resulted in multiple revisions of the development footprint as demonstrated in Section 7. Although not detected in surveys to date across a large portion of the development footprint, spatial gaps in survey effort due changing designs has resulted assuming presence across 1.58 ha. It is considered highly unlikely this species is present and will be impacted based on survey effort to date within and outside the amended development footprint. Potential indirect impacts will be managed through mitigation measures which are outlined in Section 9, which includes but not limited to detailed BMP, pre-clearance surveys, adaptive management and unexpected finds procedures.	Significant impact considered unlikely Detailed assessment provided in Appendix 6.
Maireana cheelii	Low risk of significant impact	Important populations not defined. Therefore considered key source populations either for breeding or dispersal, for maintaining genetic diversity, near the limit of the species range. Critical habitat not defined. Therefore considered areas necessary for long-term maintenance, genetic diversity and long term evolutionary development, reintroduction of populations or recovery of the species.	Surveyed. 51 individuals recorded	Yes **Offsets for residual impacts required**	Targeted surveys for *Maireana cheelii* have been carried out throughout the development footprint in September 2022, 2023, 2024, 2025 and November 2022, 2023, 2024, 2025. This species was recorded, with 51 individuals located in PCT 13, adjacent to the existing Goolgumbla Road. In terms of avoidance, detailed constraints assessment and modelling of biodiversity values was undertaken to ensure areas of high biodiversity value, and therefore most likely habitat for this species, were avoided as much as possible. Additionally, further redesign of the road upgrade and transmission line alignment along Goolgumbla Road led to further avoidance, and restricting impacts to 0.44 ha of known habitat. Small spatial gaps in survey effort due to changing designs has resulted in assuming presence across 2.54 ha. Potential indirect impacts will be managed through mitigation measures which are outlined in Section 9, which includes but not limited to detailed BMP, pre-clearance surveys, adaptive management and unexpected finds procedures.	Significant impact unlikely Detailed assessment provided in Appendix 6.

MNES	DCCEEW consideration	Important populations / Critical habitat	Updated likelihood of occurrence based on assessment	Potential impacts	Summary of MNES occurrence, avoidance efforts, potential impact (amended design)	SIC self-assessment undertaken / result (Appendix 6)
Swainsona murrayana	Some risk of significant impact	Important populations not defined. Therefore considered key source populations either for breeding or dispersal, for maintaining genetic diversity, near the limit of the species range. Critical habitat not defined. Therefore considered areas necessary for long-term maintenance, genetic diversity and long term evolutionary development, reintroduction of populations or recovery of the species.	Recorded within development footprint.	Yes **Offsets for residual impacts required**	This species has been identified during surveys in September 2022 , 2023, 2024 and 2025. All records and suitable habitat were found to be in certain habitats of reduced grass cover, increase forb cover with species such as Bulbine lily. Large numbers of the species were recorded through the subject land , estimated to up to 1,527 individuals and 276 ha of optimal habitat, however numerous designs revisions have occurred to avoid and minimise impacts to larger patches to ensure a viable local population can be maintained. Potential impacts will occur to 13.16 ha of habitat , of which an estimated 2 85 individuals are present. Unlikely to be considered an important population. This represents approximately 2 % of the local population recorded , and 5% of potential habitat. Additionally this species is also impacted by the adjacent Dinawan Solar Farm, with a conservative 38 ha impacted. Potential indirect impacts will be managed through mitigation measures which are outlined in Section 9, which includes but not limited to detailed BMP, pre -clearance surveys, adaptive management and unexpected finds procedures.	Significant impact considered unlikely Detailed assessment provided in Appendix 6.
Swainsona plagiotropis	Low risk of significant impact	Fourteen important populations have been defined in NSW, with 12 sub-populations comprising the Jerilderie meta -population, south of the subject land. Further unidentified important populations may exist, which would be defined as: • 'Stronghold' populations (greater than 1000 individuals) • Populations that, if lost, would cause a significant range contraction or loss of genetic diversity. • Populations subject to monitoring and conservation management. All habitat for this species should be considered important for the species' long-term survival	Surveyed. Unlikely to be present. Assumed present where survey coverage not adequate	Unlikely	Targeted surveys for *Swainsona plagiotropis* have been carried out throughout the development footprint in September 2022 , 2023, 2024 and 2025. This species has not been recorded. It was found to be flowering during surveys in September 2023 and 2025 at a known reference population near Jerilderie. In terms of avoidance, detailed constraints assessment and modelling of biodiversity values was undertaken to ensure areas of high biodiversity value, and therefore most likely habitat for this species, were avoided as much as possible. This has resulted in multiple revisions of the development footprint as demonstrated in Section 7. Although not detected in surveys to date across a large portion of the development footprint, spatial gaps in survey effort due changing designs has resulted assuming presence across 4.67 ha. It is considered highly unlikely this species is present and will be impacted based on survey effort to date within and outside the amended development footprint. Potential indirect impacts will be managed through mitigation measures which are outlined in Section 9, which includes but not limited to detailed BMP, pre -clearance surveys, adaptive management and unexpected finds procedures.	Significant impact unlikely Detailed assessment provided in Appendix 6.
Eastern Major Mitchell's Cockatoo	Low risk of significant impact	As an Endangered listed species, all populations are considered 'Important Populations'. Habitat critical to the survival of the eastern Pink cockatoo consist of: • Arid and semi- arid woodlands dominated by Mulga, mallee and box eucalypts, Slender Cypress Pine or Belah. • Known habitat containing suitable attributes, including potential habitat for the subspecies, especially where there are large mature trees with suitable hollows. • Surrounding matrix of these areas for the role of providing movement corridors for dispersal across the landscape.	Surveyed. Unlikely to be present for breeding	Unlikely **BAM offsets for residual impacts to foraging habitat via ecosystem credits only**	Not recorded during detailed BUS across two years , during targeted surveys nor incidentally.. Hollow bearing trees will be removed as part of the project, limited to nine . Turbine collision is possible, but overall risk is considered low. In terms of avoidance, detailed constraints assessment and modelling of biodiversity values was undertaken to ensure areas of high biodiversity value, and therefore most likely habitat for this species, were avoided as much as possible. No known breeding site will be impac ted. Potential indirect impacts will be managed through mitigation measures which are outlined in Section 9, which includes but not limited to detailed BMP, pre -clearance surveys, adaptive management and unexpected finds procedures.	Significant impact unlikely Detailed assessment provided in Appendix 6.
Australasian Bittern	Some risk of significant impact	As an Endangered listed species, all populations are considered 'Important Populations'.	Transient only	Unlikely	There is no optimal habitat for the Australasian Bittern within the subject land, however this species is known to fly to and from breeding grounds in	Significant impact unlikely

MNES	DCCEEW consideration	Important populations / Critical habitat	Updated likelihood of occurrence based on assessment	Potential impacts	Summary of MNES occurrence, avoidance efforts, potential impact (amended design)	SIC self-assessment undertaken / result (Appendix 6)
		Any natural wetland habitat where the species is known or likely to occur (breeding or foraging habitat) within the indicative distribution map (Cth DCCEEW 2022a)			and around Leeton and Griffith in NSW, through to Victoria. It is unlikely that this species would occur within the subject land, other than rare transient use or during increased seasonal flooding events and only on a temporary basis. Potential flight heights for Australasian Bitterns can vary depending on several factors, including habitat type, weather conditions, and behavioural patterns. Generally, Bitterns are known to fly at relatively low altitudes, often skimming over wetland vegetation such as reeds and grasses. This low-level flight behaviour is believed to be an adaptation to their hunting strategy, as they primarily prey on small fish, frogs, and invertebrates found in shallow water within wetland habitats. Bitterns are likely to fly lower to minimise energy expenditure and maintain stability due to their bulky heavy set build. However, prolonged flights over open areas and open habitats may occur on occasion, and they may occasionally ascend to slightly higher altitudes, particularly during cert ain behaviours such as territorial displays, courtship flights, or nomadic movements. I t is considered an unlikely event that Bitterns would fly within the RSA of this project, that being within 61 -239m above ground level. This species has a low risk of being effected by macro avoidance of large areas of turbines. Potential indirect impacts will be managed through mitigation measures which are outlined in Section 9, which includes but not limited to detailed BMP and BBAMP, pre-clearance surveys, adaptive management and unexpected finds procedures.	Detailed assessment provided in Appendix 6.
Australian Painted Snipe	Low risk of significant impact	As an Endangered listed species, all populations are considered 'Important Populations'. Any natural wetland habitat where the species is known or likely to occur (especially with suitable breeding habitat) within the indicative distribution map. Any location outside the above area that may be periodically occupied by Australian Painted Snipe when wetland conditions are favourable. (Cth DCCEEW 2022b)	Transient only	Unlikely	There is no optimal habitat for the Australian Painted Snipe within the subject land, however this species is known to fly to and from optimal areas nomadically based on environmental conditions, influenced by factors such as habitat availability, water levels, and food resources as well as for breeding events between September and March. Swamps, and flooded grasslands may provide suitable habitat on the rare occasion during rare flooding events. Australian Painted Snipes typically fly at relatively low elevations, especially during their migration and foraging activities. They are not considered high- altitude migratory birds like some species of waterbirds and/or raptors. Instead, they tend to fly close to the ground, skimming over wetlands and vegetation a s they move between feeding and breeding sites. Whilst not well known, and research on movements is currently underway, it is unlikely that Australian Painted Snipe would fly within the RSA of this project, that being within 61 -239m above ground level. Potential indirect impacts will be managed through mitigation measures which are outlined in Section 9, which includes but not limited to detailed BMP and BBAMP, pre-clearance surveys, adaptive management and unexpected finds procedures.	Significant impact unlikely Detailed assessment provided in Appendix 6.
Superb Parrot	Some risk of significant impact	The species is considered to comprise a single national population of an estimated 6500 mature individuals (Cth DCCEEW 2024t) . The National Recovery Plan (DAWE 2021b) details critical habitat as: • The two main distinct habitat types used for breeding: riverine forests in the Riverina, and box -gum woodlands in the tablelands and slopes of VIC, SW, ACT.	Recorded within development footprint.	Yes- **Offsets for residual significant impacts required**	Recorded foraging onsite. No direct observational evidence of breeding was recorded within the subject land, however numerous paired individuals and juveniles were observed. Potential hollows were found to be preferentially in use by common species such as Blue Bonnets and Galahs. A number of annual flights (between 1 and 4) for the Superb Parrot are at risk of collision with turbines as well as the potential, albeit low likelihood, of macro avoidance of habitat within the subject land. In terms of avoidanc e, detailed	Potential for significant impact based on reduced occupancy and collision risk. Recorded within RSA. Detailed assessment provided in Appendix 6.

MNES	DCCEEW consideration	Important populations / Critical habitat	Updated likelihood of occurrence based on assessment	Potential impacts	Summary of MNES occurrence, avoidance efforts, potential impact (amended design)	SIC self-assessment undertaken / result (Appendix 6)
		• Any known breeding colonies with a 10 km buffer zone where there is contiguous habitat.			constraints assessment and modelling of biodiversity values was undertaken to ensure areas of high biodiversity value, and therefore most likely habitat for this species, were avoided as much as possible. This has resulted in multiple revisions of the deve lopment footprint as demonstrated in Section 7. Potential indirect impacts will be managed through mitigation measures which are outlined in Section 9, which includes but not limited to detailed BMP and BBAMP, pre -clearance surveys, adaptive management and unexpected finds procedures. x	
Southern Whiteface	Low risk of significant impact	Important populations not defined. Therefore considered key source populations either for breeding or dispersal, for maintaining genetic diversity, near the limit of the species range. Habitat critical to the survival of the Southern Whiteface includes areas of: • Relatively undisturbed open woodlands and shrublands with an understorey of grasses or shrubs, or both. • Habitat with low tree densities and an herbaceous understory litter cover which provides essential foraging habitat. • Living and dead trees with hollows and crevices which are essential for roosting and nesting. (Cth DCCEEW 2023d)	Recorded within development footprint.	Yes **BAM offsets for residual impacts to foraging habitat via ecosystem credits only**	Recorded foraging onsite frequently in all major habitats within the development corridor. In terms of avoidance, detailed constraints assessment and modelling of biodiversity values was undertaken to ensure areas of high biodiversity value, and therefore most likely habitat for this species, were avoided as much as possible. This has resulted in multiple revisions of the development footprint as demonstrated in Section 7. Potential indirect impacts will be managed through mitigation measures which are outlined in Section 9, which includes but not limited to detailed BMP, pre-clearance surveys, adaptive management and unexpected finds procedures.	Significant impact unlikely Not at risk of collision Detailed assessment provided in Appendix 6.
Painted Honeyeater	Low risk of significant impact	The species is considered to comprise a single national population of fewer than 10,000 mature individuals (DAWE 2021a) The National Recovery Plan for the Painted Honeyeater lists critical habitat as: • Known or likely breeding habitat in Weeping Myall, Brigalow *Acacia harpophylla* woodlands, box -gum woodlands and box -ironbark forests on the inland slopes of the Great Dividing Range in New South Wales, Victoria and southern Queensland. • All preferred foraging species within known and likely foraging habitat particularly mistletoes of the genus *Amyema* growing on forest and woodland eucalypts and acacias. (DAWE 2021a)	Recorded adjacent to development footprint	Yes **BAM offsets for residual impacts to foraging habitat via ecosystem credits only**	Recorded foraging adjacent to the previous development corridor in high condition Weeping Myall vegetation that has been avoided. Detailed constraints assessment and modelling of biodiversity values was undertaken to ensure areas of high biodiversity value, and therefore most likely habitat for this species, were avoided as much as possible. This has resulted in multiple revisions of the development footprint as demonstrated in Section 7. Direct impacts to 116.77 ha of intact Weeping Myall areas containing mature woody vegetation are predicted; however, 678 ha will be retained within the development corridor and an additional estimated 4,780 ha within the subject land will also be retained. Movement through the landscape will not be impeded by the project. Potential indirect impacts will be managed through mitigation measures which are outlined in Section 9, which includes but not limited to detailed BMP, pre -clearance surveys, adaptive management and unexpected finds procedures.	Significant impact unlikely Not at risk of collision Detailed assessment provided in Appendix 6.
Diamond Firetail	Low risk of significant impact	Important populations not defined. Therefore considered key source populations either for breeding or dispersal, for maintaining genetic diversity, near the limit of the species range. Habitat critical to the survival of the diamond firetail includes areas of: • Eucalypt, acacia or casuarina woodlands, open forests and other lightly timbered habitats. • Low tree density, few large logs, and little litter cover but high grass cover for foraging, roosting and breeding. • Drooping she -oak (Allocasuarina verticillata) within the Mt Lofty Ranges. (Cth DCCEEW 2024p)	Recorded within development footprint.	Yes **BAM offsets for residual impacts to foraging habitat via ecosystem credits only**	Recorded foraging onsite and likely to use majority of habitats within the development corridor. In terms of avoidance, detailed constraints assessment and modelling of biodiversity values was undertaken to ensure areas of high biodiversity value, and therefore most likely habitat for this species, were avoided as much as possible. This has resulted in multiple revisions of the development footprint as demonstrated in Section 7. Potential indirect impacts will be managed through mitigation measures which are outlined in Section 9, which includes but not limited to detailed BMP, pre-clearance surveys, adaptive management and unexpected finds procedures	Significant impact unlikely Not at risk of collision Detailed assessment provided in Appendix 6.
Blue-winged Parrot	Low risk of significant impact	No important populations have been defined for the species. The species can be considered to comprise a single national population of	Surveyed. Not recorded, and unlikely to be present	Unlikely	Not recorded during detailed BBUS surveys across two years , targeted surveys or incidentally. Breeding noted as typically occurring in Tasmania,	Significant impact unlikely to “Important

MNES	DCCEEW consideration	Important populations / Critical habitat	Updated likelihood of occurrence based on assessment	Potential impacts	Summary of MNES occurrence, avoidance efforts, potential impact (amended design)	SIC self-assessment undertaken / result (Appendix 6)
		an estimated 10,000 mature individuals (DCCEEW 2023) Critical habitat is described as: • Foraging and staging habitats found from coastal, sub -coastal and inland areas, right through to semi -arid zones including: grasslands, grassy woodlands and semi -arid chenopod shrubland with native and introduced grasses, herbs and shrubs. • Wetlands both near the coast and in semi -arid zones used for foraging and staging. • Eucalypt forests and woodlands within the breeding range in Tasmania, coastal south -eastern South Australia and southern Victoria. • Live and dead trees and stumps with suitable hollows within the breeding range. (DCCEEW 2023).			coastal south -eastern Australia and southern Victoria. With single national population, and no more than a rare or vagrant occurrence within the subject land, there is no potential for a Significant Impact as a result of the project. Turbine collision is possible, but overall risk is considered low. In terms of avoidance, detailed constraints assessment and modelling of biodiversity values was undertaken to ensure areas of high biodiversity value, and therefore most likely habitat for this species, were avoided as much as possible. This has resulted in multiple revisions of the development footprint as demonstrated in Section 7. Potential indirect impacts will be managed through mitigation measures which are outlined in Section 9, which includes but not limited to detailed BMP, pre -clearance surveys, adaptive management and unexpected finds procedures	population" (single national population) of the Vulnerable listed species. Species not at risk from collision impacts.
Southern Bell Frog	Some risk of significant impact	Any viable population is considered to be an important population. A viable population is one which is not isolated from other populations or water bodies, such that it has the opportunity to interact with other nearby populations or has the ability to establish new populations when water bodies fill and become available (DEWHA 2009b) . Populations from the north and west of the species' range occur in swamps dominated by River Red Gum, Lignum and Typha, and Black Box / Lignum / Nitre Goosefoot, and will also occur in irrigated rice crops. Critical features of these 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 (DSE 2012)	Recorded within development footprint.	Yes **Offsets for residual impacts required**	This species was observed opportunistically and repeatedly during habitat surveys, as well as again in February and March 2023, and January 2024 during targeted habitat surveys. Records occurred following above average rainfall and flooding conditions that likely washed individuals from a stronghold area in the Coleambally irrigation areas to the north, via flooding events in Delta Creek and Coleambally outfall drain. For majority of the time, the only areas that provide more permanent, yet still suboptimal habitat, are within the irrigation channel and grasslands adjacent to. In terms of avoidance, detailed constraints assessment and modelling of biodiversity values was undertaken to ensure areas of high biodiversity value, and therefore most likely habitat for this species, were avoided as much as possible. Direct impacts will be limited, with most impacts associated to adjacent buffers and dispersal habitat up to 8 3.63 ha. It was noted that where more permanent water was found and *Gambusia holbrooki* were present, Southern Bell Frog was not recorded or observed to be present. Where more permanent water was found, such as irrigation channels and farm dams, and where *Gambusia holbrooki* was not present, mature individuals, immature individuals and tadpoles were observed. Potential indirect impacts will be managed through mitigation measures which are outlined in Section 9, which includes but not limited to detailed BMP, pre -clearance surveys, adaptive management and unexpected finds procedures as well generation of additional credits for indirect impacts to residual transient habitats as prescribed by the BAM.	Significant impact unlikely Detailed assessment provided in Appendix 6.
Coben long-eared Bat	Low risk of significant impact	Important populations not defined. Therefore considered key source populations either for breeding or dispersal, for maintaining genetic diversity, near the limit of the species range. Critical habitat not defined. Therefore considered areas necessary for long -term maintenance, genetic diversity and long term evolutionary development, reintroduction of populations or recovery of the species.	Recorded within development footprint.	Unlikely	Corben's long -eared bats can vary depending on factors such as time of night (more frequent movement between dusk and 10pm), weather conditions, and individual behaviour. These bats often fly at low levels, particularly when foraging for insects. They may fly just a few meters above the ground or forest canopy with good vegetative structure., where their prey is more abundant. Unlikely to fly within RSA. Flying at lower heights allows them to more effectively detect and capture flying insects using echoloc ation. Habitat for this species are intact riverine woodland communities and White Cypress Pine communities, where impacts have been minimised. The removal of nine hollow bearing tress, in a locality with	Significant impact unlikely Detailed assessment provided in Appendix 6.

MNES	DCCEEW consideration	Important populations / Critical habitat	Updated likelihood of occurrence based on assessment	Potential impacts	Summary of MNES occurrence, avoidance efforts, potential impact (amended design)	SIC self-assessment undertaken / result (Appendix 6)
					a high abundance of small and medium hollows, is not likely to affect this species. Potential indirect impacts will be managed through mitigation measures which are outlined in Section 9, which includes but not limited to detailed BMP and BBAMP, pre -clearance surveys, adaptive management and unexpected finds procedures.	
Glossy Ibis	Low risk of significant impact	Important populations not defined. Therefore considered habitat that supports an ecologically significant proportion of the population/species, habitat of critical importance to particular life -cycle stages, or at the limit of the species range. Critical habitat is not defined for Migratory species.	Recorded within subject land (BUS control point only)	Unlikely	Preferred habitat for foraging and breeding are fresh water marshes at the edges of lakes and rivers, lagoons, flood -plains, wet meadows, swamps, reservoirs, sewage ponds, rice -fields and cultivated areas under irrigation (Cth DCCEEW 2024q) Australian breeding locations are limited to a number of areas including the Murray Darling Basin in northern New South Wales, western Riverina of NSW/Victoria, wider south -east South Australia, Channel Country of Queensland and South Australia and the low er Ord/Keep Rivers of Western Australia and the Northern Territory (Cth DCCEEW 2024q) . Dams within the subject land are not considered likely to support breeding habitat or foraging habitat for this species. Glossy Ibis was recorded on just one occasion during any targeted avian surveys, BUS or incidental surveys within the subject land despite periods of above average rainfall and flooding events increasing the quantity and availability of water within the subject land and surrounding landscape. Potential indirect impacts will be managed through mitigation measures which are outlined in Section 9, which includes but not limited to detailed BMP and BBAMP, pre-clearance surveys, adaptive management and unexpected finds procedures.	Significant impact unlikely
Caspian Tern	Low risk of significant impact	The total global population of the Caspian Tern is estimated to be 240 000–420, 000 birds (BirdLife International 2024c) . Critical habitat is not defined for Migratory species.	Not recorded within subject land	Unlikely	Within Australia this species typically occurs along coastlines of south Australia, Western Australia and coastlines of western West Australia. In NSW the species is widespread east of the Great Divide, mainly in coastal regions, and also in the Riverina a nd Lower and Upper Western Regions, with occasional records elsewhere. Occurrence of this species is also present in northern QLD, some areas of coastal QLD, coastal VIC and Tasmania. Globally this species is also found in North America, Africa and Eurasia (Cwth DCCEEW 2024) Within Australia, this species occurs in sheltered coastal embayment's including harbours, lagoons, inlets, bays, estuaries and river deltas. Areas with muddy or sandy margins are preferred. This species also occurs on near -coastal or inland terrestrial we tlands that are either fresh or saline, especially lakes (including ephemeral lakes), waterholes, reservoirs, rivers and creeks. (Cwth DCCEEW 2024). This species breeds in Australia, utilising low islands, cays, spits, banks, ridges, beaches of sand or shell, terrestrial wetlands and stony or rocky inlets. Nests are constructed in the open, or in low sparse vegetation consisting of a scraped hollow in the ground lined with vegetation, small stones, feathers or shells. Breeding has also been recorded from the Menindee Lakes, north of the Riverina (Cwth DCCEEW 2024) Potential indirect impacts will be managed through mitigation measures which are outlined in Section 9, which includes but not limited to detailed	No potential for significant impact

MNES	DCCEEW consideration	Important populations / Critical habitat	Updated likelihood of occurrence based on assessment	Potential impacts	Summary of MNES occurrence, avoidance efforts, potential impact (amended design)	SIC self-assessment undertaken / result (Appendix 6)
					BMP and BBAMP, pre-clearance surveys, adaptive management and unexpected finds procedures.	
Fork Tailed Swift	Low risk of significant impact	Important populations not defined. Therefore considered habitat that supports an ecologically significant proportion of the population/species, habitat of critical importance to particular life -cycle stages, or at the limit of the species range. Critical habitat is not defined for Migratory species.	Recorded within development footprint.	Yes	This species was recorded once, during BUS surveys in March 2024 only, despite two years of survey. The Fork -tailed Swift is almost exclusively aerial, flying from less than 1 m to at least 300 m above ground and probably much higher. Mostly occur over inl and plains but sometimes above foothills or in coastal areas. Fork -tailed Swift undertake extensive migrations, traveling thousands of kms from their breeding grounds to their wintering areas. Their movements are influenced by factors such as food availabi lity, weather patterns, and breeding cycles. Turbine collision is possible, but overall risk is considered low. Potential indirect impacts will be managed through mitigation measures which are outlined in Section 9, which includes but not limited to detailed BMP and BBAMP, pre -clearance surveys, adaptive management and unexpected finds procedures.	Significant impact unlikely
White-throated Needletail	Low risk of significant impact	Important populations not defined. Therefore considered habitat that supports an ecologically significant proportion of the population/species, habitat of critical importance to particular life -cycle stages, or at the limit of the species range. Critical habitat is not defined for Migratory species.	Surveyed. Unlikely to be present	Unlikely	Not recorded during detailed BUS surveys across two years. Foraging in Australia occurs until January – April, where birds begin migration back to breeding grounds in Asia and Siberia. The subject land is considered to be at its southern and westerly distr ibution This species is almost entirely aerial, foraging from 1m to 1000m above the ground, they occur over most habitat types, with a preference towards wooded areas. Roosting occurs in in forest/woodland in dense canopy or hollow, with indications of aer ial roosting also occurring. Turbine collision is possible, but overall risk is considered low in this region. Potential indirect impacts will be managed through mitigation measures which are outlined in Section 9, which includes but not limited to detailed BMP and BBAMP, pre -clearance surveys, adaptive management and unexpected finds procedures.	Significant impact unlikely

12.1.3. Survey effort for MNES entities

Habitat assessments to determine microhabitats for threatened species across the development corridor and subject land have been completed. Suitable foraging and breeding habitat was identified for a number of species within the development corridor and subject land. Targeted surveys included the following:

- Targeted flora surveys.
- Targeted nocturnal bird surveys.
- Diurnal bird surveys (Bird Utilisation Surveys):
- Two years survey effort covering summer/autumn/winter/spring.
- Microchiroptera bat survey (Bat Utilisation Survey) .

Vegetation surveys comprising mapping of vegetation communities and collection of floristic plot data were also completed to determine the presence of TECs listed as MNES under the EPBC Act.

Section 4, provides details of survey method and effort, justification for survey methods employed, timing of surveys, experience of personnel undertaking the surveys and the result of the surveys.

The following MNES listed species were identified during the survey effort:

- Painted Honeyeater .
- Diamond Firetail.
- Southern Whiteface.
- Superb Parrot.
- Southern Bell Frog.
- Corben's Long-eared Bat (precautionary from call analysis based on species group identification).
- Fork-tailed Swift .
- *Swainsona murrayana*.

12.1.4. Avoidance of impacts to MNES

Avoidance and minimisation of impacts to biodiversity values have been undertaken throughout the development and design of the project from initial desktop -based constraints information, followed by design workshops and updates based on a number of rounds of collection of ground -validated data. Section 7 and Table 101 provide detailed information of efforts undertaken to minimise impacts to MNES which have been considered throughout the assessment as high constraint biodiversity values .

12.1.5. MNES potentially impacted by the project

The likelihood of occurrence of MNES within the development corridor and subsequent potential impacts were assessed through desktop and field -based assessments. Species were determined to be at risk of significant impact and were subject to assessment under the EPBC Act Significant Impact Guidelines (DoE 2013):

Likelihood of occurrence tables are addressed with BAM candidate species in Appendix 2. Significant Impact Criteria assessments for MNES are provided in Appendix 6. This assessment determined the species outlined below as having the potential for significant impact from the project:

- Plains Wanderer – Critically Endangered.
    - o Significant impact .
- Superb Parrot – Vulnerable.
    - o Significant impact .
- Natural Grasslands of the Murray Valley Plains – Critically Endangered
    - o Significant impact .
- Weeping Myall Woodlands – Endangered.
    - o Significant impact .

Species such as the Australasian Bittern that may traverse through the landscape during nomadic movement may be impacted by barrier effects and macro avoidance of large areas of turbines, however this impact is not considered to be significant or substantial.

12.1.6. Mitigation to MNES

Ongoing avoidance, minimisation and mitigation of impacts to biodiversity values will be undertaken through detailed design, construction and operation of the project. Table 87 in Section 9 provides detailed information on mitigation measures and commitment to ensure impacts to MNES continue to be minimised during future project stages with such measures including (but are not limited to) the following:

- Development of adaptive management plans, including a BMP and final BBAMP, that provide clear mitigation and management measures required to benefit MNES, and to ensure unexpected or indirect impacts are prevented from occurring, or if unforeseen impacts d o occur these are realised early, arrested, prevented from reoccurring, and if significant enough additional offsets are secured.
- Impact minimisation and mitigation strategies to prevent collision with and electrocution from overhead powerlines by MNES will be employed.
- Ongoing pest control to prevent an increase in predator populations will be implemented, this will be particularly important for the local Plains -wanderer population.
- Rehabilitation of areas subject to temporary impacts only to allow for the maintenance of forage and shelter opportunities for mobile fauna, and to allow for the maintenance of habitats that potentially support threatened flora species recorded within the disturbance footprint.
- Operational impacts minimisation measure such as fauna friendly fencing, ongoing weed control, reduced construction speed limits and vehicle strike procedures will all benefit MNES recorded or considered likely to occur within the subject land.
- Additional and appropriate measures as a result of potential SAII impacts include an additional 40 ha (2.63 ha associated with stage 1 and 36.53 ha associated with stage 2) of habitat to be managed for nature positive benefits, within a biodiversity stewardship site agreement, that is over and above credit obligations for the Plains Wanderer.

12.1.7. Residual Impacts to MNES

Following all efforts to avoid and minimise impacts to MNES (and biodiversity values generally) the project is expected to result in the following unavoidable residual impacts shown in Table 102.

Table 102 MNES within the subject land

Name of MNES	Nature & consequence of impact (direct & indirect)	Duration of impact (e.g. construction, operation, life of project)	Quantum of impact	Consequence of impact (local, state & national scales)	Impact requires offsetting? (significant or not)
Development footprint					
Weeping Myall Woodlands	Direct Indirect	Life of project	Direct impacts to 128.71 ha (116.77 ha intact and 11.94 ha sparse) Indirect impacts to 668 within the subject land.	Local	• Significant impact likely and offsets required • Impacts to over 128 ha of the TEC is considered a substantial reduction, and likely to be a significant impact under the EPBC Act.
Natural Grasslands of the Murray Valley Plains	Direct Indirect	Life of project	Direct impacts to 76.06 ha. Indirect impacts to 341 within the subject land.	Local	• Significant impact likely and offsets required . • Reduction in the extent of a critically endangered community, as well as the potential for cumulative impacts.
Plains-Wanderer	Direct Indirect	Life of project	Direct impacts to 2.55 ha important mapped habitat and 39.16 ha potential habitat Direct impacts to 12.26 ha important mapped habitat and 128 ha potential habitat	Local	• Significant impact likely and offsets required . • The project is likely to adversely affect habitat critical to the survival of the species, reduce the area of occupancy of a population, and has some potential to impact the species' habitat to the extent that the species is likely to decline.
Brachyscome muelleroides	Assumed	Life of project	Assumed impacts within 0.93 ha	Local	• Significant impact unlikely. • Offset required for assumed presence. • It is considered highly unlikely this species is present and will not be impacted based on survey effort to date within and outside the amended development footprint .
Brachyscome papillosa	Assumed	Life of project	Assumed impacts within 1.74 ha	Local	• Significant impact unlikely. • Offset required for assumed presence. • It is considered highly unlikely this species is present and will not be impacted based on survey effort to date within and outside the amended development footprint .

Name of MNES	Nature & consequence of impact (direct & indirect)	Duration of impact (e.g. construction, operation, life of project)	Quantum of impact	Consequence of impact (local, state & national scales)	Impact requires offsetting? (significant or not)
Lepidium monoplocoides	Assumed	Life of project	Assumed impacts within 1.61 ha	Local	• Significant impact unlikely. • Offset required for assumed presence. • It is considered highly unlikely this species is present and will not be impacted based on survey effort to date within and outside the amended development footprint .
Sclerolaena napiformis	Assumed	Life of project	Assumed impacts within 7.03 ha	Local	• Significant impact unlikely. • Offset required for assumed presence. • It is considered highly unlikely this species is present and will not be impacted based on survey effort to date within and outside the amended development footprint .
Austrostipa wakoolica	Assumed	Life of project	Assumed impacts within 1.58 ha	Local	• Significant impact unlikely. • Offset required for assumed presence. • It is considered highly unlikely this species is present and will not be impacted based on survey effort to date within and outside the amended development footprint .
Maireana cheelii	Direct Indirect Assumed	Life of project	Direct impacts to 0.44 ha of known habitat and 2.54 ha assumed habitat	Local	• Significant impact unlikely. • Offset required for direct impacts and assumed presence . • *Maireana cheelii* has been recorded within the subject land and subject to high levels of avoidance of optimal habitat and species clusters .
Swainsona murrayana	Direct Indirect	Life of project	Direct impacts to 285 isolated individuals across an area of 13.16 ha. Indirect and mitigated impacts to 167 ha of optimal habitat containing approximately 1,239 plants	Local	• Significant impact unlikely . • Offset required for direct impacts and assumed presence . • *Swainsona murrayana* has been recorded within the subject land and subject to high levels of avoidance of optimal habitat and species clusters .
Swainsona plagiotropis	Assumed	Life of project	Assumed impacts within 4.67 ha	Local	• Significant impact unlikely. • Offset required for assumed presence .

Name of MNES	Nature & consequence of impact (direct & indirect)	Duration of impact (e.g. construction, operation, life of project)	Quantum of impact	Consequence of impact (local, state & national scales)	Impact requires offsetting? (significant or not)
					• It is considered highly unlikely this species is present and will not be impacted based on survey effort to date within and outside the amended development footprint .
Eastern Major Mitchell's Cockatoo	Direct Indirect Prescribed	Life of project	Direct impacts to foraging habitat of 132 ha and loss of nine hollow bearing tree s. Negligible to low collision risk	Local	• Significant impact unlikely. • Impacts to foraging and potential breeding habitat is represented woodland communities such as PCT's 13, 15, 26 and 45, supporting tree hollows. • Species not recorded during 24 months of BUS., targeted birds surveys nor incidentally. • Considered at a low risk from turbine collisions and barrier effect from the project . • Offsets required for impacts to foraging habitat only .
Australasian Bittern	Indirect Prescribed	Life of project	Indirect impacts to potential transient and nomadic movements. Low collision risk	State	• Significant impact unlikely. • No offsets required . • Impacts to suboptimal habitat comprising farm dams, and freshwater Lignum wetlands and shrublands within PCT 24, PCT 17, PCT 13 and PCT 15. • Collision risk and barrier effect considered l ow risk for Australasian Bittern .
Australian Painted Snipe	Indirect Prescribed	Life of project	Indirect impacts to potential transient and nomadic movements. Negligible to low collision risk	State	• Significant impact unlikely. • No offsets required. • Impacts to suboptimal habitat comprising farm dams, and freshwater Lignum wetlands and shrublands within PCT 24, PCT 17, PCT 13 and PCT 15. • Collision risk and barrier effect considered n egligible (collision) and low (barrier effect) for Australian Painted Snipe .
Superb Parrot	Direct Indirect Prescribed	Life of project	Direct impacts to foraging habitat of 134.51 ha, including 36.66 buffer habitat and the loss of nine hollow bearing tree s. Moderate collision risk	Local	• Significant impact likely and offsets required . • Superb Parrot has the potential to be significantly impacted, as the project may lead to the long term decrease of an important population, reduce the areas of occupancy or fragment an

Name of MNES	Nature & consequence of impact (direct & indirect)	Duration of impact (e.g. construction, operation, life of project)	Quantum of impact	Consequence of impact (local, state & national scales)	Impact requires offsetting? (significant or not)
					existing important population. This results from removal of habitat and risk of collisions. • It is considered unlikely the Superb Parrot utilises habitat for breeding within the subject land, and move towards more significant major permanent waterways for breeding where suitable hollows are abundant. • The project may isolate or decrease the availability or quality of habitat to the extent the species declines, and may interfere will the recovery of the species.
Southern Whiteface	Direct Indirect	Life of project	Direct impacts to foraging habitat of 134.32 ha and loss of one hollow bearing tree. Indirect impacts to foraging habitat of 88.22 ha.	Local	• Significant impact unlikely. • Offsets required for impacts to foraging habitat only . • Considered at a n egligible risk from turbine collisions and barrier effect from the project . • None of these species have been assessed as an Important Population. • The project will not lead to the long term decrease of an important population, reduce the areas of occupancy or fragment an existing important population.
Painted Honeyeater	Direct Indirect	Life of project	Direct impacts to foraging habitat of 116.77 ha PCT 26 intact Indirect impacts to foraging habitat of 668 ha PCT 26 intact	Local	• Significant impact unlikely. • Offsets required for impacts to foraging habitat only . • Considered at a n egligible risk from turbine collisions and barrier effect from the project . • None of these species have been assessed as an Important Population. • The project will not lead to the long term decrease of an important population, reduce the areas of occupancy or fragment an existing important population.

Name of MNES	Nature & consequence of impact (direct & indirect)	Duration of impact (e.g. construction, operation, life of project)	Quantum of impact	Consequence of impact (local, state & national scales)	Impact requires offsetting? (significant or not)
Diamond Firetail	Direct Indirect	Life of project	Direct impacts to foraging habitat of 134.32 ha and loss of one hollow bearing tree. Indirect impacts to foraging habitat of 88.22 ha.	Local	• Significant impact unlikely. • Offsets required for impacts to foraging habitat only . • Considered at a n egligible risk from turbine collisions and barrier effect from the project . • None of these species have been assessed as an Important Population. • The project will not lead to the long term decrease of an important population, reduce the areas of occupancy or fragment an existing important population.
Southern Bell Frog	Direct Indirect Prescribed	Life of project	Direct impacts to 83.63 ha of habitat and indirect buffer habitat	Local	• Significant impact unlikely. • Offsets required for direct impacts and indirect impacts . • The project will not lead to the long term decrease of a population, reduce the areas of occupancy or fragment an existing population. • Nor will it disrupt the breeding cycle of a population, or species as a whole, adversely modify the species habitat, introduce invasive species/diseases, or interfere will the recovery of the species. • Potential indirect impacts can be effectively mitigated through implementation of the BMP.
Blue-winged Parrot	Direct Indirect Prescribed	Life of project	Direct impacts to foraging habitat of 132 ha and loss of nine hollow bearing trees. Negligible collision risk	Local	• Significant impact unlikely. • Impacts to foraging and potential breeding habitat is represented woodland communities such as PCT's 13, 15, 26 and 45, supporting tree hollows. • Considered at a n egligible risk from turbine collisions and barrier effect from the project . • Species not recorded during 24 months of BUS., targeted birds surveys nor incidentally . • Offsets required for impacts to foraging habitat only

Name of MNES	Nature & consequence of impact (direct & indirect)	Duration of impact (e.g. construction, operation, life of project)	Quantum of impact	Consequence of impact (local, state & national scales)	Impact requires offsetting? (significant or not)
Coben long-eared Bat	Direct Indirect	Life of project	Direct impacts to foraging habitat of 16.72 ha and loss of nine hollow bearing trees. Indirect impacts to foraging habitat of 90.50 ha.	Local	• Significant impact unlikely. • Offsets required for impacts to foraging habitat only . • Considered at a n egligible risk from turbine collisions and barrier effect from the project . • None of these species have been assessed as an Important Population. • The project will not lead to the long term decrease of an important population, reduce the areas of occupancy or fragment an existing important population. • Nor will it disrupt the breeding cycle of an important population, the local population or species as a whole, adversely modify the species habitat or introduce invasive species/diseases, or interfere will the recovery of the species. • Offsets required for impacts to foraging habitat only .
Glossy Ibis	Indirect Prescribed	Life of project	Indirect impacts to potential transient and nomadic movements.	State	• Significant impact unlikely. • No offsets required. • Considered at a n egligible risk from turbine collisions and barrier effect from the project . • The project is unlikely to substantially modify, destroy or isolate an area of important habitat, or result in an invasive species becoming established in an area of important. • Nor will the project seriously disrupt the lifecycle of an ecologically significant proportion of the population the species. • Potential collision risk can be effectively mitigated through implementation of the BBAMP.
Caspian Tern	Indirect Prescribed	Life of project	Indirect impacts to potential transient and nomadic movements.	State	• Significant impact unlikely. • No offsets required. • Considered at a n egligible risk from turbine collisions and barrier effect from the project .

Name of MNES	Nature & consequence of impact (direct & indirect)	Duration of impact (e.g. construction, operation, life of project)	Quantum of impact	Consequence of impact (local, state & national scales)	Impact requires offsetting? (significant or not)
					• The project is unlikely to substantially modify, destroy or isolate an area of important habitat, or result in an invasive species becoming established in an area of important. • Nor will the project seriously disrupt the lifecycle of an ecologically significant proportion of the population the species. • Potential collision risk can be effectively mitigated through implementation of the BBAMP.
Fork Tailed Swift	Indirect Prescribed	Life of project	Indirect impacts to potential transient and nomadic movements.	State	• Significant impact unlikely. • No offsets required. • Considered at a low risk from turbine collisions and barrier effect from the project . • Numerous individuals of Fork -tailed Swift across were encountered incidentally enroute between BBUS surveys in March 2024. • The project is unlikely to substantially modify, destroy or isolate an area of important habitat, or result in an invasive species becoming established in an area of important. • Nor will the project seriously disrupt the lifecycle of an ecologically significant proportion of the population the species. • Potential collision risk can be effectively mitigated through implementation of the BBAMP.
White-throated Needletail	Indirect Prescribed	Life of project	Indirect impacts to potential transient and nomadic movements.	State	• Significant impact unlikely. • No offsets required. • White -throated Needletail has not been recorded within the subject land. • Considered at a n egligible risk from turbine collisions and barrier effect from the project . • The project is unlikely to substantially modify, destroy or isolate an area of important habitat, or result in an invasive species becoming established in an area of important.

Name of MNES	Nature & consequence of impact (direct & indirect)	Duration of impact (e.g. construction, operation, life of project)	Quantum of impact	Consequence of impact (local, state & national scales)	Impact requires offsetting? (significant or not)
					• Nor will the project seriously disrupt the lifecycle of an ecologically significant proportion of the population the species. • Potential collision risk can be effectively mitigated through implementation of the BBAMP.

12.1.8. Offsetting of residual impacts to MNES

Impacts to MNES as a result of the project have been determined to be significant for two listed threatened species, and two threatened ecological communities , in accordance with Significant Impact Guidelines 1.1 - Matters of National Environmental Significance (DoE 2013) (refer Appendix 6). Offsetting in accordance with the EPBC Act Environmental Offsets Policy (CoA 2012) and the EPBC Act is not specifically required. Reducing impacts to these species and communities will be the focus of further detailed design.

Impacts to all MNES , including those assessed as unlikely to be significantly impacted by the project, will be offset in accordance with the NSW BOS through generation of either Ecosystem Credits or Species Credits via direct establishment of Biodiversity Stewardship Sites to generate biodiversity credits to offset the project's impacts, through securing biodiversity credits from the open market, or from payment to the Biodiversity Conservation Fund. Further information of the project biodiversity offset strategy is provided in Section 11.

The project is committed to providing additional offsets, over and above those required by the NSW BOS and EPBC Act Environmental Offsets Policy to benefit significantly impacted communities and species through means such as providing additional funding fo r habitat management, predator exclusion and pest control. These are likely to be contained within stewardship sites currently under assessment for the project. The quantum of additional offset contributions, specific measures to be funded, and relevant mechanisms will be detailed in the Biodiversity Offset Strategy, to be developed post -approval.

Table 103 Potential residual offsets for MNES

Name of MNES	Associated PCTs for ecosystem credit species / ecological community	Area of Impact (ha)	Credits Required	Offsetting Approach	Reference (EIS/BDAR)
Development footprint					
Weeping Myall Woodlands	PCT 26 Intact PCT 26 sparse (in part)	116.77 11.94	3,916 276	Bilateral agreement Stewardship site	BDAR
Natural Grasslands of the Murray Valley Plains	PCT 45 PCT 46	76.06	4,277	Bilateral agreement Stewardship site and/or payment	BDAR
Plains-Wanderer	Important mapped areas PCT 26 DNG PCT 46	2.55 39.16	138	Bilateral agreement Stewardship site for important mapped areas Additional and appropriate measures for potential habitat	BDAR
Brachyscome muelleroides	PCT 46	0.93	63	Bilateral agreement Stewardship site and/or payment	BDAR
Brachyscome papillosa	PCT 46	1.74	79	Bilateral agreement Stewardship site and/or payment	BDAR
Lepidium monoplocoides	PCT 26	1.61	36	Bilateral agreement Stewardship site and/or payment	BDAR
Sclerolaena napiformis	PCT 26 PCT 46	7.03	219	Bilateral agreement Stewardship site and/or payment	BDAR
Austrostipa wakoolica	PCT 17 PCT 26	1.58	52	Bilateral agreement Stewardship site and/or payment	BDAR
Maireana cheelii	PCT 13 PCT 26	2.98	93	Bilateral agreement Stewardship site and/or payment	BDAR
Swainsona murrayana	PCT 26 PCT 28	13.16	409	Bilateral agreement Stewardship site	BDAR

Name of MNES	Associated PCTs for ecosystem credit species / ecological community	Area of Impact (ha)	Credits Required	Offsetting Approach	Reference (EIS/BDAR)
	PCT 46				
Swainsona plagiotropis		4.67	150	Bilateral agreement Stewardship site	BDAR
Eastern Major Mitchell's Cockatoo	PCT 13 PCT 15 PCT 26 PCT 45	132 (foraging only)	Ecosystem credits only	Bilateral agreement Stewardship site	BDAR
Superb Parrot	PCT 10 PCT 13 PCT 15 PCT 17 PCT 26	134 (foraging only) 36.66 (buffer)	1,013	Bilateral agreement Stewardship site and/or payment	BDAR
Southern Whiteface	PCT 13 PCT 15 PCT 26 PCT 45	134 (foraging only)	Ecosystem credits only	Bilateral agreement Stewardship site	BDAR
Painted Honeyeater	PCT 26 Intact	116.77 (foraging only)	Ecosystem credits only	Bilateral agreement Stewardship site	BDAR
Diamond Firetail	PCT 13 PCT 15 PCT 26 PCT 45	134 (foraging only)	Ecosystem credits only	Bilateral agreement Stewardship site	BDAR
Blue-winged Parrot	PCT 13 PCT 15 PCT 26 PCT 45	132 (foraging only)	Ecosystem credits only	Bilateral agreement Stewardship site	BDAR
Southern Bell Frog	PCT 13 PCT 15 PCT 26 (buffer)	83.63	1,961	Bilateral agreement Stewardship site	BDAR

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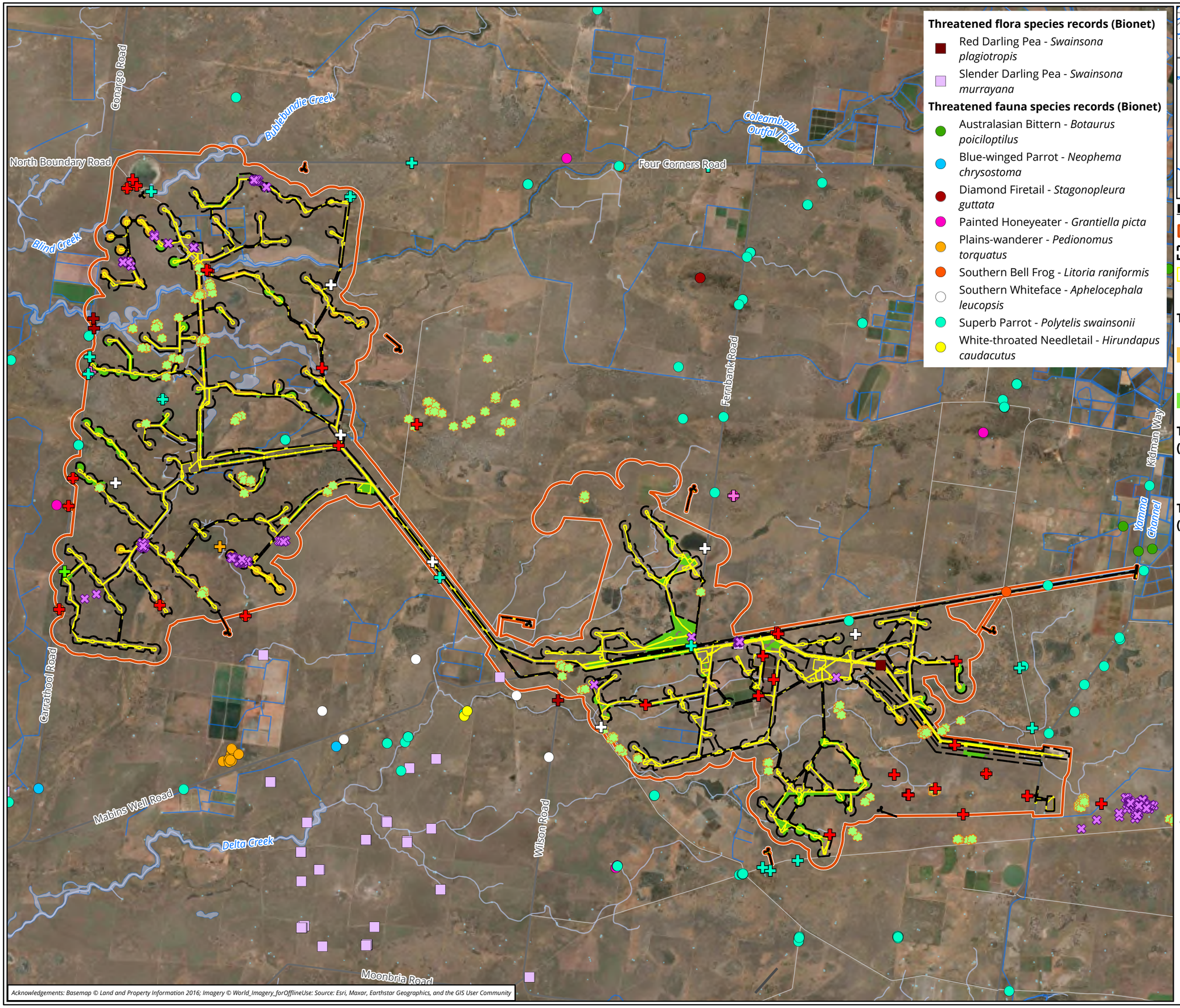
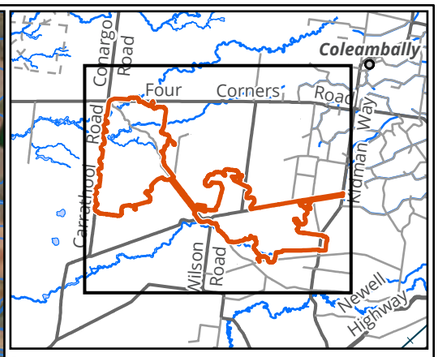
Name of MNES	Associated PCTs for ecosystem credit species / ecological community	Area of Impact (ha)	Credits Required	Offsetting Approach	Reference (EIS/BDAR)
	PCT 28 (buffer) PCT 45 (buffer) PCT 46 (buffer)				
Corben long-eared Bat	PCT 10 PCT 13 PCT 15 PCT 28	16.72 (foraging only)	Ecosystem credits only	Bilateral agreement Stewardship site	BDAR





Legend

- Subject land
- Development corridor
- Development footprint
- Hollow-bearing tree

Threatened ecological communities

- Natural Grasslands of the Murray Valley Plains (potential) (CEEC, EPBC Act)
- Weeping Myall Woodlands (EEC, EPBC Act)

Threatened flora species records (Biosis)

- Slender Darling-pea - *Swainsona murrayana*

Threatened fauna species records (Biosis)

- Diamond Firetail - *Stagonopleura guttata*
- Fork-tailed Swift - *Apus pacificus*
- Painted Honeyeater - *Grantiella picta*
- Plains-wanderer - *Pedionomus torquatus*
- Southern Bell Frog - *Litoria raniformis*
- Southern Whiteface - *Aphelocephala leucopsis*
- Superb Parrot - *Polytelis swainsonii*

Figure 24 Matters of national environmental significance - Overview

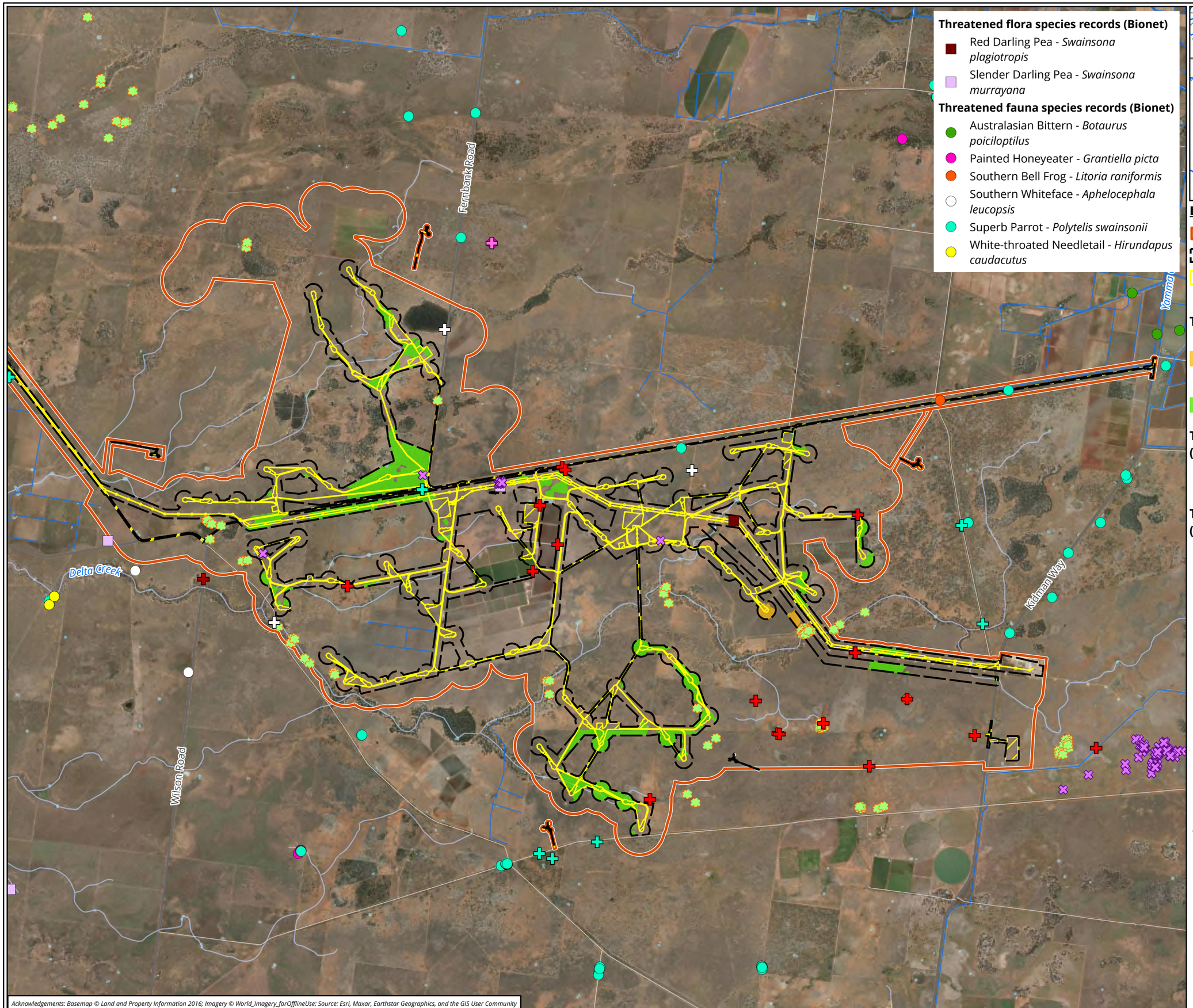
0 1 2 3 4 5

Kilometers
Scale: 1:130,000 @ A3
Coordinate System:
GDA2020 MGA Zone 55

N

biosis

Matter: 37263, Date: 06 February 2026,
GIS: JB, Checked by: MP, Last edited by: jbeckius
Location: P:\37200s\37263\Mapping\
37263_Dinawan_BDAR_Wind_F18-24.aprx
Layout: 37263_Wind_F24_MNES

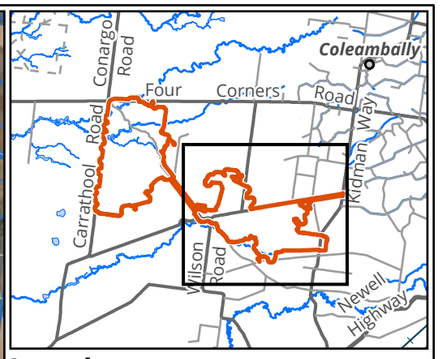


Threatened flora species records (Bionet)

- Red Darling Pea - *Swainsona plagiotropis*
- Slender Darling Pea - *Swainsona murrayana*

Threatened fauna species records (Bionet)

- Australasian Bittern - *Botaurus poiciloptilus*
- Painted Honeyeater - *Grantiella picta*
- Southern Bell Frog - *Litoria raniformis*
- Southern Whiteface - *Aphelocephala leucopsis*
- Superb Parrot - *Polytelis swainsonii*
- White-throated Needletail - *Hirundapus caudacutus*



Legend

- Subject land
- Development corridor
- Development footprint
- Hollow-bearing tree

Threatened ecological communities

- Natural Grasslands of the Murray Valley Plains (potential) (CEEC, EPBC Act)
- Weeping Myall Woodlands (EEC, EPBC Act)

Threatened flora species records (Biosis)

- Slender Darling-pea - *Swainsona murrayana*

Threatened fauna species records (Biosis)

- Diamond Firetail - *Stagonopleura guttata*
- Painted Honeyeater - *Grantiella picta*
- Southern Bell Frog - *Litoria raniformis*
- Southern Whiteface - *Aphelocephala leucopsis*
- Superb Parrot - *Polytelis swainsonii*

Figure 24 Matters of national environmental significance - Eastern area

0 1 2 3

Kilometers
Scale: 1:80,000 @ A3
Coordinate System:
GDA2020 MGA Zone 55

N

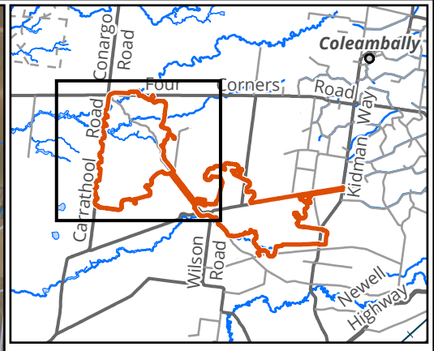
biosis

Matter: 37263, Date: 06 February 2026,
GIS: JB, Checked by: MP, Last edited by: jbeckius
Location: P:\37200s\37263\Mapping\
37263_Dinawan_BDAR_Wind_F18-24.aprx
Layout: 37263_Wind_F24_MNES

North Boundary Road
Conargo Road
Bubleburndie Creek
Four Corners Road
Blind Creek
Coleambally Outfall Drain
Carrathool Road
Mabins Well Road
Delta Creek

Threatened flora species records (Bionet)
- Slender Darling Pea - *Swainsona murrayana*

Threatened fauna species records (Bionet)
- Blue-winged Parrot - *Neophema chrysostoma*
- Painted Honeyeater - *Grantiella picta*
- Southern Bell Frog - *Litoria raniformis*
- Southern Whiteface - *Aphelocephala leucopsis*
- Superb Parrot - *Polytelis swainsonii*
- White-throated Needletail - *Hirundapus caudacutus*



Legend
- Subject land
- Development corridor
- Development footprint
- Hollow-bearing tree

Threatened ecological communities
- Natural Grasslands of the Murray Valley Plains (potential) (CEEC, EPBC Act)
- Weeping Myall Woodlands (EEC, EPBC Act)

Threatened flora species records (Biosis)
- Slender Darling-pea - *Swainsona murrayana*

Threatened fauna species records (Biosis)
- Diamond Firetail - *Stagonopleura guttata*
- Fork-tailed Swift - *Apus pacificus*
- Painted Honeyeater - *Grantiella picta*
- Plains-wanderer - *Pedionomus torquatus*
- Southern Bell Frog - *Litoria raniformis*
- Southern Whiteface - *Aphelocephala leucopsis*
- Superb Parrot - *Polytelis swainsonii*

Figure 24 Matters of national environmental significance - Western area

0 1 2 3
Kilometers
Scale: 1:80,000 @ A3
Coordinate System:
GDA2020 MGA Zone 55

N

biosis

Matter: 37263, Date: 06 February 2026,
GIS: JB, Checked by: MP, Last edited by: jbeckius
Location: P:\37200s\37263\Mapping\
37263_Dinawan_BDAR_Wind_F18-24.aprx
Layout: 37263_Wind_F24_MNES

Acknowledgements: Basemap © Land and Property Information 2016; Imagery © World_Imagery_forOfflineUse: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

12.2. Fisheries Management Act 1994

The FM Act provides for the protection and conservation of aquatic species and their habitat throughout NSW. Impacts to threatened species, populations and communities, and critical habitats listed under the FM Act must be assessed through an Assessment of Significance process.

Predicted habitat for threatened aquatic species such as the Flathead Galaxias or Silver Perch is mapped on the DPI spatial data portal within the subject land and within sections of the Coleambally Outfall Drain. These species are also identified as part of Delta Creek, however this creek will not be directly impacted. The Coleambally Outfall Drain are identified as Poor Freshwater Fish Community habitat within the subject land and on the NSW DPI Freshwater Fish Community map (DPI 2023). The area of indicative habitat for this species within the subject land is located within a modified earthen channel, the Coleambally Outfall Drain, which is used to supply water for irrigation (NSW Agriculture 2003). Water pooling and minor flow were observed during surveys within the subject land, however water quality was observed to be in poor condition. The habitat within the Coleambally Outfall Drain consists of a two-three meter wide, highly modified earthen channel, and at best, one to two meter in depth. This channel may be used as transitional habitat between areas of suitable breeding and foraging areas, however it is considered highly unlikely to support breeding of these species during low or high flows. No records of threatened aquatic species have been recorded within 10 kilometres of the subject land on the BioNet Atlas of NSW, however two species were predicted by the Protected Matters Search Tool (PMST).

Numerous ephemeral watercourses associated are located within the subject land and dissected by the development corridor. No instream woody debris is proposed to be removed and therefore a permit under Part 7 of the FM Act is not required. NSW DPI is required to assess all projects that involve structures that span the full width of a waterway (including pipe crossings) or modifies the velocity or quantity of water. Crossing locations within the Coleambally Outfall Drain are located where existing structures occur currently. Consideration of appropriate riparian buffer distances for the purpose of key fish habitat conservation, as well as best practise guidance on minimising impacts to fish passage and general aquatic wildlife as a result of temporary and permanent waterway crossings will be undertaken. Mitigation measures will be implemented to ensure impacts within the subject land do not result in indirect impacts to waterways in the broader locality. As the waterways within the subject land do not support significant aquatic ecological communities, fish passage is unlikely to be impacted by the project.

12.3. Biosecurity Act 2015

The *Biosecurity Act 2015* provides for the identification, classification and control of priority weeds with the purpose of determining if a biosecurity risk is likely to occur. A biosecurity risk is defined as the risk of a biosecurity impact occurring, which for weeds includes the introduction, presence, spread or increase of a pest into or within NSW or any part of the State. A pest plant has the potential to; harm or reduce biodiversity or out-compete other organisms for resources, including food, water, nutrients, habitat and sunlight.

Two priority weeds for the Murray LLS Region have been recorded in the subject land and are African Boxthorn *Lycium ferocissimum* and Bathurst Burr *Xanthium spinosum*. Both have a General Biosecurity Duty under the Act.

13. Biodiversity credit report

Offsetting through establishment of Biodiversity Stewardship Sites, the transfer and retirement of biodiversity credits, and/ or paying into the BCT Offset Fund, is required for the project . Biodiversity credit report s provided on the following pages.

BAM Credit Summary Report

Proposal Details

Assessment Id
00034895/BAAS17051/25/00055370

Proposal Name
Dinawan Wind_DevFoot

BAM data last updated *
09/04/2026

Assessor Name
Mitchell Palmer

Report Created
15/05/2026

BAM Data version *
Current classification (live - default) (94)

Assessor Number
BAAS17051

BAM Case Status
Finalised

Date Finalised
15/05/2026

Assessment Revision
6

BOS entry trigger

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)												
2	13_Moderate	Not a TEC	70.6	70.6	4	PCT Cleared - 57%	High Sensitivity to Gain			1.75		122

3	13_Thinned	Not a TEC	69.2	69.2	7.8	PCT Cleared - 57%	High Sensitivity to Gain			1.75		237
											Subtotal	**359**
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)												
4	15_Moderate	Not a TEC	75.7	75.7	2.5	PCT Cleared - 50%	High Sensitivity to Gain			1.75		84
5	15_Thinned	Not a TEC	67.1	67.1	1.1	PCT Cleared - 50%	High Sensitivity to Gain			1.75		32
											Subtotal	**116**
Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion												
14	46_Moderate	Natural Grasslands of the Murray Valley Plains	90.6	90.6	72.6	Environment Protection and Conservation Act listing status	High Sensitivity to Gain	Not Listed	Critically Endangered	2.50		4112

17	46_Intersection	Natural Grasslands of the Murray Valley Plains	100	100.0	0.34	Environment Protection and Conservation Act listing status	High Sensitivity to Gain	Not Listed	Critically Endangered	2.50		21
											Subtotal	**4133**
Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)												
6	17_Mod_Good	Not a TEC	84.2	84.2	0.76	PCT Cleared - 63%	High Sensitivity to Gain			1.75		28
7	17_Moderate	Not a TEC	83.5	83.5	1.3	PCT Cleared - 63%	High Sensitivity to Gain			1.75		49
											Subtotal	**77**
Nitre Goosefoot shrubland wetland on clays of the inland floodplains												
15	160_Mod_Good	Not a TEC	79	79.0	5	PCT Cleared - 28%	High Sensitivity to Gain			1.50		147
											Subtotal	**147**

Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion												
13	45_Mod_Good	Natural Grasslands of the Murray Valley Plains	65.1	65.1	2.3	Environment Protection and Conservation Act listing status	High Sensitivity to Gain	Not Listed	Critically Endangered	2.50		92
16	45_Intersection	Natural Grasslands of the Murray Valley Plains	100	100.0	0.83	Environment Protection and Conservation Act listing status	High Sensitivity to Gain	Not Listed	Critically Endangered	2.50		52
											Subtotal	**144**
River Red Gum - Black Box woodland wetland of the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)												
1	10_Moderate	Not a TEC	29.2	29.2	0.19	PCT Cleared - 43%	High Sensitivity to Gain			1.50		2
											Subtotal	**2**

Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion												
8	26_DNG	Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions	20.3	20.3	343.2	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00		3483
9	26_Intact	Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions	67.1	67.1	116.8	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00		3916

10	26_Sparse	Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions	46.2	46.2	328.8	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00		7598
											Subtotal	**14997**
Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion												
18	26_Sparse_EPBC	Weeping Myall Woodlands	46.2	46.2	11.9	Environment Protection and Conservation Act listing status	High Sensitivity to Gain	Not Listed	Endangered	2.00		276
											Subtotal	**276**

White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone												
11	28_Low	Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions	57.1	57.1	47.6	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00		1360
12	28_Moderate	Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions	73.8	73.8	1.1	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00		41
											Subtotal	**1401**
											Total	**21652**

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

Austrostipa wakoolica / A spear-grass (Flora)									
17_Moderate	83.5	83.5	0.68	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	28
26_Intact	67.1	67.1	0.23	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	8
26_Sparse	46.2	46.2	0.68	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	16
								Subtotal	**52**
Brachyscome muelleroides / Claypan Daisy (Flora)									
46_Moderate	90.6	90.6	0.93	Geographic Distribution	Ability to colonise improved habitat	Vulnerable	Vulnerable	True	63
								Subtotal	**63**

Brachyscome papillosa / Mossgiel Daisy (Flora)									
46_Moderate	90.6	90.6	1.7	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	79
								Subtotal	**79**
Hemiaspis damelii / Grey Snake (Fauna)									
10_Moderate	29.2	29.2	0.19	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	3
13_Moderate	70.6	70.6	4	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	140
13_Thinned	69.2	69.2	7.8	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	270
15_Moderate	75.7	75.7	2.5	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	96

15_Thinned	67.1	67.1	1.1	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	37
17_Mod_Good	84.2	84.2	0.76	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	32
17_Moderate	83.5	83.5	1.3	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	56
160_Mod_Good	79.0	79.0	5	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	196
								Subtotal	**830**
Lepidium monoplocoides / Winged Peppercress (Flora)									
26_Intact	67.1	67.1	0.2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	7

26_Sparse	46.2	46.2	1.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	26
26_DNG	20.3	20.3	0.29	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	3
								Subtotal	**36**
Leptorhynchos orientalis / Lanky Buttons (Flora)									
26_Intact	67.1	67.1	0.2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	7
26_Sparse	46.2	46.2	1.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	26
46_Moderate	90.6	90.6	0.93	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	42

26_DNG	20.3	20.3	0.29	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	3
								Subtotal	**78**
Litoria raniformis / Southern Bell Frog (Fauna)									
13_Moderate	70.6	70.6	0.55	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	19
13_Thinned	69.2	69.2	2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	69
15_Thinned	67.1	67.1	1.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	36
17_Mod_Good	84.2	84.2	0.49	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	21

26_Intact	67.1	67.1	8.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	271
26_Sparse	46.2	46.2	29.9	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	692
28_Low	57.1	57.1	0.77	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	22
46_Moderate	90.6	90.6	9.5	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	432
160_Mod_Good	79.0	79.0	1.5	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	58
26_DNG	20.3	20.3	28.7	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	292

45_Intersection	100.0	100.0	0.64	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	32
46_Intersection	100.0	100.0	0.34	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	17
								Subtotal	**1961**
Maireana cheelii / Chariot Wheels (Flora)									
13_Moderate	70.6	70.6	0.29	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	10
13_Thinned	69.2	69.2	0.14	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	5
26_Intact	67.1	67.1	0.2	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	7
26_Sparse	46.2	46.2	1.1	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	26

46_Moderate	90.6	90.6	0.93	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	42
26_DNG	20.3	20.3	0.29	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	3
								Subtotal	**93**
Myotis macropus / Southern Myotis (Fauna)									
13_Moderate	70.6	70.6	0.55	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	19
13_Thinned	69.2	69.2	1.8	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	64
								Subtotal	**83**
Pedionomus torquatus / Plains-wanderer (Fauna)									
13_Moderate	70.6	70.6	0.01	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Critically Endangered	True	1

13_Thinned	69.2	69.2	0.11	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Critically Endangered	True	6
17_Moderate	83.5	83.5	0.03	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Critically Endangered	True	2
26_Sparse	46.2	46.2	0.91	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Critically Endangered	True	32
46_Moderate	90.6	90.6	1.4	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Critically Endangered	True	96
26_DNG	20.3	20.3	0.08	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Critically Endangered	True	1

								Subtotal	138
Pilularia novae-hollandiae / Austral Pillwort (Flora)									
13_Moderate	70.6	70.6	2.3	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Not Listed	False	81
13_Thinned	69.2	69.2	3.8	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Not Listed	False	130
15_Moderate	75.7	75.7	1.5	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Not Listed	False	56
15_Thinned	67.1	67.1	1.1	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Not Listed	False	37
17_Moderate	83.5	83.5	0.71	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Not Listed	False	30

26_Intact	67.1	67.1	0.35	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Not Listed	False	12
26_Sparse	46.2	46.2	8.4	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Not Listed	False	195
45_Mod_Good	65.1	65.1	0.27	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Not Listed	False	9
46_Moderate	90.6	90.6	44.9	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Not Listed	False	2034
26_DNG	20.3	20.3	6.2	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Not Listed	False	63
45_Intersection	100.0	100.0	0.83	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Not Listed	False	42

46_Intersection	100.0	100.0	0.34	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Not Listed	False	17
								Subtotal	**2706**
Polytelis swainsonii / Superb Parrot (Fauna)									
10_Moderate	29.2	29.2	0.19	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	3
13_Moderate	70.6	70.6	4	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	140
13_Thinned	69.2	69.2	7.8	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	270
15_Moderate	75.7	75.7	2.5	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	96
15_Thinned	67.1	67.1	1.1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	37

17_Moderate	83.5	83.5	0.27	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	11
26_Intact	67.1	67.1	1.6	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	52
26_Sparse	46.2	46.2	7.5	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	174
28_Low	57.1	57.1	0.04	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	1
28_Moderate	73.8	73.8	0.21	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	8
45_Mod_Good	65.1	65.1	0.15	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	5
46_Moderate	90.6	90.6	2.9	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	130

160_Mod_Good	79.0	79.0	0.01	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	1
26_DNG	20.3	20.3	8.4	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	85
								Subtotal	**1013**
Sclerolaena napiformis / Turnip Copperburr (Flora)									
26_Intact	67.1	67.1	0.4	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	13
26_Sparse	46.2	46.2	2.2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	52
46_Moderate	90.6	90.6	3.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	141

26_DNG	20.3	20.3	1.3	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	13
								Subtotal	**219**
Swainsona murrayana / Slender Darling Pea (Flora)									
26_Intact	67.1	67.1	0.47	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	16
26_Sparse	46.2	46.2	3.8	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	89
28_Low	57.1	57.1	0.06	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	2
46_Moderate	90.6	90.6	5.8	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	264
26_DNG	20.3	20.3	3.7	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	38
								Subtotal	**409**

Swainsona plagiotropis / Red Darling Pea (Flora)									
26_Intact	67.1	67.1	0.2	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	7
26_Sparse	46.2	46.2	1.1	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	26
46_Moderate	90.6	90.6	2.4	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	107
26_DNG	20.3	20.3	0.97	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	10
								Subtotal	**150**
Swainsona sericea / Silky Swainson-pea (Flora)									
26_Intact	67.1	67.1	0.35	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Not Listed	False	12
26_Sparse	46.2	46.2	4	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Not Listed	False	92

28_Low	57.1	57.1	0.06	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Not Listed	False	2
46_Moderate	90.6	90.6	2.4	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Not Listed	False	108
26_DNG	20.3	20.3	3	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Not Listed	False	30
								Subtotal	**244**

BAM Biodiversity Credit Report (Like for like)

Proposal Details

Assessment Id
00034895/BAAS17051/25/00055370

Proposal Name
Dinawan Wind_DevFoot

BAM data last updated *
09/04/2026

Assessor Name
Mitchell Palmer

Assessor Number
BAAS17051

BAM Data version *
Current classification (live - default) (94)

Proponent Names

Report Created
15/05/2026

BAM Case Status
Finalised

Assessment Revision
6

BOS entry trigger

Assessment Type
Major Projects

Date Finalised
15/05/2026

* 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
Brachyscome muelleroides / Claypan Daisy
Pedionomus torquatus / Plains-wanderer

Additional Information for Approval

PCT Outside Ibra Added

None added

PCTs With Customized Benchmarks

PCT
No Changes

Predicted Threatened Species Not On Site

Name
Polytelis anthopeplus monarchoides / Regent Parrot (eastern subspecies)

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
10-River Red Gum - Black Box woodland wetland of the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Not a TEC	0.2	2	0	2
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	11.8	359	0	359

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	3.6	116	0	116
17-Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Not a TEC	2.1	0	77	77
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	788.7	0	14997	14997
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	48.7	1401	0	1401
45-Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion	Natural Grasslands of the Murray Valley Plains	3.1	0	144	144
46-Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion	Natural Grasslands of the Murray Valley Plains	73.0	0	4133	4133
160-Nitre Goosefoot shrubland wetland on clays of the inland floodplains	Not a TEC	5.0	0	147	147
26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion	Weeping Myall Woodlands	11.9	0	276	276

10-River Red Gum - Black Box woodland wetland of the semi-arid (warm) climatic 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, 4088, 4089	Inland Riverine Forests <50%	10_Moderate	Yes	2	Murrumbidgee, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
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_Moderate	Yes	122	Murrumbidgee, 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_Thinned	Yes	237	Murrumbidgee, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

13-Black Box - Lignum woodland wetland of the inne

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_Moderate	Yes	84	Murrumbidgee, 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_Thinned	Yes	32	Murrumbidgee, 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	28	Murrumbidgee, 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_Moderate	No	49	Murrumbidgee, 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_DNG	No	3483	Murrumbidgee, 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_Intact	No	3916	Murrumbidgee, 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_Sparse	No	7598	Murrumbidgee, 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
Weeping Myall Woodlands This includes PCT's: 26, 27, 1766	-	26_Sparse_EPBC	No	276	Murrumbidgee, 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_Low	Yes	1360	Murrumbidgee, 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_Moderate	Yes	41	Murrumbidgee, 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**					
	Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region
	Natural Grasslands of the Murray Valley Plains This includes PCT's: 44, 45, 46	-	45_Mod_Good	No	92	Murrumbidgee, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Natural Grasslands of the Murray Valley Plains This includes PCT's: 44, 45, 46	-	45_Intersection	No	52	Murrumbidgee, 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 th

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

Name of offset trading group	Trading group	Zone	HBT	Credits	IBRA region
Natural Grasslands of the Murray Valley Plains This includes PCT's: 44, 45, 46	-	46_Moderate	No	4112	Murrumbidgee, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
Natural Grasslands of the Murray Valley Plains This includes PCT's: 44, 45, 46	-	46_Intersection	No	21	Murrumbidgee, 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	147	Murrumbidgee, 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
Austrostipa wakoolica / A spear-grass	**17_Moderate, 26_Intact, 26_Sparse**	1.6	52.00
Brachyscome muelleroides / Claypan Daisy	**46_Moderate**	0.9	63.00
Brachyscome papillosa / Mossgiel Daisy	**46_Moderate**	1.7	79.00
Hemiaspis damelii / Grey Snake	**10_Moderate, 13_Moderate, 13_Thinned, 15_Moderate, 15_Thinned, 17_Mod_Good, 17_Moderate, 160_Mod_Good**	22.7	830.00
Lepidium monoplocoides / Winged Peppercress	**26_Intact, 26_Sparse, 26_DNG**	1.6	36.00
Leptorhynchos orientalis / Lanky Buttons	**26_Intact, 26_Sparse, 46_Moderate, 26_DNG**	2.5	78.00

Litoria raniformis / Southern Bell Frog	**13_Moderate, 13_Thinned, 15_Thinned, 17_Mod_Good, 26_Intact, 26_Sparse, 28_Low, 46_Moderate, 160_Mod_Good, 26_DNG, 45_Intersection, 46_Intersection**	83.6	1961.00
Maireana cheelii / Chariot Wheels	**13_Moderate, 13_Thinned, 26_Intact, 26_Sparse, 46_Moderate, 26_DNG**	3.0	93.00
Myotis macropus / Southern Myotis	**13_Moderate, 13_Thinned**	2.4	83.00
Pedionomus torquatus / Plains-wanderer	**13_Moderate, 13_Thinned, 17_Moderate, 26_Sparse, 46_Moderate, 26_DNG**	2.6	138.00
Pilularia novae-hollandiae / Austral Pillwort	**13_Moderate, 13_Thinned, 15_Moderate, 15_Thinned, 17_Moderate, 26_Intact, 26_Sparse, 45_Mod_Good, 46_Moderate, 26_DNG, 45_Intersection, 46_Intersection**	70.7	2706.00

Polytelis swainsonii / Superb Parrot	**10_Moderate, 13_Moderate, 13_Thinned, 15_Moderate, 15_Thinned, 17_Moderate, 26_Intact, 26_Sparse, 28_Low, 28_Moderate, 45_Mod_Good, 46_Moderate, 160_Mod_Good, 26_DNG**	36.7	1013.00
Sclerolaena napiformis / Turnip Copperburr	**26_Intact, 26_Sparse, 46_Moderate, 26_DNG**	7.0	219.00
Swainsona murrayana / Slender Darling Pea	**26_Intact, 26_Sparse, 28_Low, 46_Moderate, 26_DNG**	13.9	409.00
Swainsona plagiotropis / Red Darling Pea	**26_Intact, 26_Sparse, 46_Moderate, 26_DNG**	4.7	150.00
Swainsona sericea / Silky Swainson-pea	**26_Intact, 26_Sparse, 28_Low, 46_Moderate, 26_DNG**	9.7	244.00

Credit Retirement Options

Like-for-like credit retirement options

Austrostipa wakoolica / A spear-grass	Spp	IBRA subregion
	Austrostipa wakoolica / A spear-grass	Any in NSW
Brachyscome muelleroides / Claypan Daisy	Spp	IBRA subregion
	Brachyscome muelleroides / Claypan Daisy	Any in NSW

Brachyscome papillosa / Mossgiel Daisy	Spp	IBRA subregion
	Brachyscome papillosa / Mossgiel Daisy	Any in NSW
Hemiaspis damelii / Grey Snake	Spp	IBRA subregion
	Hemiaspis damelii / Grey Snake	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
Litoria raniformis / Southern Bell Frog	Spp	IBRA subregion
	Litoria raniformis / Southern Bell Frog	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 swainsonii / Superb Parrot	Spp	IBRA subregion
	Polytelis swainsonii / Superb Parrot	Any in NSW
Sclerolaena napiformis / Turnip Copperburr	Spp	IBRA subregion
	Sclerolaena napiformis / Turnip Copperburr	Any in NSW
Swainsona murrayana / Slender Darling Pea	Spp	IBRA subregion
	Swainsona murrayana / Slender Darling Pea	Any in NSW
Swainsona plagiotropis / Red Darling Pea	Spp	IBRA subregion
	Swainsona plagiotropis / Red Darling Pea	Any in NSW

Swainsona sericea / Silky Swainson-pea	Spp	IBRA subregion
	Swainsona sericea / Silky Swainson-pea	Any in NSW

BAM Credit Summary Report

Proposal Details

Assessment Id
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Proposal Name
Din Wind_ enabling works

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BOS entry trigger

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

Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion												
5	46_Intersection	Natural Grasslands of the Murray Valley Plains	100	100.0	0.34	Environment Protection and Conservation Act listing status	High Sensitivity to Gain	Not Listed	Critically Endangered	2.50		21
											Subtotal	**21**
Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion												
4	45_Intersection	Natural Grasslands of the Murray Valley Plains	100	100.0	0.83	Environment Protection and Conservation Act listing status	High Sensitivity to Gain	Not Listed	Critically Endangered	2.50		52
											Subtotal	**52**

Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion												
1	26_DNG	Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions	20.3	20.3	24.9	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00		253
2	26_Intact	Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions	67.1	67.1	1.2	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00		40

3	26_Sparse	Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions	46.2	46.2	9	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00	208
										Subtotal	**501**
										Total	**574**

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
Litoria raniformis / Southern Bell Frog (Fauna)									
26_DNG	20.3	20.3	5.5	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	56

45_Intersection	100.0	100.0	0.64	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	32
46_Intersection	100.0	100.0	0.34	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	17
								Subtotal	**105**
Pilularia novae-hollandiae / Austral Pillwort (Flora)									
26_DNG	20.3	20.3	1.3	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Not Listed	False	13
26_Sparse	46.2	46.2	1	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Not Listed	False	24
45_Intersection	100.0	100.0	0.83	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Not Listed	False	42

46_Intersection	100.0	100.0	0.34	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Not Listed	False	17
								Subtotal	**96**
Swainsona murrayana / Slender Darling Pea (Flora)									
26_DNG	20.3	20.3	0.01	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	1
								Subtotal	**1**

BAM Credit Summary Report

Proposal Details

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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 - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)												
1	13_Thinned	Not a TEC	69.2	69.2	2.5	PCT Cleared - 57%	High Sensitivity to Gain			1.75		76
											Subtotal	**76**
Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion												
8	46_Moderate	Natural Grasslands of the Murray Valley Plains	90.6	90.6	1.3	Environment Protection and Conservation Act listing status	High Sensitivity to Gain	Not Listed	Critically Endangered	2.50		76
											Subtotal	**76**
Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)												
2	17_Mod_Good	Not a TEC	84.2	84.2	0.32	PCT Cleared - 63%	High Sensitivity to Gain			1.75		12
3	17_Moderate	Not a TEC	83.5	83.5	0.5	PCT Cleared - 63%	High Sensitivity to Gain			1.75		18
											Subtotal	**30**

Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion												
7	45_Mod_Good	Natural Grasslands of the Murray Valley Plains	65.1	65.1	2.2	Environment Protection and Conservation Act listing status	High Sensitivity to Gain	Not Listed	Critically Endangered	2.50		91
											Subtotal	**91**
Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion												
4	26_DNG	Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions	20.3	20.3	107	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00		1086

5	26_Intact	Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions	67.1	67.1	22.6	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00		759
6	26_Sparse	Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions	46.2	46.2	104.6	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00		2418
											Subtotal	**4263**

Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion												
9	26_Sparse_EPBC	Weeping Myall Woodlands	46.2	46.2	7.1	Environment Protection and Conservation Act listing status	High Sensitivity to Gain	Not Listed	Endangered	2.00		163
											Subtotal	**163**
											Total	**4699**

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
Austrostipa wakoolica / A spear-grass (Flora)									
17_Moderate	83.5	83.5	0.47	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	20
26_Intact	67.1	67.1	0.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	3

26_Sparse	46.2	46.2	0.66	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	15
								Subtotal	**38**
Hemiaspis damelii / Grey Snake (Fauna)									
13_Thinned	69.2	69.2	2.5	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	87
17_Mod_Good	84.2	84.2	0.32	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	13
17_Moderate	83.5	83.5	0.5	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	21
								Subtotal	**121**

Litoria raniformis / Southern Bell Frog (Fauna)									
17_Mod_Good	84.2	84.2	0.23	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	10
26_DNG	20.3	20.3	10.5	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	107
26_Intact	67.1	67.1	2.4	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	79
26_Sparse	46.2	46.2	15.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	350
								Subtotal	**546**
Pedionomus torquatus / Plains-wanderer (Fauna)									
26_DNG	20.3	20.3	1.3	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Critically Endangered	True	20

46_Moderate	90.6	90.6	1.3	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Critically Endangered	True	89
								Subtotal	**109**
Pilularia novae-hollandiae / Austral Pillwort (Flora)									
13_Thinned	69.2	69.2	0.26	Geographic Distribution	Ecology or response to management is poorly known	Endangered	Not Listed	False	9
17_Moderate	83.5	83.5	0.5	Geographic Distribution	Ecology or response to management is poorly known	Endangered	Not Listed	False	21
26_DNG	20.3	20.3	1.1	Geographic Distribution	Ecology or response to management is poorly known	Endangered	Not Listed	False	11
26_Intact	67.1	67.1	0.16	Geographic Distribution	Ecology or response to management is poorly known	Endangered	Not Listed	False	5

26_Sparse	46.2	46.2	6.6	Geographic Distribution	Ecology or response to management is poorly known	Endangered	Not Listed	False	152
45_Mod_Good	65.1	65.1	0.27	Geographic Distribution	Ecology or response to management is poorly known	Endangered	Not Listed	False	9
46_Moderate	90.6	90.6	0.86	Geographic Distribution	Ecology or response to management is poorly known	Endangered	Not Listed	False	39
								Subtotal	**246**
Polytelis swainsonii / Superb Parrot (Fauna)									
13_Thinned	69.2	69.2	2.5	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	87
26_DNG	20.3	20.3	1.1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	11
45_Mod_Good	65.1	65.1	0.15	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	5

26_Sparse	46.2	46.2	0.95	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	22
								Subtotal	**125**
Swainsona murrayana / Slender Darling Pea (Flora)									
26_DNG	20.3	20.3	0.4	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	4
26_Sparse	46.2	46.2	0.38	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	9
								Subtotal	**13**

BAM Credit Summary Report

Proposal Details

Assessment Id
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Proposal Name
Dinawan wind - Stage 2

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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 - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)												
2	13_Moderate	Not a TEC	70.6	70.6	4	PCT Cleared - 57%	High Sensitivity to Gain			1.75		122

3	13_Thinned	Not a TEC	69.2	69.2	5.3	PCT Cleared - 57%	High Sensitivity to Gain			1.75		160
											Subtotal	**282**
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)												
4	15_Moderate	Not a TEC	75.7	75.7	2.5	PCT Cleared - 50%	High Sensitivity to Gain			1.75		84
5	15_Thinned	Not a TEC	67.1	67.1	1.1	PCT Cleared - 50%	High Sensitivity to Gain			1.75		32
											Subtotal	**116**
Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion												
13	46_Moderate	Natural Grasslands of the Murray Valley Plains	90.6	90.6	71.3	Environment Protection and Conservation Act listing status	High Sensitivity to Gain	Not Listed	Critically Endangered	2.50		4036
											Subtotal	**4036**

Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)												
6	17_Mod_Good	Not a TEC	84.2	84.2	0.43	PCT Cleared - 63%	High Sensitivity to Gain			1.75		16
7	17_Moderate	Not a TEC	83.5	83.5	0.83	PCT Cleared - 63%	High Sensitivity to Gain			1.75		30
											Subtotal	**46**
Nitre Goosefoot shrubland wetland on clays of the inland floodplains												
14	160_Mod_Good	Not a TEC	79	79.0	5	PCT Cleared - 28%	High Sensitivity to Gain			1.50		147
											Subtotal	**147**
Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion												
16	45_Mod_Good	Natural Grasslands of the Murray Valley Plains	65.1	65.1	0.01	Environment Protection and Conservation Act listing status	High Sensitivity to Gain	Not Listed	Critically Endangered	2.50		1
											Subtotal	**1**

River Red Gum - Black Box woodland wetland of the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)												
1	10_Moderate	Not a TEC	29.2	29.2	0.19	PCT Cleared - 43%	High Sensitivity to Gain			1.50		2
											Subtotal	**2**
Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion												
8	26_DNG	Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions	20.3	20.3	211.2	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00		2144

9	26_Intact	Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions	67.1	67.1	93	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00		3118
10	26_Sparse	Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions	46.2	46.2	215.1	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00		4971
											Subtotal	**10233**

Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion												
15	26_sparse_EPBC	Weeping Myall Woodlands	46.2	46.2	4.9	Environment Protection and Conservation Act listing status	High Sensitivity to Gain	Not Listed	Endangered	2.00		113
											Subtotal	**113**
White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone												
11	28_Low	Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions	57.1	57.1	47.6	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00		1360

12	28_Moderate	Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions	73.8	73.8	1.1	Biodiversity Conservation Act listing status	High Sensitivity to Gain	Endangered Ecological Community	Not Listed	2.00		41
											Subtotal	**1401**
											Total	**16377**

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
Austrostipa wakoolica / A spear-grass (Flora)									
17_Moderate	83.5	83.5	0.21	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	9
26_Intact	67.1	67.1	0.12	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	4

26_Sparse	46.2	46.2	0.02	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	1
								Subtotal	**14**
Brachyscome muelleroides / Claypan Daisy (Flora)									
46_Moderate	90.6	90.6	0.93	Geographic Distribution	Ability to colonise improved habitat	Vulnerable	Vulnerable	True	63
								Subtotal	**63**
Brachyscome papillosa / Mossgiel Daisy (Flora)									
46_Moderate	90.6	90.6	1.7	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	79
								Subtotal	**79**
Hemiaspis damelii / Grey Snake (Fauna)									
10_Moderate	29.2	29.2	0.19	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	3

13_Moderate	70.6	70.6	4	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	140
13_Thinned	69.2	69.2	5.3	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	183
15_Moderate	75.7	75.7	2.5	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	96
15_Thinned	67.1	67.1	1.1	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	37
17_Mod_Good	84.2	84.2	0.43	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	18
17_Moderate	83.5	83.5	0.83	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	35

160_Mod_Good	79.0	79.0	5	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Endangered	False	196
								Subtotal	**708**
Lepidium monoplocoides / Winged Peppercress (Flora)									
26_DNG	20.3	20.3	0.29	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	3
26_Intact	67.1	67.1	0.2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	7
26_Sparse	46.2	46.2	1.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	26
								Subtotal	**36**

Leptorhynchos orientalis / Lanky Buttons (Flora)									
26_DNG	20.3	20.3	0.29	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	3
26_Intact	67.1	67.1	0.2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	7
26_Sparse	46.2	46.2	1.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	26
46_Moderate	90.6	90.6	0.93	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	42
								Subtotal	**78**
Litoria raniformis / Southern Bell Frog (Fauna)									
13_Moderate	70.6	70.6	0.55	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	19

13_Thinned	69.2	69.2	2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	69
15_Thinned	67.1	67.1	1.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	36
17_Mod_Good	84.2	84.2	0.26	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	11
26_DNG	20.3	20.3	12.7	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	129
26_Intact	67.1	67.1	5.7	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	192
26_Sparse	46.2	46.2	14.8	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	342

28_Low	57.1	57.1	0.77	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	22
46_Moderate	90.6	90.6	9.5	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	432
160_Mod_Good	79.0	79.0	1.5	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Vulnerable	False	58
								Subtotal	**1310**
Maireana cheelii / Chariot Wheels (Flora)									
13_Moderate	70.6	70.6	0.29	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	10
13_Thinned	69.2	69.2	0.14	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	5
26_DNG	20.3	20.3	0.29	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	3

26_Intact	67.1	67.1	0.2	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	7
26_Sparse	46.2	46.2	1.1	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	26
46_Moderate	90.6	90.6	0.93	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	42
								Subtotal	**93**
Myotis macropus / Southern Myotis (Fauna)									
13_Moderate	70.6	70.6	0.55	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	19
13_Thinned	69.2	69.2	1.8	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	64
								Subtotal	**83**

Pedionomus torquatus / Plains-wanderer (Fauna)									
13_Moderate	70.6	70.6	0.01	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Critically Endangered	True	1
13_Thinned	69.2	69.2	0.11	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Critically Endangered	True	6
17_Moderate	83.5	83.5	0.03	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Critically Endangered	True	2
26_DNG	20.3	20.3	0.08	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Critically Endangered	True	1

26_Sparse	46.2	46.2	0.91	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Critically Endangered	True	32
46_Moderate	90.6	90.6	1.4	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Critically Endangered	True	96
								Subtotal	**138**
Pilularia novae-hollandiae / Austral Pillwort (Flora)									
13_Moderate	70.6	70.6	2.3	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Not Listed	False	81
13_Thinned	69.2	69.2	3.5	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Not Listed	False	121
15_Moderate	75.7	75.7	1.5	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Not Listed	False	56

15_Thinned	67.1	67.1	1.1	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Not Listed	False	37
17_Moderate	83.5	83.5	0.21	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Not Listed	False	9
26_DNG	20.3	20.3	3.8	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Not Listed	False	39
26_Intact	67.1	67.1	0.19	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Not Listed	False	6
26_Sparse	46.2	46.2	0.8	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Not Listed	False	18
46_Moderate	90.6	90.6	44	Biodiversity Conservation Act listing status	Ecology or response to management is poorly known	Endangered	Not Listed	False	1995

								Subtotal	2362
Polytelis swainsonii / Superb Parrot (Fauna)									
10_Moderate	29.2	29.2	0.19	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	3
13_Moderate	70.6	70.6	4	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	140
13_Thinned	69.2	69.2	5.3	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	183
15_Moderate	75.7	75.7	2.5	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	96
15_Thinned	67.1	67.1	1.1	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	37
17_Moderate	83.5	83.5	0.27	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	11

26_DNG	20.3	20.3	7.3	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	74
26_Intact	67.1	67.1	1.6	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	52
26_Sparse	46.2	46.2	6.6	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	152
28_Low	57.1	57.1	0.04	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	1
28_Moderate	73.8	73.8	0.21	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	8
46_Moderate	90.6	90.6	2.9	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	130
160_Mod_Good	79.0	79.0	0.01	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	1
								Subtotal	**888**

Sclerolaena napiformis / Turnip Copperburr (Flora)									
26_DNG	20.3	20.3	1.3	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	13
26_Intact	67.1	67.1	0.4	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	13
26_Sparse	46.2	46.2	2.2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	52
46_Moderate	90.6	90.6	3.1	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	141
								Subtotal	**219**
Swainsona murrayana / Slender Darling Pea (Flora)									
26_DNG	20.3	20.3	3.3	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	34

26_Intact	67.1	67.1	0.47	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	16
26_Sparse	46.2	46.2	3.5	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	80
28_Low	57.1	57.1	0.06	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	2
46_Moderate	90.6	90.6	5.8	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	264
								Subtotal	**396**
Swainsona plagiotropis / Red Darling Pea (Flora)									
26_DNG	20.3	20.3	0.97	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	10
26_Intact	67.1	67.1	0.2	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	7

26_Sparse	46.2	46.2	1.1	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	26
46_Moderate	90.6	90.6	2.4	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	107
								Subtotal	**150**
Swainsona sericea / Silky Swainson-pea (Flora)									
26_DNG	20.3	20.3	3	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Not Listed	False	30
26_Intact	67.1	67.1	0.35	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Not Listed	False	12
26_Sparse	46.2	46.2	4	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Not Listed	False	92
28_Low	57.1	57.1	0.06	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Not Listed	False	2

46_Moderate	90.6	90.6	2.4	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Not Listed	False	108
								Subtotal	**244**

BAM Credit Summary Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00034895/BAAS17051/24/00047205	Dinawan wind - Scattered Stage 1	09/04/2026
Assessor Name	**Report Created**	**BAM Data version ***
Mitchell Palmer	15/05/2026	Current classification (live - default) (94)
Assessor Number	**BAM Case Status**	**Date Finalised**
BAAS17051	Finalised	15/05/2026
Assessment Revision	**BOS entry trigger**	**Assessment Type**
6	Major Project	Scattered Trees

* 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
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)			
3	True	2.0	2
			2
26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion			
2	False	1.0	1
			1
			3

Species credits for threatened species

Nil

BAM Credit Summary Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00034895/BAAS17051/25/00055371	Dinawan wind - Scattered stage 2	09/04/2026
Assessor Name	**Report Created**	**BAM Data version ***
Mitchell Palmer	15/05/2026	Current classification (live - default) (94)
Assessor Number	**BAM Case Status**	**Date Finalised**
BAAS17051	Finalised	15/05/2026
Assessment Revision	**BOS entry trigger**	**Assessment Type**
3	Major Project	Scattered Trees

* 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
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)			
2	False	1.0	1
			1
26-Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion			
2	False	3.0	2
			2
			3

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

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