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Document Control

Client	ARTC Inland Rail
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Date Issued	30/06/2020
Prepared by	Joanne Woodhouse ERM
Purpose	BDAR Waiver Request
Endorsed by	
Approved by	
Date	

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REVISION	DATE ISSUED	DESCRIPTION
0	09/06/2020	BDAR Waiver Request submitted for approval
1	30/06/2020	BDAR Waiver finalised based on client review

BDAR WAIVER – 2100 ALBURY TO ILLABO

Doc. Name:	**BDAR WAIVER – 2100 ALBURY TO ILLABO**		
Doc. Number:	2-0001-640-ESV-00-RP-0002	**Revision:**	
Prepared by:	Joanne Woodhouse ERM	**Doc. Type:**	**Report**
Date:	**01/07/2020**	**Date required:**	**03/07/2020**

Reviewed by:			
Name/Position	**Initial**	**Date**	**Comments**
Alberto Paludetto **Environment Advisor** **A2I**	AP	01/07/2020	

Submitted for Approval

SIGNED BY	NAME	POSITION	DATE	SIGNATURE
Endorsed by	Andrew Skele	NSW Environment Manager		Andrew Skele (Jul 1, 2020 15:54 GMT+10)
	Melvyn Maylin	Project Director		
	Sarah Connelly	Program Environment Manager		Sarah Connelly (Jul 2, 2020 15:05 GMT+10)
APPROVED	Rebecca Pickering	Director – Engagement, Environment & Property		Rebecca Pickering (Jul 3, 2020 08:23 GMT+10)

Secretary
NSW Department of Planning, Industry and Environment
GPO Box 39, Sydney NSW 2001
information@planning.nsw.gov.au

30 June 2020

Reference: 0520125

Dear Secretary,

Subject: ARTC Inland Rail, Albury to Illabo Project - BDAR Waiver Request

Inland Rail is a major nation-building program that will enhance Australia's existing national rail network and service the interstate freight market. Inland Rail consists of 13 projects, seven of which are located within NSW. Each of these projects (and, in some cases as appropriate, separate work sites within a project) would be subject to an assessment and, if required, approval under the relevant planning or project laws in the relevant jurisdictions.

The proposal that is the subject of this request is the Albury to Illabo (A2I)project consisting of enhancement works to structures and sections of track along 185 kilometres of existing operational narrow gauge railway from the Victorian/New South Wales border to Illabo in regional NSW ('Proposal') (refer to Attachment A).

The Proposal is subject to environmental assessment under Part 5, Division 5.2 of the *NSW Environmental Planning and Assessment Act 1979* (EP&A Act) through the effect of Part 3 Division 15 of State Environmental Planning Policy (Infrastructure) 2007 (Infrastructure SEPP) and Part 3 of State Environmental Planning Policy (State and Regional Development) 2011 (SRD SEPP). The capital investment value of the Proposal is estimated to be in excess of $50 million, and as a result the Proposal is declared as State Significant Infrastructure (SSI) under the SRD SEPP. As SSI, the Proposal requires approval from the NSW Minister for Planning and Public Spaces under Part 5, Division 5.2 of the EP&A Act. This is a request for a determination under Section 7.8(2) of the *Biodiversity Conservation Act 2016* (BC Act) that the Proposal is not likely to have any significant impact on biodiversity values such that a biodiversity development assessment report is not required to accompany the application for approval under Division 5.2 of the EP&A Act to carry out the Proposal.

A State Significant Infrastructure (SSI) application and Scoping Report was lodged with the NSW Department of Planning, Industry and Environment (DPIE) in April 2020, seeking the Secretary's Environmental Assessment Requirements (SEARs) for the Environmental Impact Statement (EIS), as part of the first step in the approvals process for the Proposal. A Biodiversity Assessment Report has also been prepared and is provided in Attachment B.

As outlined within the Biodiversity Assessment Report (ERM 2020), the subject of the Proposal will be confined to the existing operational rail corridor which is subject to regular rail maintenance activities including mowing and herbicide treatment, track developments and influences from surrounding agriculture, industrial and urban areas. This ongoing disturbance has resulted in the A2I Proposal site being almost exclusively non-remnant vegetation characterised predominately by non-native grasslands. Exotic flora and invasive flora species were regularly found throughout the A2I Proposal site. The broader region of the A2I Proposal has also been subject to extensive clearing for agriculture, industry and urban uses.

The Native Vegetation Regulation Maps have identified the entire rail corridor as 'land excluded land from the LLS Act'. The Biodiversity Values Map also generally excludes the existing rail corridor as not having high biodiversity value, with the exception of the Murray River Bridge - Enhancement Site 1 (Riparian Vegetation) (refer to Map 1 Attachment B); and close to the Uranquinty Track Slew Site (Riparian Vegetation)(refer to Map 9 Attachment B).

This request is made on behalf of ARTC and is based on the assessment against the relevant biodiversity values identified by the BC Act (Sections 1.5 and 6.3) and the *Biodiversity Conservation Regulation 2017* (Clauses 1.4 and 6.1) (refer to Table 1 and Table 2 Attachment A).

While it is considered that a BDAR and application of the BAM is not suitable for this project, it is important to note that the EIS will include a separate biodiversity assessment and a detailed test of significance as set out in s. 7.3 of the BC Act. It is also expected that the SEARs will outline further biodiversity matters that need to be addressed in the EIS including aquatic habitat, indirect impacts such soil erosion and sedimentation mitigation, noise and vibration, and Matters of National Environmental Significance. The EIS will also provide an opportunity for additional mitigation and where practicable habitat enhancement at the existing Kapooka glider crossings.

We trust that this information is sufficient to allow the Department to waive this requirement. Should you require any additional information please do not hesitate to contact Murray Curtis or Joanne Woodhouse.

Yours sincerely,

Joanne Woodhouse
Project Manager

Murray Curtis
Partner

ATTACHMENT A TABLES

June 2020

Table 1: Key Information

Item	Details
Admin	Proponent name: ARTC Proponent Contact Details: Andrew Skele, 0429 060 647, ASkele@ARTC.com.au Project ID: PDA1512. SSI number not yet allocated by NSW DPIE Name and ecological qualifications of person completing Table 2: Joanne Woodhouse B. Env Sci. Joanne is a Principal Environmental Consultant with over fifteen years of professional experience specialising in terrestrial ecology, environmental impact assessment, bushfire hazard assessment and environmental management. A CV can be provided on request.
Site details	The Proposal commences in Albury NSW and ends at Illabo, NSW. The southern end of the Proposal commences at the Murray River Rail Bridge at 648.566 km on the line, measured from Central Railway Station, Sydney. The northern end of the Proposal ends at Illabo at 465.223km on the line. Works at the Murray River Bridge will be carried out in cooperation with the Tottenham to Albury (T2A), North East Rail Line (NERL) projects and ongoing passenger, freight train activities across the NSW-Victoria border. The Proposal then follows the existing rail corridor north for 185 km following the Main South line. Stations located along the track within the A2I Proposal site include the Albury, Bomen, Culcairn, Henty, The Rock, Wagga Wagga and Junee Stations. Private land acquisition is not expected as all of the key enhancement and track slew sites are all located within the existing operational rail corridor. Refer to Attachment A
Proposed development	The Proposal would provide clearance of the existing 'Main South' corridor to operate 1800 metre trains and includes the provision of dual track in some areas for train passing. The key features of the Proposal, as currently designed (and subject to further design refinement) are within four major site precincts: Albury, Wagga Wagga, Junee and Murray River Bridge. Each of these four sites would require a discreet set of vertical and horizontal clearance activities. Refer to Attachment A In addition, there are several discrete sites such as Wagga Road track lowering at Ettamogah, track lowering at Pearson Street Wagga Wagga, a potential bridge replacement within the Uranquinty Track Slew Site (Sandy Creek) and the removal of a pedestrian footbridge at Culcairn. The Proposal would also comprise: ■ A total of approximately 26 kilometres of track slewing, at multiple locations along the existing alignment, to allow trains vertical and horizontal clearance at gantries and all rail corridor structures according to Inland Rail clearance specification; ■ underbridge and culvert modifications in enhancement sites only, to allow slews to be carried out; ■ provision of signalling infrastructure (such as signal gantry); ■ aerial cable clearances (including associated overhead powerlines); ■ relocation or protection of utilities (such as telecommunications, water mains, etc); ■ modification of awnings at station buildings and structures (such as platforms) to maintain a safe distance from the track as currently designed and subject to further design refinement; and ■ operation of ancillary facilities, laydown areas for plant and equipment, personnel and materials and collection of water to supply construction activities, from potential suitable sources.
Impacts on biodiversity values	Noting there is already an existing impact associated with the existing rail line, the focus of the impact assessment and this waiver request is any additional impacts associated with the Proposal. Refer to Attachment B and Table 2 below.

Table 2: Assessment against the relevant biodiversity values

Biodiversity Value	Comment	Potential Impact
1.4(a) BC Regulation threatened species abundance—being the occurrence and abundance of threatened species or threatened ecological communities, or their habitat, at a particular site,	Three (3) woodland patches characterised by PCT 277 intercepts parts of the A2I Proposal site at Wagga Road Bridge - Enhancement Site 4. Refer to Figure 2 of the attached BAR (Attachment B). The northern woodland patch is approximately 0.24 ha. The central woodland patch is approximately 0.79 ha. The southern woodland patch is approximately 1.20 ha. Much of these areas extend outside of Enhancement Site 4. The total area of White Box Yellow Box Blakely's Red Gum Woodland (Box-Gum Woodland) TEC within the A2I Proposal site itself is 0.45 ha and will be avoided during detailed design. These areas are not listed under the EPBC Act as they do not meet the condition criteria. Specifically, they do not contain a predominantly native understorey and field survey confirmed less than 50% native species in the ground layer.	**No impact.** The 0.45 ha of BC Act listed White Box Yellow Box Blakely's Red Gum Woodland (Box-Gum Woodland) mapped within Wagga Road - Enhancement Site 4 will be avoided during detailed design. This area will be clearly delineated in the field and on all construction drawings as a no go zone.
	There are three (3) threatened species known to occur and six (6) threatened species considered likely to occur within the A2I Proposal site: Known: ■ Squirrel Glider (*Petaurus norfolcensis*); ■ Grey-crowned Babbler (*Pomatostomus temporalis temporalis*); and ■ Superb Parrot (*Polytelis swainsonii*). Likely: ■ Sloane's Froglet (*Crinia sloanei*);	The main potential impacts of the Proposal during construction and operation include: ■ Clearance of <0.5 ha of isolated and regrowth woodland trees scattered across the entire 185km long alignment; ■ Loss of isolated trees may create gaps that exceed gliding distance for the local squirrel glider population; ■ Loss of highly disturbed fauna habitats including a small number of tree hollows and grassy habitats (dominated by non-native grasses and herbaceous weeds); ■ Disturbance to natural and constructed aquatic habitats; and

Biodiversity Value	Comment	Potential Impact
	■ Little Lorikeet (*Glossopsitta pusilla*); ■ Major Mitchell's Cockatoo (*Lophochroa leadbeateri*); ■ Turquoise Parrot (*Neophema pulchella*); ■ Diamond Firetail (*Stagonopleura guttata*);and ■ Grey-headed Flying-fox (*Pteropus poliocephalus*).	■ Increased potential for wildlife to be struck by the potential higher frequency of trains and use of double deck rolling stock. Fragmentation of the adjacent habitats is considered to be an existing impact and where required additional glider crossings may also be installed as part of the Proposal which will result in increased connectivity across the broader landscape. Noting there is already an existing impact associated with the rail line, the Proposal will included detailed assessment including management and mitigation measures to ensure that the **risk of any additional significant impacts is unlikely** within the already highly disturbed operational alignment. The impacts to threatened species will be considered in the EIS in accordance with the requirements of the BC Act and EPBC Act, but based on the fact that construction will be confined to the existing rail corridor which is dominated by non-remnant exotic vegetation, this assessment is not proposed in the form of a BDAR (subject to approval of this waiver application). A preliminary assessment of potential impacts to those species known to occur within the A2I Proposal site is provided below and will be supported in the EIS by additional field assessment and detailed mitigation measures to ensure **no additional significant impact**: <u>Squirrel Glider</u> The Squirrel Glider has been identified within the locality of the A2I Proposal site over 900 times and forms part of the endangered population (Wagga Wagga Local Government Area - endangered population listing under BC Act). Whilst the local population would not be dependant on the limited resources available within the A2I Proposal site itself, there are

Biodiversity Value	Comment	Potential Impact
		some hollows present and the population is known to cross the rail corridor to move between adjacent areas of habitat. The Kapooka Environmental Monitoring programme (SMEC 2019) highlights that ongoing monitoring provides evidence that the local population of gliders continue to cross transport barriers (highway and rail) and suggests that these movements represented exploratory movements to peripheral parts of the home-range area or to extend the home-range. David Sharpe (pers. comm.) confirms that the movements also represented dispersal events. **Fragmentation of potential habitat is considered to be an existing impact** and would not be significantly increased as a result of the A2I proposal. No enhancement works are proposed at Kapooka although it is noted that the Kapooka Squirrel Glider Crossing that intercepts the A2I Proposal site is under the 7.1m clearance and it would likely be a requirement to relocate or redesign the glider crossing. This will require consultation and agreement with the relevant road authority and will consider the vast amount of information that is already available for the local population. The Proposal will be designed to ensure gliders continue to be able to move through the locality as appropriate. Based on detailed assessment to be included in the EIS, additional crossings may also be installed as part of the Proposal where adjacent habitats are available on both sides of the rail corridor and **would result in *increased* connectivity across the landscape**. <u>Grey-crowned Babbler</u> The Grey-crowned Babbler has been previously recorded within the rail corridor at Kapooka with characteristic nests occurring within 100m of the A2I Proposal site (pers. comm. David Sharpe). No enhancement works

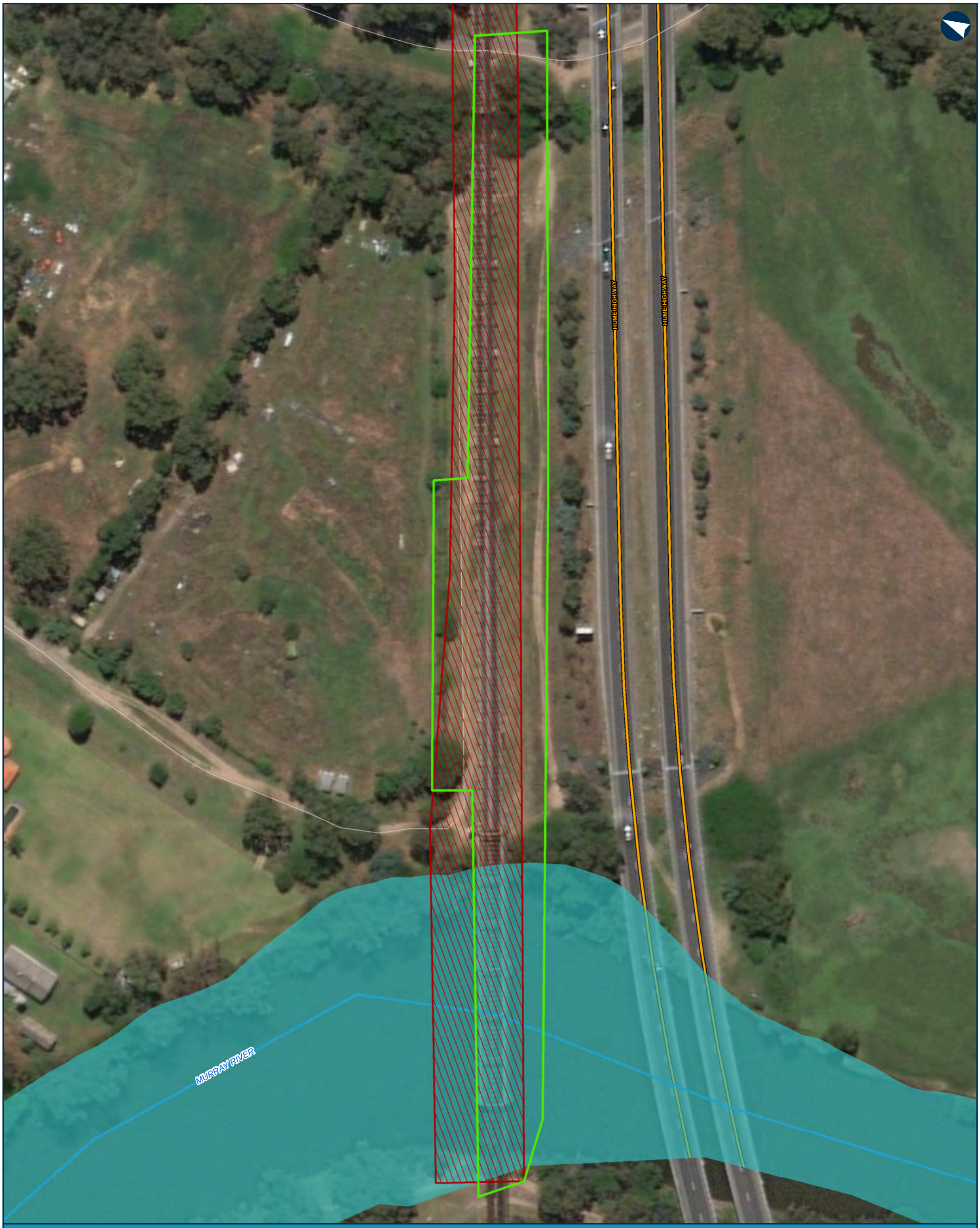
Biodiversity Value	Comment	Potential Impact
		are proposed at Kapooka and no Grey-crowned Babbler or their characteristic nests were recorded within any of the proposed work sites during the recent survey. This species would not be dependant on any of the resources present within the enhancement sites and it is likely to utilise the edges of the rail corridor as part of its foraging range only. Additional surveys to better understand the use of the A2I Proposal site by this species will be undertaken to support the EIS although it is unlikely that the Proposal would present any additional impacts to those already present in the existing operational corridor. **Areas of remnant woodlands will be avoided and detailed design will ensure no additional significant impact to the local population of the Grey-crowned Babbler**. <u>Superb Parrot</u> Several Superb Parrot individuals were observed within the A2I Proposal site on two (2) separate occasions. Although, the A2I Proposal site is predominately cleared and absent of woody vegetation, there are some areas that contain intermittent/scattered Eucalyptus individuals (e.g. *E. camaldulensis, E. melliodora* and *E. blakeyi*) with a grassy understory that provides some suitable foraging habitat for Superb Parrots. This species is known to inhabit White Box-Yellow Box-Blakely's Red Gum Grassy Woodlands TEC, which was present within (and adjacent to) the A2I Proposal site, all of which **will be avoided through detailed design.**
1.4(b) BC Regulation	As outlined within the attached BAR (refer to Table 9), the vast majority of the A2I Proposal site is within the existing rail corridor and is subject to regular rail maintenance activities (e.g. mowing and	The Proposal will result in the clearance of <0.5 ha of isolated and regrowth woodland trees scattered across the entire 185km long alignment.

Biodiversity Value	Comment	Potential Impact
vegetation abundance—being the occurrence and abundance of vegetation at a particular site,	herbicide treatment), track developments and influences from surrounding agriculture, industrial and urban areas. This ongoing disturbance has resulted in the A2I Proposal site being almost exclusively non-remnant vegetation characterised predominately by non-native grasslands. Exotic flora and invasive flora species were regularly found throughout the A2I Proposal site. Small pockets of riparian and semi-cleared open woodland persists in isolated pockets only and will be avoided through detailed design. The broader region of the A2I Proposal site has also been subject to extensive clearing for agriculture, industry and urban uses.	**Impacts to retained native vegetation will be avoided**. Retained vegetation within (and adjacent to) the A2I Proposal site will be clearly delineated in the field and on all construction drawings as a no go zone. Given the high levels of disturbance within the A2I Proposal site, there is also the risk that weeds and pathogens may be transported off-site. Biosecurity measures to reduce the chance of weed spread will be considered within the EIS and implemented during construction as appropriate.
1.4(c) BC Regulation habitat connectivity—being the degree to which a particular site connects different areas of habitat of threatened species to facilitate the movement of those species across their range,	The habitats available within the existing rail corridor do not contribute to the movement of threatened species across their range; and connectivity is limited due to extensive clearing and operational use of the rail corridor. In terms of existing habitat enhancements, there is an existing Glider Crossing installed at Kapooka that intercepts the A2I Proposal site. No other significant habitat features are available within the Project site to facilitate the movement of species across their range.	The EIS will review the height and design of the existing glider crossings to ensure that they are suitable to accommodate the new train heights. The Proposal will be designed to ensure gliders continue to be able to move through the locality. Additional crossings may also be installed as part of the Proposal where adjacent habitats are available on both sides of the rail corridor and **would result in *increased* connectivity across the landscape**. Riparian habitats and connectivity along the adjacent watercourses including the Murray River will not be further impacted as a result of the Proposal. Other highly mobile species, including the Superb Parrot and Grey-crowned Babbler are known to forage within the adjacent landscaped areas or fly over the rail corridor as part of their generalist habitat requirements however they would not be dependant on the limited resources present and the Proposal will not further reduce their movement across the landscape.

Biodiversity Value	Comment	Potential Impact
1.4(d) BC Regulation threatened species movement—being the degree to which a particular site contributes to the movement of threatened species to maintain their lifecycle,	The habitats available within the existing rail corridor do not contribute to the movement of threatened species to maintain their lifecycle. Whilst the local Squirrel Glider population would not be dependant on the limited resources available within the A2I Proposal site itself, it is known to cross the rail corridor to move between adjacent areas of habitat. The Kapooka Environmental Monitoring programme (SMEC 2019) highlights that ongoing monitoring provides evidence that the local population of gliders continue to cross transport barriers (highway and rail) and suggests that these movements represented exploratory movements to peripheral parts of the home-range area or to extend the home-range, rather than being dispersal events.	Fragmentation of the adjacent habitats is considered to be an existing impact and would not be significantly increased as a result of the Proposal. Additional glider crossings may also be installed as part of the Proposal and would result in increased connectivity across the broader landscape.
1.4(e) BC Regulation flight path integrity—being the degree to which the flight paths of protected animals over a particular site are free from interference,	Highly mobile species (including migratory birds and bats) may forage within the adjacent landscaped areas or fly over the Site as part of their generalist habitat requirements however they would not be dependant on the limited resources present and the Proposal would not alter or disturb any species movement patterns across this highly disturbed landscape.	There is a minor increased potential for wildlife to be struck by the potential higher frequency of trains and use of double deck rolling stock. This impact will be addressed within the EIS.
1.4(f) BC Regulation Water sustainability - being the degree to which water quality, water bodies and hydrological processes sustain threatened species and threatened ecological communities at a particular site.	The A2I Proposal site is located within the Murray – Darling Basin and covers two sub-catchments, which include the Mid Murray and Murrumbidgee. Due to the linear nature of the Proposal, the A2I Proposal site is intercepted and in close proximity to many watercourses, drainage features, wetlands, artificial dams and canals. Watercourses include major rivers such as the Murray River and several minor streams.	All waterway crossings will consider an appropriately designed structure that does not obstruct fish passage and will be designed in accordance with the Policy and Guidelines for Fish Habitat Conservation and Management and the Policy and Guidelines for Fish Friendly Waterway Crossings so far as practicable. Water quality and hydrological impacts will be addressed within the EIS.

Biodiversity Value	Comment	Potential Impact
1.5(2)(a) BC Act Vegetation integrity - degree to which the composition, structure and function of vegetation at a particular site and the surrounding landscape has been altered from a near natural state	As outlined within the attached BAR (refer to Table 9), the vast majority of the A2I Proposal site is within the existing rail corridor and is subject to regular rail maintenance activities (e.g. mowing and herbicide treatment), track developments and influences from surrounding agriculture, industrial and urban areas. This ongoing disturbance has resulted in the A2I Proposal site being almost exclusively non-remnant vegetation characterised predominately by non-native grasslands. Exotic flora and invasive flora species were regularly found throughout the A2I Proposal site. Small pockets of riparian and semi-cleared open woodland persists in isolated pockets only, and field survey confirmed less than 50% native species in the ground layer.	The Proposal will result in the clearance of <0.5 ha of isolated and regrowth woodland trees scattered across the entire 185km long alignment.
1.5(2)(b) BC Act Habitat suitability - Degree to which the habitat needs of threatened species are present at a particular site	There are no karst, caves, crevices, cliffs or other areas of geological significance within the A2I Proposal site. Many of the culverts inspected contained suitable microbat roosting habitat although no evidence of microbat roosts were identified during the field survey. Hollow bearing trees were recorded and the riparian vegetation at Murray River Bridge - Enhancement Site 1 could provide refuge habitat to a range of fauna species. Enhancement Site 4 also contained some small hollow logs that could be used has habitat for reptile and small mammal species. The A2I Proposal site contained several semi-permanent and permanent water sources, which could be utilised during times of drought for the BC Act and EPBC Act listed *Crinia sloanei* (Sloane's Froglet).	None of the threatened species recorded, or considered likely to occur within the locality would be dependant of any of the resources available with the already highly disturbed operational rail corridor. The EIS will provide an opportunity for additional mitigation and where practicable habitat enhancement.

ATTACHMENT B FIGURES



Albury to Illabo

1. A2I Study Area - Biodiversity Value Map - Murray River Bridge Precinct (Enhancement Site 1)

MAP 1 OF 21

0 20 40 60 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 29/06/2020 Paper: A3
Author: ERM Scale: 1:1,260
Data Sources: DCDB - NSW Gov; ESRI World Imagery; Inset : Bing

LEGEND

- ARTC KM Posts
- Enhancement Sites
- Track Slew Site
- Previous Survey
- Watercourse
- Primary Road/Motorway
- Major Road
- Minor Road

Biodiversity Value Map

- Protected Riparian Land
- Threatened species or communities with potential for serious and irreversible impacts

INLAND RAIL ARTC

The Australian Government is delivering Inland Rail through the Australian Rail Track Corporation (ARTC), in partnership with the private sector.

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Albury to Illabo

2. A2I Study Area - Biodiversity Value Map - Albury Station Precinct (Enhancement Sites 2 and 3)

MAP 2 OF 21

0 20 40 60
m

Coordinate System: GDA 1994 MGA Zone 55

Date: 29/06/2020 Paper: A3
Author: ERM Scale: 1:5,590
Data Sources: DCDB - NSW Gov; ESRI World Imagery; Inset : Bing

LEGEND

- ARTC KM Posts
- Enhancement Sites
- Track Slew Site
- Previous Survey
- Watercourse
- Primary Road/Motorway
- Major Road
- Minor Road

Biodiversity Value Map

- Protected Riparian Land
- Threatened species or communities with potential for serious and irreversible impacts

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Albury to Illabo | 3. A2I Study Area - Biodiversity Value Map - Wagga Road Bridge (Enhancement Site 4) | MAP 3 OF 21

0 20 40 60 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 29/06/2020 Paper: A3
Author: ERM Scale: 1:1,850
Data Sources: DCDB - NSW Gov; ESRI World Imagery; Inset : Bing

LEGEND

- ARTC KM Posts
- Enhancement Sites
- Track Slew Site
- Previous Survey
- Watercourse
- Primary Road/Motorway
- Major Road
- Minor Road

Biodiversity Value Map

- Protected Riparian Land
- Threatened species or communities with potential for serious and irreversible impacts

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Albury to Illabo

4. A2I Study Area - Biodiversity Value Map - Trackside Structures at chainage 632.86

MAP 4 OF 21

0 20 40 60 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 29/06/2020 Paper: A3
Author: ERM Scale: 1:1,870
Data Sources: DCDB - NSW Gov; ESRI World Imagery; Inset : Bing

LEGEND

- ARTC KM Posts
- Enhancement Sites
- Track Slew Site
- Previous Survey
- Trackside Structures
- Watercourse
- Primary Road/Motorway
- Major Road
- Minor Road

Biodiversity Value Map

- Protected Riparian Land
- Threatened species or communities with potential for serious and irreversible impacts

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Albury to Illabo | 5. A2I Study Area - Biodiversity Value Map - Culcairn Footbridge (Enhancement Site 5) | MAP 5 OF 21

0 20 40 60 m

Coordinate System: GDA 1994 MGA Zone 55

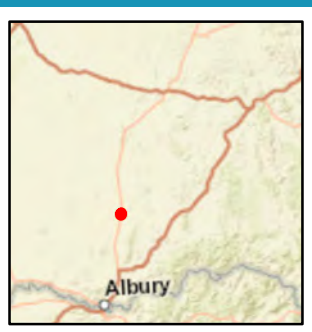
Date: 29/06/2020 Paper: A3
Author: ERM Scale: 1:2,700
Data Sources: DCDB - NSW Gov; ESRI World Imagery; Inset : Bing

LEGEND

- ARTC KM Posts
- Enhancement Sites
- Track Slew Site
- Previous Survey
- Trackside Structures
- Watercourse
- Primary Road/Motorway
- Major Road
- Minor Road

Biodiversity Value Map

- Protected Riparian Land
- Threatened species or communities with potential for serious and irreversible impacts



INLAND RAIL | ARTC

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BUCKARGINGAH CREEK

580

580.5

581

Albury to Illabo

6. A2I Study Area - Biodiversity Value Map - Henty Track Slew

MAP 6 OF 21

0 20 40 60 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 29/06/2020 Paper: A3
Author: ERM Scale: 1:3,880
Data Sources: DCDB - NSW Gov; ESRI World Imagery; Inset : Bing

LEGEND

- ARTC KM Posts
- Track Slew Site
- Previous Survey
- Trackside Structures
- Watercourse
- Primary Road/Motorway
- Major Road
- Minor Road

Biodiversity Value Map

- Protected Riparian Land
- Threatened species or communities with potential for serious and irreversible impacts

INLAND RAIL ARTC

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564.5

565

565.5

OLYMPIC HIGHWAY

COX STREET

PLUNKETT STREET

COLE STREET

SANDY CREEK

Albury to Illabo

7. A2I Study Area - Biodiversity Value Map - Yerong Creek Track Slew

MAP 7 OF 21

0 20 40 60 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 29/06/2020 Paper: A3
Author: ERM Scale: 1:3,920
Data Sources: DCDB - NSW Gov; ESRI World Imagery; Inset : Bing

LEGEND

- ARTC KM Posts
- Track Slew Site
- Previous Survey
- Watercourse
- Primary Road/Motorway
- Major Road
- Minor Road

Biodiversity Value Map

- Protected Riparian Land
- Threatened species or communities with potential for serious and irreversible impacts

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BURKES CREEK
THE ROCK-COLLINGULLIE ROAD
FORD STREET
URANA STREET
URANA STREET
OLYMPIC HIGHWAY
MANGOPLAH ROAD
RAILWAY STREET
OLYMPIC HIGHWAY
550
550.5
551
551.5
551.5

Albury to Illabo

8. A2I Study Area - Biodiversity Value Map - Trackside Structures near The Rock

MAP 8 OF 21

0 20 40 60
m

Coordinate System: GDA 1994 MGA Zone 55

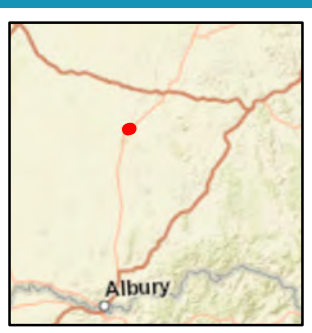
Date: 29/06/2020 Paper: A3
Author: ERM Scale: 1:5,820
Data Sources: DCDB - NSW Gov; ESRI World Imagery; Inset : Bing

LEGEND

- ARTC KM Posts
- Enhancement Sites
- Track Slew Site
- Previous Survey
- Trackside Structures
- Watercourse
- Primary Road/Motorway
- Major Road
- Minor Road

Biodiversity Value Map

- Protected Riparian Land
- Threatened species or communities with potential for serious and irreversible impacts



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ARTC

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URANQUINTY CROSS ROAD
YARRAGUNDRY STREET
OLYMPIC HIGHWAY
535
535.5
MORGAN STREET
RYAN STREET
KEY STREET
SANDY CREEK
536
536.5
537
OLYMPIC HIGHWAY
SANDY CREEK

Albury to Illabo

9. A2I Study Area - Biodiversity Value Map - Uranquinty Track Slew

MAP 9 OF 21

0 20 40 60
m

Coordinate System: GDA 1994 MGA Zone 55

Date: 29/06/2020 Paper: A3
Author: ERM Scale: 1:6,060
Data Sources: DCDB - NSW Gov; ESRI World Imagery; Inset : Bing

LEGEND

- ARTC KM Posts
- Track Slew Site
- Previous Survey
- Trackside Structures
- Watercourse
- Primary Road/Motorway
- Major Road
- Minor Road

Biodiversity Value Map

- Protected Riparian Land
- Threatened species or communities with potential for serious and irreversible impacts

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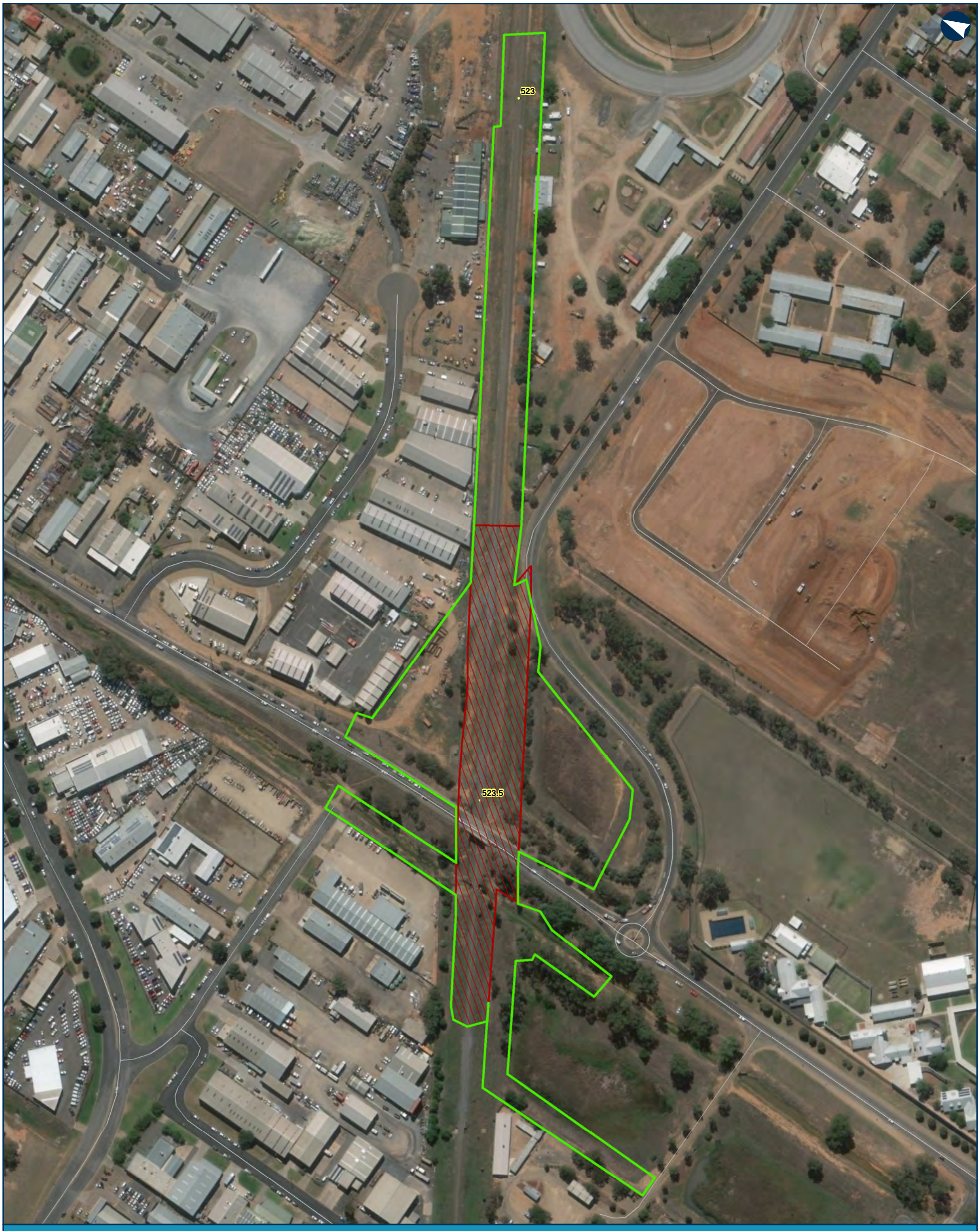

Albury to Illabo | 10. A2I Study Area - Biodiversity Value Map - Pearson Street Bridge (Enhancement Site 6) | MAP 10 OF 21

0 20 40 60 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 29/06/2020 Paper: A3
Author: ERM Scale: 1:2,520
Data Sources: DCDB - NSW Gov; ESRI World Imagery; Inset : Bing

LEGEND

- ARTC KM Posts
- Enhancement Sites
- Track Slew Site
- Previous Survey
- Watercourse
- Primary Road/Motorway
- Major Road
- Minor Road

Biodiversity Value Map

- Protected Riparian Land
- Threatened species or communities with potential for serious and irreversible impacts

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Albury to Illabo 11. A2I Study Area - Biodiversity Value Map - Wagga Wagga Station Precinct (Enhancement Sites 7, 8 and 9) Map 10 of 21

0 20 40 60 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 29/06/2020 Paper: A3
Author: ERM Scale: 1:4,840
Data Sources: DCDB - NSW Gov; ESRI World Imagery; Inset : Bing

LEGEND

- ARTC KM Posts
- Enhancement Sites
- Track Slew Site
- Previous Survey
- Watercourse
- Primary Road/Motorway
- Major Road
- Minor Road

Biodiversity Value Map

- Protected Riparian Land
- Threatened species or communities with potential for serious and irreversible impacts

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513.5

BYRNES ROAD

514

514.5

Albury to Illabo

12. A2I Study Area - Biodiversity Value Map - Bomen Track Slew

MAP 12 OF 21

0 20 40 60 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 29/06/2020 Paper: A3
Author: ERM Scale: 1:3,320
Data Sources: DCDB - NSW Gov; ESRI World Imagery; Inset : Bing

LEGEND

- ARTC KM Posts
- Track Slew Site
- Previous Survey
- Watercourse
- Primary Road/Motorway
- Major Road
- Minor Road

Biodiversity Value Map

- Protected Riparian Land
- Threatened species or communities with potential for serious and irreversible impacts

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Albury to Illabo | 13. A2I Study Area - Biodiversity Value Map - Harefield Track Slew | MAP 13 OF 21

0 20 40 60 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 29/06/2020 Paper: A3
Author: ERM Scale: 1:3,070
Data Sources: DCDB - NSW Gov; ESRI World Imagery; Inset : Bing

LEGEND

- ARTC KM Posts
- Track Slew Site
- Previous Survey
- Trackside Structures
- Watercourse
- Primary Road/Motorway
- Major Road
- Minor Road

Biodiversity Value Map

- Protected Riparian Land
- Threatened species or communities with potential for serious and irreversible impacts

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Albury to Illabo

14. A2I Study Area - Biodiversity Value Map - Kemp Street Bridge (Enhancement Site 10)

MAP 14 OF 21

0 20 40 60 m

LEGEND

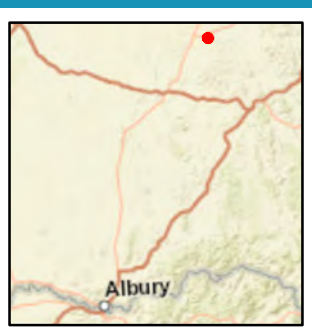
- ARTC KM Posts
- Enhancement Sites
- Track Slew Site
- Previous Survey
- Watercourse
- Primary Road/Motorway
- Major Road
- Minor Road

Biodiversity Value Map

- Protected Riparian Land
- Threatened species or communities with potential for serious and irreversible impacts

Coordinate System: GDA 1994 MGA Zone 55

Date: 29/06/2020 Paper: A3
Author: ERM Scale: 1:1,110
Data Sources: DCDB - NSW Gov; ESRI World Imagery; Inset : Bing



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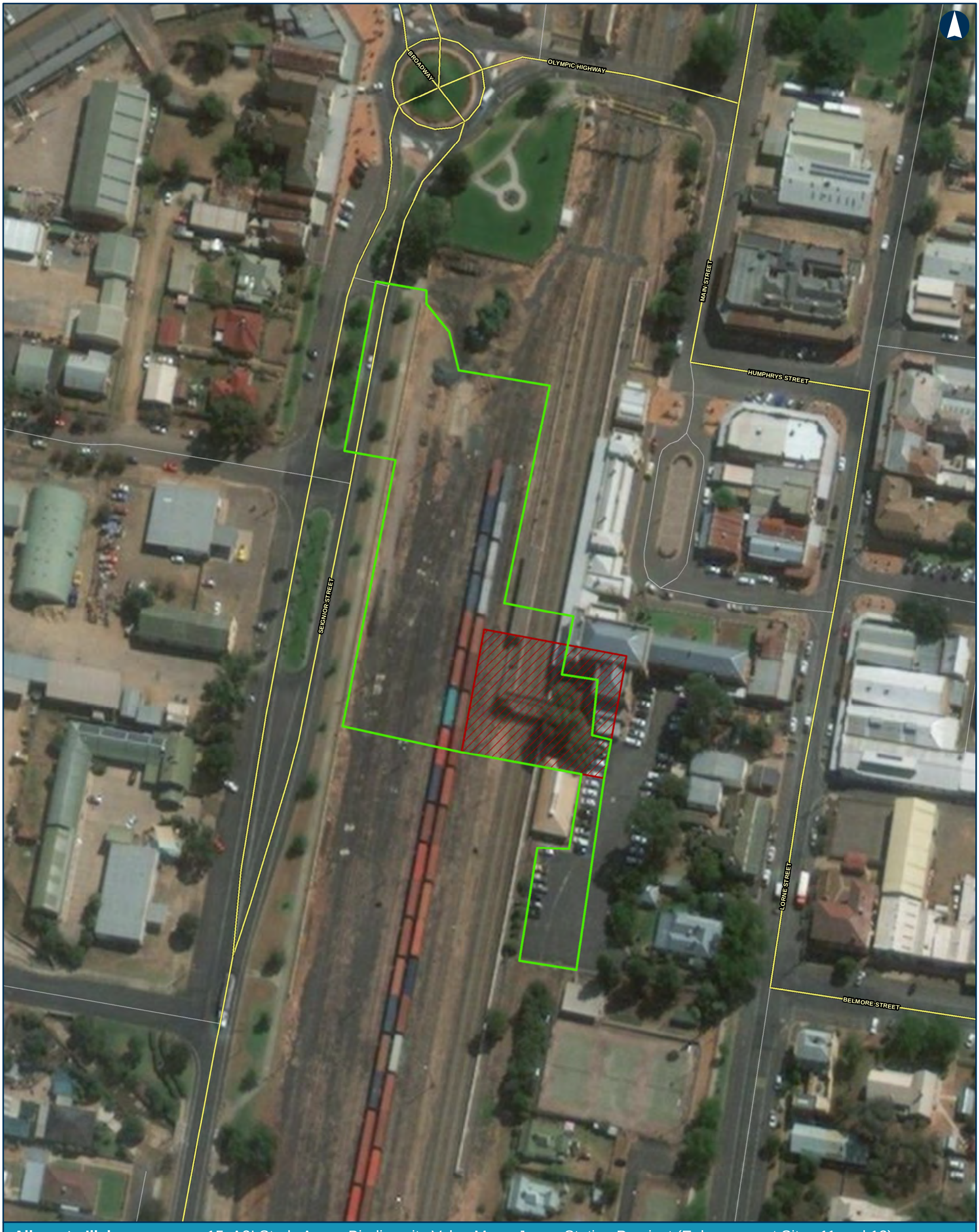

Albury to Illabo — 15. A2I Study Area - Biodiversity Value Map - Junee Station Precinct (Enhancement Sites 11 and 12) — MAP 15 OF 21

0 20 40 60 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 29/06/2020 Paper: A3
Author: ERM Scale: 1:1,160
Data Sources: DCDB - NSW Gov; ESRI World Imagery; Inset : Bing

LEGEND

- ARTC KM Posts
- Enhancement Sites
- Track Slew Site
- Previous Survey
- Watercourse
- Primary Road/Motorway
- Major Road
- Minor Road

Biodiversity Value Map

- Protected Riparian Land
- Threatened species or communities with potential for serious and irreversible impacts

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Albury to Illabo — 16. A2I Study Area - Biodiversity Value Map - Junee Track Slew — MAP 16 OF 21

0 20 40 60
m

Coordinate System: GDA 1994 MGA Zone 55

Date: 29/06/2020 Paper: A3
Author: ERM Scale: 1:4,870
Data Sources: DCDB - NSW Gov; ESRI World Imagery; Inset : Bing

LEGEND

- ARTC KM Posts
- Track Slew Site
- Previous Survey
- Watercourse
- Primary Road/Motorway
- Major Road
- Minor Road

Biodiversity Value Map

- Protected Riparian Land
- Threatened species or communities with potential for serious and irreversible impacts

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Albury to Illabo | 17. A2I Study Area - Biodiversity Value Map - Illabo to Junee Track Slew | MAP 17 OF 21

0 200 400 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 29/06/2020 Paper: A3
Author: ERM Scale: 1:14,880
Data Sources: DCDB - NSW Gov; ESRI World Imagery; Inset : Bing

LEGEND

- ARTC KM Posts
- Track Slew Site
- Previous Survey
- Watercourse
- Primary Road/Motorway
- Major Road
- Minor Road

Biodiversity Value Map

- Protected Riparian Land
- Threatened species or communities with potential for serious and irreversible impacts

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STANYER ROAD

OLYMPIC HIGHWAY

474 473.5 473 472.5 472

474.5 475 475.5 476 476.5

JERALGAMBETH CREEK

Albury to Illabo

18. A2I Study Area - Biodiversity Value Map - Illabo to Junee Track Slew

MAP 18 OF 21

0 240 480 960 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 29/06/2020 Paper: A3
Author: ERM Scale: 1:17,950
Data Sources: DCDB - NSW Gov; ESRI World Imagery; Inset : Bing

LEGEND

- ARTC KM Posts
- Track Slew Site
- Previous Survey
- Watercourse
- Primary Road/Motorway
- Major Road
- Minor Road

Biodiversity Value Map

- Protected Riparian Land
- Threatened species or communities with potential for serious and irreversible impacts

INLAND RAIL ARTC

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STANYER ROAD
OLYMPIC HIGHWAY
467.5
468
TURLAND STREET
CROWTHER STREET
468.5
469
469.5
MORRIS STREET
EURONGILLY ROAD
470
470.5
471
471.5
JERILDERIE CREEK
472
BRABINS ROAD

Albury to Illabo

19. A2I Study Area - Biodiversity Value Map - Illabo to Junee Track Slew

MAP 19 OF 21

0 200 400 m

Coordinate System: GDA 1994 MGA Zone 55

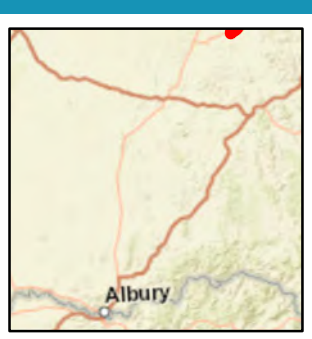
Date: 29/06/2020 Paper: A3
Author: ERM Scale: 1:14,290
Data Sources: DCDB - NSW Gov; ESRI World Imagery; Inset : Bing

LEGEND

- ARTC KM Posts
- Track Slew Site
- Previous Survey
- Watercourse
- Primary Road/Motorway
- Major Road
- Minor Road

Biodiversity Value Map

- Protected Riparian Land
- Threatened species or communities with potential for serious and irreversible impacts



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Albury to Illabo | 20. A2I Study Area - Biodiversity Value Map - Illabo to Junee Track Slew | MAP 20 OF 21

0 2 4 6 8 10
m

Coordinate System: GDA 1994 MGA Zone 55

Date: 29/06/2020 Paper: A3
Author: ERM Scale: 1:11,470
Data Sources: DCDB - NSW Gov; ESRI World Imagery; Inset : Bing

LEGEND

- ARTC KM Posts
- Track Slew Site
- Previous Survey
- Watercourse
- Primary Road/Motorway
- Major Road
- Minor Road

Biodiversity Value Map

- Protected Riparian Land
- Threatened species or communities with potential for serious and irreversible impacts

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531

531.5

532.5

OLYMPIC HIGHWAY

Albury to Illabo

21. A2I Study Area - Biodiversity Value Map - Trackside Structures at chainage 531.256

MAP 21 OF 21

0 20 40 60
m

Coordinate System: GDA 1994 MGA Zone 55

Date: 29/06/2020 Paper: A3
Author: ERM Scale: 1:5,200
Data Sources: DCDB - NSW Gov; ESRI World Imagery; Inset : Bing

LEGEND

- ARTC KM Posts
- Track Slew Site
- Previous Survey
- Power Crossing
- Watercourse
- Primary Road/Motorway
- Major Road
- Minor Road

Biodiversity Value Map

- Protected Riparian Land
- Threatened species or communities with potential for serious and irreversible impacts

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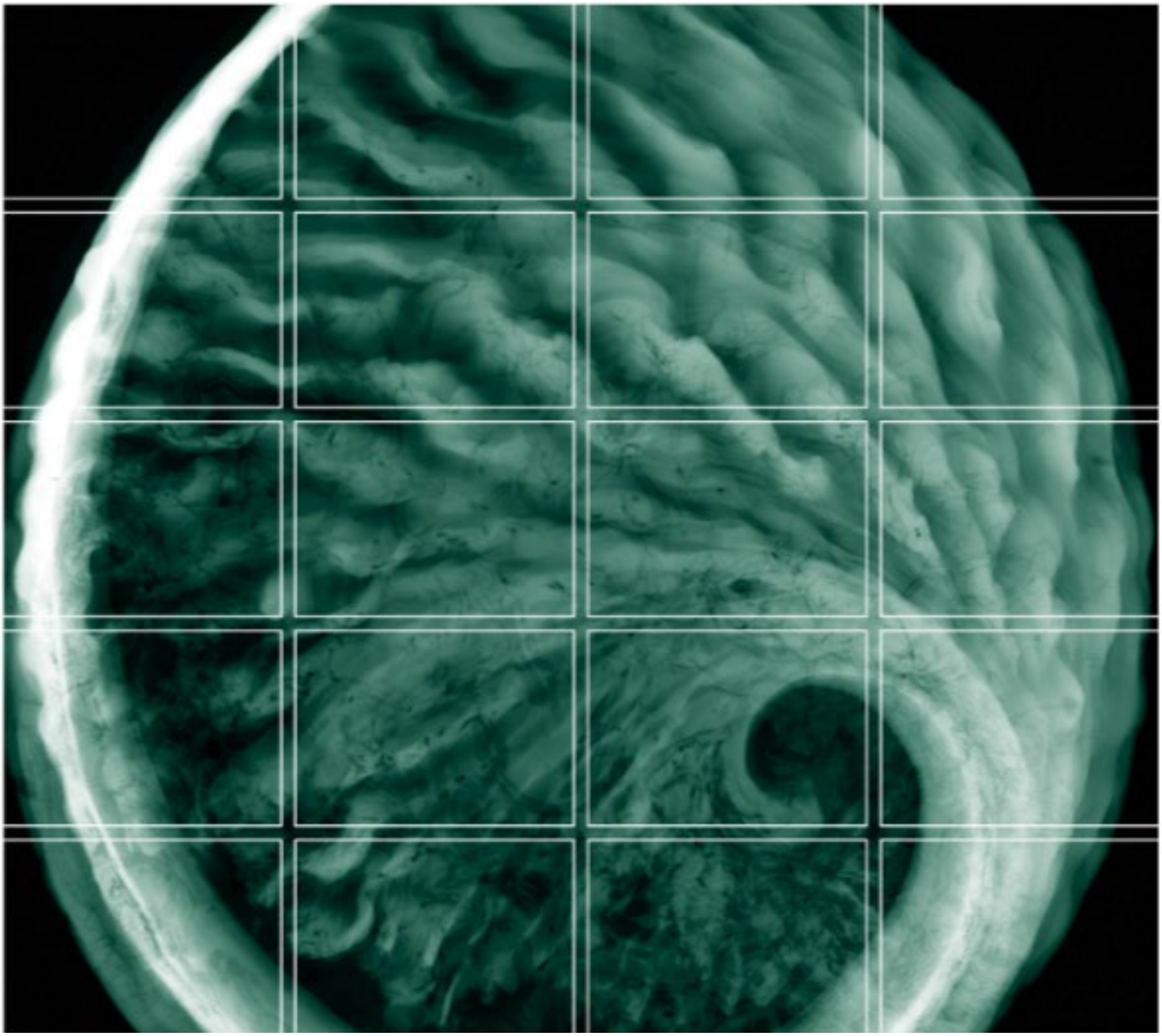
ATTACHMENT C BIODIVERSITY ASSESSMENT REPORT (PRELIMINARY)



Australian Rail Track Corporation (ARTC)

Inland Rail – Albury to Illabo Project (A2I)

Biodiversity Assessment Report

2-0001-640-ESV-00-RP-0001_0

9 April 2020

Project No.: 0520125

The business of sustainability

ERM

Document details	
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Date	9 April 2020
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Client Name	Australian Rail Track Corporation (ARTC)

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				ERM approval to issue		
Version	Revision	Author	Reviewed by	Name	Date	Comments
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Final	02	Sebastian Madden	Joanne Woodhouse	Murray Curtis	9/04/2020	Final for Submission

Signature Page

10 April 2020

Inland Rail – Albury to Illabo Project (A2I)

Biodiversity Assessment Report

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CONTENTS

List of Tables

List of Figures

Acronyms and Abbreviations

Name	Description
A2I	Albury to Illabo
A2I Proposal site	All areas within the railway corridor extending between Albury to Illabo in NSW.
AOBV	Areas of Outstanding Biodiversity Value
ARTC	Australian Rail Track Corporation Ltd
BAM	Biodiversity Assessment Method
BAR	Biodiversity Assessment Report
BC Act	NSW Biodiversity Conservation Act 2016
BDAR	Biodiversity Development Assessment Report
BOS	Biodiversity Offsets Scheme
BOSET	Biodiversity Offsets Scheme Entry Threshold
CSSI	Critical State Significant Infrastructure
DoEE	Commonwealth Department of the Environment and Energy
DPIE	NSW Department of Planning, Industry and Environment
EEC	Endangered Ecological Community
EIS	Environment Impact Statement
Enhancement Sites	Discrete sites within the A2I Proposal site that are proposed for infrastructure enhancement. This includes the 12 key enhancement sites as well as the signal gantries. Enhancement works at each of these discrete work sites may include raising, widening or replacing bridges, raising or replacing signal gantries, and lowering sections of track
EP&A Act	NSW Environmental Planning and Assessment Act 1979
EP&A Regulation	Environmental Planning and Assessment Regulation 2000
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
ha	hectare
Infrastructure SEPP	State Environmental Planning Policy (Infrastructure) 2007
km	kilometre
LGA	Local Government Areas
Locality	refers to an area within a 10 km buffer around the A2I Proposal site
MBIR	Melbourne-Brisbane Inland Rail
MNES	Matters of National Environmental Significance
NSW	New South Wales
PMST	Protected Matters Search Tool
Proposal	The Albury to Illabo enhancement works along 185 kilometres of existing operational narrow gauge railway from the Victorian/New South Wales border to Illabo in regional NSW. The Proposal would provide clearance of the existing 'Main South' corridor to operate 1800 metre trains and includes the provision of dual track in some areas for train passing.
SAII	serious and irreversible impacts
SEARs	Secretary's Environmental Assessment Requirements

Name	Description
Slew Sites	Track slewing to provide horizontal clearance as required along selected sections of the Proposal
TEC	threatened ecological communities
VIS	Vegetation Information System
Won's	Weeds of National Significance

1. INTRODUCTION

Environmental Resources Management Australia Pty Ltd (ERM) has been engaged by Australian Rail Track Corporation (ARTC) to prepare a Biodiversity Assessment Report, which will support the scoping report for the SEARs application for the SSI Proposal and the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC) Referral for the Inland Rail – Albury to Illabo (A2I) Enhancement Works project.

1.1 Background

The Australian Government has committed to delivering the Inland Rail Program, which is a high performance and direct interstate freight rail corridor between Melbourne and Brisbane, via central-west New South Wales (NSW) and Toowoomba in Queensland.

Inland Rail is a major nation-building program that will enhance Australia's existing national rail network and service the interstate freight market.

The Inland Rail route, which is about 1,700 kilometres long, involves:

- Using the existing interstate rail line through Victoria and southern NSW.
- Upgrading about 400 kilometres of existing track, mainly in western NSW.
- Providing about 600 kilometres of new track, mainly in northern NSW and south-east Queensland.

The Inland Rail consists of 13 projects, seven of which are located within NSW. One of the projects is the A2I Project, which is comprised of enhancement works to structures and sections of track along 185 kilometres of existing rail corridor from the Victorian/New South Wales border to Illabo in regional NSW. Enhancement works to existing structures and track is required to provide the increased vertical and horizontal clearance required for double-stacked freight trains. Enhancement works include raising, widening or replacing bridges, raising or replacing signal gantries, and lowering sections of track.

The Proposal is subject to environmental assessment under Part 5 Division 5.2 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) through the effect of Division 15 of *State Environmental Planning Policy (Infrastructure) 2007* (Infrastructure SEPP). ARTC is defined as a public authority for rail infrastructure developments in accordance with clause 277(1) of the *Environmental Planning and Assessment Regulation 2000* (EP&A Regulation). The capital investment value of the Proposal is estimated to be in excess of $50 million, and as a result the Proposal is State Significant Infrastructure under *State Environmental Planning Policy (State and Regional Development) 2011* (SRD SEPP). The Proposal requires approval from the NSW Minister for Planning and Public Spaces under Part 5, Division 5.2 of the EP&A Act. In addition, ARTC is seeking to have the Proposal declared as Critical State Significant Infrastructure under Section 5.13 of the EP&A Act, also under clause 16 of SRD SEPP and amendment of Schedule 5 of the SRD SEPP.

The Proposal will also be referred under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

1.2 Objectives

The objective of this assessment is to identify and describe key biodiversity values within the Proposal and to provide preliminary recommendations in terms of avoidance, mitigation and/or additional assessment required.

Biodiversity values are defined as those species and communities listed as vulnerable, endangered or critically endangered under the EPBC Act, and/or the NSW *Biodiversity Conservation Act 2016* (BC Act). This report is informed by a combination of:

- Desktop assessment and a review of previous field investigations and reports along the Proposal site (refer to Table 7); and
- Rapid Biological Values Assessments conducted in August 2019 to provide additional detail on key biodiversity values across the Proposal site. The rapid surveys were designed to verify and refine the presence/absence of biodiversity constraints from the Proposal, focusing in particular on listed threatened and endangered ecological communities as well as habitat capable of supporting listed threatened species.

The Report includes:

- Identification of actual and potential biodiversity values within the Proposal site, including the presence or potential presence of listed threatened species (and their habitats) and ecological communities;
- Description of biodiversity impacts and mitigation measures associated with the Proposal. Noting there is already an existing impact associated with the existing rail line, the focus of the impact assessment is on any additional impacts associated with the Proposal; and
- Description of outcomes and recommendations to support the ongoing Proposal design and assessment process.

This assessment has been prepared to support the Scoping Report and request for Secretary's Environmental Assessment Requirements (SEARs). The assessment has not been undertaken in accordance with the Biodiversity Assessment Method (BAM). This would be undertaken separately if required as part of the Environment Impact Statement (EIS) to be prepared under Part 5 of the EP&A Act.

1.3 Identification of the Proposal and Key Survey Areas

The project location definitions (and terms used throughout this report) include:

A2I Proposal site:	All areas within the existing 185 kilometre railway corridor extending between Albury to Illabo in NSW.
Enhancement Sites:	Discrete sites within the A2I Proposal site that are proposed for infrastructure enhancement. This includes the 12 key enhancement sites as well as the signal gantries. Enhancement works at each of these discrete work sites may include raising, widening or replacing bridges, raising or replacing signal gantries, and lowering sections of track as outlined in Table 1 and Table 2.
Locality:	Refers to an area within a 10 km buffer around the A2I Proposal site.
Slew Sites:	Track slewing to provide horizontal clearance is required along selected sections of the Proposal as outlined in Table 3.

The existing corridor operates single stacked freight trains 1,800m long, with impacts to biodiversity managed by ARTC business practices.

The Proposal includes the operation of double stack trains up to 1,800m long and 6.5m high and includes the provision of dual track in some areas for train passing, with a possible future upgrade to accommodate for 3,600m trains.

There is potential additional impacts to Threatened Species by way of wildlife strike due to the higher frequency of trains and use of double deck rolling stock.

Table 1 Identification of Enhancement Sites

No	Enhancement site	Site type	Area (hectare)	Enhancement type	Figure reference
Murray River Bridge Precinct					
1	Murray River Bridge	Rail underbridge	1.24	Raise the height of the existing arches and reinforce the bridge.	Appendix A. Map 1
Albury Station Precinct					
2	Albury Station Footbridge	Footbridge	16.00	Replace the existing over-rail section of the Albury Station Footbridge. Replacement section will tie into the recently built footbridge section over the Hume Freeway.	Appendix A. Map 2
	Albury Station Signal Box and Relay Room	Signal structures		Track slews required to clear these structures.	Appendix A. Map 2
3	Riverina Highway Bridge	Road overbridge		Track lowering of the Through and Loop tracks under the highway and associated works including retaining structures and drainage.	Appendix A. Map 2
Wagga Road Bridge					
4	Wagga Road / Billy Hughes Bridge	Bridge	4.87	Lower the track under the highway.	Appendix A. Map 3
Culcairn Footbridge					
5	Culcairn Footbridge	Footbridge	0.40	Removal of derelict footbridge.	Appendix A. Map 5
Pearson Street Bridge					
6	Pearson Street Bridge	Road overbridge	4.87	Lower the track underneath the bridge.	Appendix A. Map 10
Wagga Wagga Station Precinct					
7	Brookong Avenue Footbridge	Footbridge	0.25	Footbridge replacement.	Appendix A. Map 11
8	Edmondson Street Bridge	Road overbridge	4.34	Build a new bridge.	Appendix A. Map 11
9	Mothers Bridge (Wagga Wagga Station Access Footbridge)	Footbridge	0.31	Footbridge replacement.	Appendix A. Map 11
Junee Station Precinct					
10	Kemp Street Bridge	Road overbridge	2.12	Rebuild of the road bridge over the rail yard.	Appendix A. Map 14
11	Junee Station Footbridge	Footbridge	0.94	Removal of derelict footbridge.	Appendix A. Map 15
12	Olympic Highway Rail Underpass	Rail underpass		Replacement or modification of rail underbridge.	Appendix A. Map 15

Table 2 Trackside Structures

Trackside Structures*	Enhancement Type*	Area (ha)	Figure Reference
Signal gantry at chainage 632.860	Provision of signalling infrastructure	0.18	Appendix A. Map 4
Signal gantry at chainage 599.360	Provision of signalling infrastructure	0.08	Appendix A. Map 5
Signal gantry at chainage 583.076	Provision of signalling infrastructure	0.14	Appendix A. Map 6
Signal gantry at chainage 554.226	Provision of signalling infrastructure	0.18	Appendix A. Map 8
Signal gantry at chainage 538.413	Provision of signalling infrastructure	0.20	Appendix A. Map 9
Signal gantry at chainage 531.256	Provision of signalling infrastructure	0.14	Appendix A. Map 21
Signal gantry at chainage 523.871	Provision of signalling infrastructure	0.11	Appendix A. Map 11
Signal gantry at chainage 523.683	Provision of signalling infrastructure	0.10	Appendix A. Map 11
Signal gantry at chainage 499.145	Provision of signalling infrastructure	0.28	Appendix A. Map 13
Signal gantry at chainage 583.990	Provision of signalling infrastructure	0.17	Appendix A. Map 6
Signal gantry at chainage 553.841	Provision of signalling infrastructure	0.26	Appendix A. Map 8
Signal gantry at chainage 553.319	Provision of signalling infrastructure	0.21	Appendix A. Map 8
Signal gantry at chainage 553.040	Provision of signalling infrastructure	0.09	Appendix A. Map 8
Signal gantry at chainage 488.892	Provision of signalling infrastructure	0.11	Appendix A. Map 14

** Chainages are measured along the line from Central Railway Station, Sydney Central. i.e. Central Railway Station is Chainage 0.*

Note that the estimated number and the identification of these trackside structures are subject to further design and refinement.

Table 3 Slew Sites

Site Name	Area (ha)*	Length (m)	Figure Reference
Illabo to Junee	62.2415	15,487	Appendix A. Maps 17 - 20
Junee	2.7836	1,475	Appendix A. Map 16 *located within the Junee Station Precinct*
Harefield	5.2996	979	Appendix A. Map 13
Bomen	5.1038	1,150	Appendix A. Map 12
Wagga Wagga		680	Appendix A. Map 11 *located within the Wagga Wagga Station Precinct*
Uranquinty**	10.7119	1,900	Appendix A. Map 9
Yerong Creek	8.5528	1,200	Appendix A. Map 7
Henty	4.6483	654	Appendix A. Map 6
Culcairn	3.2811	474	Appendix A. Map 5
Albury		1,153	Appendix A. Map 2 *located within the Albury Station Precinct*

** For the purposes of this assessment, we have assumed that the Slew Sites cover the entire width of railway corridor and will include provision of aerial cable clearances and laydown areas. In many cases the track slewing will be carried out on both tracks and where required the track sidings, loops and lanes associated with slew sites may be modified consistent with ARTC design.*

***An ephemeral watercourse (Sandy Creek) intercepts the Uranquinty Track Slew Site. Transom Bridge will likely require replacement to accommodate this track slewing. It is likely that this watercourse provides important seasonal ecosystem function for local biodiversity.*

ILLABO
GANMAIN
COOLAMON
COOLAMON SHIRE COUNCIL
JUNEE
JUNEE SHIRE COUNCIL
NARRANDERA SHIRE COUNCIL
ESTELLA
COOTAMUNDRA-GUNDAGAI REGIONAL COUNCIL
WAGGA WAGGA
GUMLY GUMLY
FOREST HILL
URANQUINTY
WAGGA WAGGA CITY COUNCIL
LADYSMITH
LOCKHART
THE ROCK
TARCUTTA
LOCKHART SHIRE COUNCIL
HENTY
CULCAIRN
SNOWY VALLEYS COUNCIL
HOLBROOK
GREATER HUME SHIRE COUNCIL
WALLA WALLA
TUMBARUMBA
NSW
JINDERA
ALBURY CITY COUNCIL
MURRAY RIVER
VIC
ALBURY
BELLBRIDGE
WODONGA
KILLARA

Albury to Illabo

Figure 1 - A2I Proposal

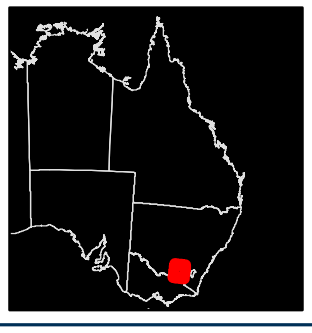
0 5 10 15 km

Coordinate System: GDA 1994 MGA Zone 55

Date: 10/02/2020 Paper: A3
Author: ERM Scale: 1:455,090
Data Sources: GA Geodata; Inset : Bing

LEGEND

- A2I Proposal
- Railway
- Major River
- LGA Boundary



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2. LEGISLATION

Table 4 below provides a description of the relevant legislative context. This report addresses the objectives and requirements of the legislation as it relates to the identification of biodiversity and ecological values. Impacts to these values will be addressed separately if required as part of the EIS to be prepared under Part 5 of the EP&A Act.

Table 4 Legislation applicable to A2I

Commonwealth Legislation
Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
The EPBC Act requires approval of the Commonwealth Minister for the Environment for actions that are likely to have a significant impact on Matters of National Environmental Significance (MNES) as assessed in accordance with the EPBC Significant Impact Guidelines 1.1. The EPBC Act is administered by the Commonwealth Department of Environment and Energy (DoEE) and lists threatened species, ecological communities and other MNES. Any proposed action that is expected to have an impact on MNES must be referred to the Minister for assessment under the EPBC Act, or assessed under the existing bilateral agreement, or accredited process between the Commonwealth and the State of New South Wales (NSW).

Matters of National Environmental Significance	Application to the Subject Site
World heritage properties	Not identified within the Locality of Proposal site.
National heritage places	Not identified within the Locality of Proposal site.
Ramsar wetlands of international importance	Not identified within the Locality of Proposal site.
Listed threatened species and communities	Threatened species and ecological communities have been recorded within the Locality, including within the Proposal site.
Internationally protected migratory species	Migratory species identified as potentially occurring within the Locality.
Commonwealth marine areas	Not identified within the Locality of Proposal site.
The Great Barrier Reef Marine Park	Not identified within the Locality of Proposal site.
Nuclear actions	Not applicable to the Proposal.
A water resource, in relation to coal seam gas development and large coal mining development	Not applicable to the Proposal.

NSW Statutory Legislation and Guidelines

Biodiversity Conservation Act 2016 (BC Act)

The BC Act came into effect on 25 August 2017. The BC Act replaced the NSW *Threatened Species Conservation Act 1995*, the NSW *Nature Conservation Trust Act 2001* and parts of the NSW *National Parks and Wildlife Act 1974*. The BC Act establishes mechanisms for:

- The management and protection of listed threatened species of native flora and fauna (excluding fish and marine vegetation) and threatened ecological communities (TECs).
- The listing of threatened species, TECs and key threatening processes.
- The development and implementation of recovery and threat abatement plans.
- The declaration of critical habitat.
- The consideration and assessment of threatened species impacts in development assessment process.
- Biodiversity Offsets Scheme (BOS), including the Biodiversity Values Map and Biodiversity Assessment Method (BAM) to identify serious and irreversible impacts (SAII).

The BC Act establishes a new regulatory framework for assessing and offsetting biodiversity impacts on proposed developments. Where development consent is granted, the authority may impose as a condition of consent an obligation to retire a number and type of biodiversity credits determined under the Biodiversity Assessment Method (BAM). A Biodiversity Values Map and Biodiversity Offsets Scheme Entry Threshold (BOSET) tool are available to identify the presence of mapped biodiversity values within land proposed for development as well as the clearing thresholds that would trigger application of the BAM.

The Biodiversity Offsets Scheme applies to state significant development and state significant infrastructure projects, unless the Secretary of the Department of Planning, Industry and Environment determines that the Proposal is not likely to have a significant impact. Given that significant impact on threatened species is unlikely within the already highly disturbed operational alignment, ARTC will to seek a determination (BDAR waiver) from the Secretary under section 7.9(2) of the BC Act. If such a determination is made, the impacts to threatened species will still need to be considered in the EIS, but not in the form of a BDAR. In addition, Section. 7.14 of the BC Act, would not apply.

Local Land Services Act 2013

The Local Land Services Act 2013 (LLS Act) regulates the management of vegetation on rural land. The amendments to the LLS Act have resulted in a change to the criteria for native vegetation clearing. There are now three different land categories for clearing on rural land:

- Category 1 – 'Exempt land' which will not be subject to clearing approval;
- Category 2 – 'Regulated Land' on which clearing of native vegetation may be carried out with or without approval in accordance with an 'allowable activity' or 'code' under the LLS Act, and
- 'Excluded Land' – Land not categorised in the Regulatory Maps and to which the LLS Act does not apply.

All of the key enhancement and track slew sites are located within the rail corridor and a review of the Native Vegetation Regulatory Map (Regulatory Map) confirms that the existing rail corridor is mapped as 'Excluded 'Land' and assessment under Part 5 of the EP&A Act will apply.

Biosecurity Act 2015

The NSW *Biosecurity Act 2015* came into effect on 1 July 2017, effectively replacing the *Noxious Weeds Act 1993*, and 13 other Acts, with a single Act. Under the Noxious Weeds Act all landowners had a responsibility to control noxious weeds on their property. Under the Biosecurity Act broadly the same responsibility will apply and will be known as a General Biosecurity Duty.

The General Biosecurity Duty states "*Any person who deals with biosecurity matter or a carrier and who knows, or ought reasonably to know, the biosecurity risk posed or likely to be posed by the biosecurity matter, carrier or dealing has a biosecurity duty to ensure that, so far as is reasonably practicable, the biosecurity risk is prevented, eliminated or minimised*." The general biosecurity duty applies to all weeds listed in Schedule 3 of the Biosecurity Act. Primary weeds have been identified in different Local Government Areas (LGA) due to

the level of threat infestation they represent, some of the Weeds of National Significance (WoNS) are also listed as Primary Weeds in LGAs.

A strategic plan for each weed will be required at each site to define responsibilities and identify strategies and actions to control the weed species. These can be downloaded from: http://www.environment.gov.au/biodiversity/invasive/weeds/weeds/lists/wons.html

Fisheries Management Act 1994

The *Fisheries Management Act 1994* provides for the conservation, protection and management of fisheries, aquatic systems and habitats in NSW. Similar to the BC Act, the *Fisheries Management Act 1994* lists threatened species, populations and ecological communities of fish and marine vegetation. Consideration of likely occurrence of threatened fish in the waterways in the Proposal site will be provided within the EIS although it is noted that the Murray River and Murrumbidgee River provide potential habitat for the Flathead Galaxias and Macquarie Perch. The smaller ephemeral streams also provide potential habitat for the Southern Pygmy Perch.

Schedule 6 of the *Fisheries Management Act 1994* also lists the following key threatening process that may be relevant to this Proposal and will be addressed within the EIS:

- Degradation of native riparian vegetation along New South Wales water courses;
- Human-caused climate change; and
- Removal of large woody debris from New South Wales rivers and streams.

Any waterway crossings will need to consider an appropriately designed structure that does not obstruct fish passage and will be designed in accordance with the Policy and Guidelines for Fish Habitat Conservation and Management and the Policy and Guidelines for Fish Friendly Waterway Crossings. Notwithstanding this, it is noted that a permit under section 219 would not be required for waterway crossings as Section 5.23 of the EP&A Act excludes SSI projects from requiring "a permit under section 201, 205 or 219 of the Fisheries Management Act 1994".

SEPP (Koala Habitat Protection) 2019

On 1 March 2020 the *State Environmental Planning Policy (Koala Habitat Protection) No.44* (SEPP 44) was repealed and replaced by the *State Environmental Planning Policy (Koala Habitat Protection) 2019* (Koala Habitat SEPP). The Koala Habitat SEPP aims to encourage the proper conservation and management of areas of natural vegetation that provide habitat for koalas to ensure a permanent free-living population over their present range and reverse the current trend of koala population decline. The key changes to the Koala Habitat SEPP relate to the definitions of koala habitat; list of tree species; list of councils; and development assessment process.

Key changes include:

- The number of tree species considered important to koalas has expanded from 10 species to up to 65 species across nine distinct regions of NSW;
- A new 'Core Koala Habitat' definition being:
  - an area of land where koalas are present;
  - or an area of land which has been assess by a suitably qualified and experienced person in accordance with the Guideline as being highly suitable koala habitat; and
  - where koalas have been recorded as being present in the previous 18 years.

The SEPP applies to the Wagga Wagga, Lockhart and Hume LGAs, and only applies to development under Part 4 of the EP&A Act. The proposal is being assess under Part 5 of the EP&A Act and the Koala Habitat SEPP is not applicable, however it is anticipated that the Proposal would, as far as practicable, aim to be consistent with the objectives of the Koala Habitat SEPP.

3. METHODOLOGY

This Biodiversity Assessment aims to identify and described key biodiversity values within the A2I Proposal site and to provide preliminary recommendations in terms of avoidance, mitigation and/or additional assessment required.

3.1 Desktop Review

The following biodiversity investigations have previously been prepared for the Proposal site and have been incorporated into this assessment:

- EMM (2018a) Biodiversity Assessment – Riverina Highway Bridge, ARTC Inland Rail, Tottenham to Albury. Report prepared for KBR by EMM (reference J17209RP1; dated 8 June 2018)
- KBR (2018a) Inland Rail Phase 2 Tottenham to Illabo: Pearson Street Bridge Biodiversity Assessment REF 6. Report prepared for ARTC by Kellogg Brown & Root (KBR) (reference 2-0001-200-EAP-00-RP-0003 Rev. A, dated 19 April 2018).
- KBR (2018b) Inland Rail Phase 2 Tottenham to Illabo: Wagga Road Bridge Biodiversity Assessment REF 7. Report prepared for ARTC by Kellogg Brown & Root (KBR) (reference 2-0001-200-EAP-00-RP-0004 Rev. A, dated 19 April 2018).

The results of these previous surveys have been supplemented by an updated review of the following online resources:

- NSW Threatened Biodiversity Data Collection, including the Wildlife Atlas (BioNET), Vegetation Information System (VIS) database and threatened species profiles;
- Results of the Commonwealth Department of Environment and Energy's (DoEE's) Protected Matters Search Tool (PMST) identifying threatened species and communities with potential to occur within the locality (10 km buffer around the A2I Proposal site). The searches were conducted in the week commencing 5 August 2019;
- NSW SEED mapping to identify Plant Community Types (PCT), threatened species or communities known or likely to occur; Mitchell Landscapes, map of Interim Biographic Regionalisation of Australia (IBRA) version 7;
- Biodiversity Offset Scheme Entry Threshold (BOSET) mapping, version 8. Accessed online https://www.lmbc.nsw.gov.au/Maps/index.html?viewer=BOSETMap;
- Key Fish Habitat maps accessed online via https://www.dpi.nsw.gov.au/fishing/habitat/publications/pubs/key-fish-habitat-maps;
- Atlas of Living Australia (ALA) Database;
- Local government databases; and
- State Vegetation Type Map: *Riverina Region version 1.2 – VIS ID 4469* (OEH 2016).

3.2 Field Surveys

Two (2) ERM ecologists undertook field surveys within the Proposal site between 26 August 2019 and 29 August 2019, representing a total of 80 person hours. Rapid Biological Values Assessments were undertaken at each of the Enhancement Sites, Trackside Structures and Track Slew sites. As noted in Table 3, for the purposes of this assessment, we have assumed that the Track Slew sites cover the entire width of railway corridor and include provision of aerial cable clearances and laydown areas.

The purpose of the Rapid Biological Values Assessments was to identify important biological values within the Proposal site. Important biological values included:

- The presence of threatened fauna and flora species;
- Threatened ecological communities; and
- Habitat and resources considered important for threatened species or ecological communities.

Assessments included quantifying habitat features present, particularly those relevant to threatened species known to occur within the locality (based the results of the desktop assessment). This included relative vegetative cover, abundance of nesting/shelter/basking sites, presence of aquatic habitats, and presence of foraging resources, dominant canopy species, connectivity and disturbances.

Survey methodologies were designed to rapidly assess biodiversity values and were not undertaken in accordance within the BAM. No detailed riparian and aquatic habitat assessments have been completed to date.

3.3 Likelihood of Occurrence

Consistent with the accepted approach for biodiversity assessment, a likelihood of occurrence assessment was undertaken, informed by desktop sources and the field survey results. Desktop sources identified a number of fauna species listed under the EPBC Act and BC Act that have been recorded previously or are predicted to occur within a 10 km buffer of the A2I Proposal site. The likelihood of occurrence approach refines the desktop generated list using site-specific and specific-species habitat information. Desktop sources are indicative only and likelihood rankings, particularly in regard to the presence of preferred habitat, are conservative. The assessment ranks the likelihood of the species occurring within the A2I Proposal site through analysis of species distribution information and the presence of specific habitat attributes as identified through the desktop analysis and field survey. The criteria applied are outlined in Table 5.

Table 5 Likelihood of Occurrence Criteria

	Preferred habitat exists	Suitable habitat exists[1]	Habitat does not exist[2]
Records within A2I Proposal site (based field investigations)	Known	Known	Known
Records in the Locality[3]	Likely	Potential	Unlikely
No records in the Locality, but A2I Proposal site is within known distribution	Potential	Unlikely	Unlikely
No records in the Locality, and Proposal site is outside of distribution	Unlikely	Unlikely	Unlikely

1. *Habitat may be considered suitable, but not preferred because: some desired habitat features may be present, but not all; habitat may have poor connectivity; or habitat may be known to be disturbed.*
2. *Based on sources reviewed and/or field survey results.*
3. *'Locality' refers to a 10 km buffer of the A2I Proposal site.*

3.4 Assumptions and Limitations

The field and desktop assessment undertaken provides an overview of the biodiversity values that exist within the A2I Proposal site. Surveys were undertaken at discrete locations based on the proposed enhancement sites to gain a general understanding of the types of species and habitat features that occur. While not all portions of the A2I Proposal site could be visited during the field survey, the landscape and its features were generally consistent throughout.

The absence of a species from a database list or observational studies does not confirm its absence from the A2I Proposal site. The lack of existing records from databases may indicate a low historic sampling effort in the region, as opposed to an absence of species. Similarly, the timing of the August 2019 survey precludes the detection of a number of migratory and wader species that are typically absent from the area at that time of the year. Survey effort was limited due to rapid assessment approach.

To overcome these limitations, the likelihood of occurrence is based on the precautionary approach and identify species that have the potential to occur rather than relying on species sightings alone.

4. BIODIVERSITY VALUES

The general landscape within the locality is largely cleared, agricultural landscape with small pockets of remnant woodland associated with riparian and roadside corridors. Key landscape features and biodiversity values within the Proposal site are summarised in Table 6 below.

Table 6 Summary of Landscape Features and Biodiversity Values

Landscape Feature	Summary Notes
IBRA Bioregion	NSW South West Slopes Bioregion
Vegetation	The vast majority of the A2I Proposal site is within the existing rail corridor and is subject to regular rail maintenance activities (e.g. mowing and herbicide treatment), track developments and influences from surrounding agriculture, industrial and urban areas. This ongoing disturbance has resulted in the Proposal site being almost exclusively non-remnant vegetation characterised predominately by non-native grasslands. Exotic flora and invasive flora species were regularly found throughout the Proposal site. Small pockets of riparian and semi-cleared open woodland persists in isolated pockets only and include Threatened Ecological Communities (TEC) listed under the BC Act. The broader region of the Proposal site has also been subject to extensive clearing for agriculture, industry and urban uses.
Threatened ecological communities	One TEC has been recorded within the Proposal site: the BC Act listed White Box Yellow Box Blakely's Red Gum Woodland (Box-Gum Woodland). These areas are not considered White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland TEC listed under the EPBC Act as they do not meet the condition criteria. Specifically, they do not contain a predominantly native understorey and field survey confirmed less than 50% native species in the ground layer (EPBC Referral in prep).
Rivers, Streams and Estuaries	The A2I Proposal site is located within the Murray – Darling Basin and covers two sub-catchments, which include the Mid Murray and Murrumbidgee. Due to the linear nature of the Proposal, the Proposal site is intercepted and in close proximity to many watercourses, drainage features, wetlands, artificial dams and canals. Watercourses include major rivers such as the Murray River and several minor streams.
Threatened species	Known: ■ Squirrel Glider (*Petaurus norfolcensis*); ■ Grey-crowned Babbler (*Pomatostomus temporalis temporalis*) (pers. comm David Sharpe); and ■ Superb Parrot (*Polytelis swainsonii*). Likely: ■ Sloane's Froglet (*Crinia sloanei*); ■ Little Lorikeet (*Glossopsitta pusilla*); ■ Major Mitchell's Cockatoo (*Lophochroa leadbeateri*); ■ Turquoise Parrot (*Neophema pulchella*);

Landscape Feature	Summary Notes
	■ Diamond Firetail (*Stagonopleura guttata*);and ■ Grey-headed Flying-fox (*Pteropus poliocephalus*).
Areas of Geological Significance	There are no karst, caves, crevices, cliffs or other areas of geological significance within the Proposal site.
Areas of Outstanding Biodiversity Value (AOBV)	There are no Areas of Outstanding Biodiversity Value (AOBV) within the A2I Proposal site.
High Biodiversity Values Map	The A2I Proposal site includes two areas considered of high biodiversity value in accordance with the NSW Biodiversity Values Map: ■ Murray River Bridge - Enhancement Site 1 (Riparian Vegetation); and ■ Uranquinty Track Slew Site (Riparian Vegetation). The A2I Proposal site is not located within any state, national or internationally protected areas.
Hollows and Hollow Bearing Trees	The riparian vegetation at Murray River Bridge - Enhancement Site 1 contained many large hollow logs and some dead woody vegetation, which could provide refuge habitat to a range of fauna species. Wagga Road Bridge - Enhancement Site 4 also contained some small hollow logs that could be used has habitat for reptile and small mammal species. Hollow bearing trees were recorded at Pearson Street Bridge - Enhancement Site 6, Bomen Track Slew Site and the Junee to Illabo Track Slew Site. These trees are likely provide important biodiversity benefits, particularly for birds and arboreal mammals.

4.1 Summary of Previous Biodiversity Assessments

Three (3) Enhancement Sites and ten (10) Trackside Structures have been previously assessed within the A2I Proposal site. A summary of these investigations is provided in Table 7 and the results have been incorporated into this assessment report.

Table 7 Previous Biodiversity Investigations

Biodiversity Assessments	EMM (2018a) Biodiversity Assessment – Riverina Highway Bridge	KBR (2018a) Inland Rail Phase 2 Tottenham to Illabo: Pearson Street Bridge Biodiversity Assessment REF 6	KBR (2018b) Inland Rail Phase 2 Tottenham to Illabo: Wagga Road Bridge Biodiversity Assessment REF 7
Survey Area	■ Enhancement Site 3	■ Enhancement Site 6	■ Enhancement Site 4
Survey Date	■ 20 February 2018	■ 22 February 2018	■ 21 February 2018
Survey Methods	■ plot and vegetation transect surveys; ■ targeted flora searches; ■ mapping of native vegetation and any listed ecological communities; and ■ identification of threatened fauna and their habitats.	■ one BAM plot; ■ one transect; and ■ one diurnal bird survey.	■ targeted surveys for threatened birds; ■ targeted surveys for threatened TECs; ■ two flora plots and one BAM plot; and ■ mapping of native vegetation and any listed ecological communities.
Native vegetation	■ disturbed land; ■ no-native grasslands are present at the site; and ■ native vegetation completely removed.	■ native vegetation has been completely removed and replaced with exotic grassland.	■ non-native grasses; and ■ an area of 0.326 ha of Blakely's Red Gum – Yellow Box Grassy tall woodland of the NSW South Western Slopes bioregion woodland (PCT 277).
Fauna habitat	■ fauna habitat is highly limited within the site; and ■ low potential for Striped Legless Lizard habitat to occur.	■ fauna habitat is highly limited; and ■ low potential for: - Black Falcon (*Falco subniger*); and - Southern Myotis (*Myotis macropus*).	■ foraging resources for common species in the grassy and woodland vegetation; and ■ potential foraging habitat for seven threatened species: - Dusky Woodswallow (*Artamus cynopterus cyanopterus*); - Spotted Harrier (*Circus assimilis*); - Turquoise Parrot (*Neophema pluchella*); - Little Lorikeet (*Glossopitta pusilla*); - Brown Treecreeper (*Climacteris picumnus*); - Varied Sittella (*Daphoenositta chrysoptera*); and - Yellow-bellied Sheathtail Bat (*Saccolaimus falviventris*).

Biodiversity Assessments	EMM (2018a) Biodiversity Assessment – Riverina Highway Bridge	KBR (2018a) Inland Rail Phase 2 Tottenham to Illabo: Pearson Street Bridge Biodiversity Assessment REF 6	KBR (2018b) Inland Rail Phase 2 Tottenham to Illabo: Wagga Road Bridge Biodiversity Assessment REF 7
Threatened species	■ no threatened species identified.	■ no threatened species identified.	■ no threatened species identified.
Threatened Ecological Communities	■ no threatened ecological communities identified.	■ no threatened ecological communities identified.	■ Blakely's Red Gum – Yellow Box Grassy tall woodland not considered a TEC under EPBC Act 1999 or BC Act 2016.
Conclusions	■ the assessment concluded that the proposed works would have no impact on species, populations and/or communities listed under the BC Act and the EPBC Act.	■ minor and temporary loss of grassland habitat to occur during the construction phase; and ■ indirect impacts to an adjacent drainage canal and individual trees	■ Wagga Road Bridge - Enhancement Site 4 is not located within the area containing the EEC, and with appropriate management measures put in place the proposal is considered not to have an impact on this EEC.

4.2 Vegetation

The vast majority of the A2I Proposal site is within the existing rail corridor and is subject to regular rail maintenance activities (e.g. mowing and herbicide treatment), track developments and influences from surrounding agriculture, industrial and urban areas.

This ongoing disturbance has resulted in the Proposal site being almost exclusively non-remnant vegetation characterised predominately by non-native grasslands. Exotic flora and invasive flora species were regularly found throughout the Proposal site (refer to the key vegetation and landscape features as identified in Table 9 and Table 11). Small pockets of riparian and semi-cleared open woodland persists in isolated pockets only.

A total of 38 flora species were identified within the A2I Proposal site. A full list of species recorded during the field surveys is provided in Appendix B. No threatened flora species were identified during the field surveys.

Seven (8) invasive flora species were identified during the field surveys. Several of these invasive flora species are restricted species in accordance with Federal and State Legislation (Table 8). Three (3) species are considered Weeds of National Significance and two (2) species are considered NSW Noxious Weeds.

Table 8 Invasive Flora known from A2I Proposal site

Scientific name	Common name	Weed of National Significance	NSW Noxious Weed
Salix Nigra	Black Willow	Yes	Yes
Ligustrum lucidum	Broad-leaved Privet	No	No
Cirsium vulgare	Spear Thistle	No	No
Solanum mauritianum	Wild Tobacco	No	No
Lycium ferocissimum	African Boxthorn	Yes	Yes
Senecio pterophorus	African Daisy	No	No
Asparagus aethiopicus	Climbing Asparagus	Yes	No
Ligustrum sinense	Small Leaved Privet	No	No

Table 9 Native Vegetation and Landscape Characteristics within Enhancement Sites

Site	Rivers, streams, estuaries and wetlands	Biodiversity Values Map	Landscape Connectivity	Mapped Plant Community Type	Associated Threatened Ecological Community
Murray River Bridge Precinct					
1	The Murray River meanders through the area. A bridge extends over the Murray River. Oddies Creek also meanders through the area. The river banks are stable and the heterogeneity of microhabitats present likely support a diverse range of aquatic and semi-aquatic species.	The riparian vegetation along the Murray River is mapped within the Biodiversity Values boundary.	The majority of the area has been subject to extensive clearing. Cleared areas are mostly subject to disturbances (e.g. rail infrastructure, roads). Vegetation is limited to riparian corridors along Murray River and Oddies Creek which was noted to support range of habitat resources including hollow bearing trees and logs nests, mistletoe and an abundance of frog habitat. Riparian vegetation along the Murray River in the immediate region of the Enhancement Site is highly fragmented and sporadic. Riparian vegetation along Oddies Creek is consistent and less fragmented. External connectivity is limited due to extensive clearing and large natural barriers (e.g. Murray River).	The majority of the area is mapped as non-remnant vegetation. Although, riparian vegetation is mapped as PCT 5. PCT 5 = River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.	No
Albury Station Precinct					
2 3	No rivers, creeks or other water bodies are present within the Enhancement Site. An artificial wetland exists within 1 km north of the Enhancement Site.	Not located within Biodiversity Values boundary.	Highly fragmented. Located within an urban environment with a range of artificial barriers. Some woody vegetation is present, although, is isolated.	This Enhancement Site is mapped as non-remnant vegetation.	No
Wagga Road Bridge					
4	No rivers, creeks or other water bodies are present within the Enhancement Site. Artificial dams and drainage features exists within 1 km of the Enhancement Site.	Not located within Biodiversity Values boundary.	The majority of the area has been subject to extensive clearing. The Enhancement Site includes three small woodland patches. These woodlands are fragmented moderate ecological connectivity. The following terrestrial habitat values were recorded: ■ Small log hollows present (reptile and small mammal habitat); and ■ Mistletoe present (foraging resource). Native species present were: ■ *Eucalyptus blakeyi;* ■ *Eucalyptus bridgesiana;* ■ *Eucalyptus albens; and* ■ *Acacia delbata*. These three woodland patches formed 'Box Gum Woodland TEC' in accordance with the BC Act. All patches were evaluated and considered likely to respond to assisted natural regeneration.	The majority of the area is mapped as non-remnant. Although, some woodland patches within the footprint are mapped as PCT 277 and 278. PCT 277: Blakely's Red Gum – Yellow Box grassy tall woodland of the NSW South-western Slopes Bioregion. PCT 278: Riparian Blakely's Red Gum – box – shrub – sedge – grass tall open forest of the central NSW South-western Slopes Bioregion.	0.45 ha of White Box – Yellow Box – Blakely's Red Gum Woodland intercepts the Proposal site. Note that this entire area of TEC is to be avoided during detailed design. **BC Act:** EEC **EPBC Act:** No These areas are not listed under the EPBC Act as they do not meet the condition criteria. Specifically, they do not contain a predominantly native understorey and field survey confirmed less than 50% native species in the ground layer.

Site	Rivers, streams, estuaries and wetlands	Biodiversity Values Map	Landscape Connectivity	Mapped Plant Community Type	Associated Threatened Ecological Community
Culcairn Footbridge					
5	No rivers, creeks or other water bodies are present within the Enhancement Site. A small wetland is located within 1km of the Enhancement Site.	Not located within Biodiversity Values boundary.	Highly fragmented. Located within an urban environment with a range of artificial barriers and minimal vegetation.	This Enhancement Site is mapped as non-remnant vegetation.	No
Pearson Street Bridge					
6	Two large artificial wetland are located within the Enhancement Site. Artificial canals are located within the Enhancement Site.	Not located within Biodiversity Values boundary.	Woodland and shrublands appear to be present within the Enhancement Site. There is some internal connectivity among vegetation around the artificial wetland. Although, historic clearing has caused fragmentation and isolated this vegetation from the broader landscape.	This Enhancement Site is mapped as non-remnant vegetation.	No
Wagga Wagga Station Precinct					
7	No rivers, creeks or other water bodies are present within the Enhancement Site.	Not located within Biodiversity Values boundary.	Highly fragmented. Located within an urban environment with a range of artificial barriers and minimal vegetation.	This Enhancement Site is mapped as non-remnant vegetation.	No
8	No rivers, creeks or other water bodies are present within the Enhancement Site.	Not located within Biodiversity Values boundary.	Highly fragmented. Located within an urban environment with a range of artificial barriers and minimal vegetation.	This Enhancement Site is mapped as non-remnant vegetation.	No
9	No rivers, creeks or other water bodies are present within the Enhancement Site.	Not located within Biodiversity Values boundary.	Highly fragmented. Located within an urban environment with a range of artificial barriers and minimal vegetation.	This Enhancement Site is mapped as non-remnant vegetation.	No
Junee Station Precinct					
10	No rivers, creeks or other water bodies are present within the Enhancement Site.	Not located within Biodiversity Values boundary.	Highly fragmented. Located within an urban environment with a range of artificial barriers. Some woody vegetation is present, although, it is noted as being isolated.	This Enhancement Site is mapped as non-remnant vegetation.	No
11 12	No rivers, creeks or other water bodies are present within the Enhancement Site.	Not located within Biodiversity Values boundary.	Highly fragmented. Located within an urban environment with a range of artificial barriers and minimal vegetation.	This Enhancement Site is mapped as non-remnant vegetation.	No

Table 10 Native Vegetation and Landscape Characteristics within Trackside Structures

Structure*	Rivers, streams, estuaries and wetlands	Biodiversity Values Map	Landscape Connectivity	Mapped Plant Community Type	Associated Threatened Ecological Community
Signal gantry at chainage 632.86KM	No rivers, creeks or other water bodies are present within the Enhancement Site. Several artificial dams are located within 1 km of the Enhancement Site.	Not located within Biodiversity Values boundary.	Highly fragmented. Lack of woody vegetation within Enhancement Site, Minimal woody vegetation within broader landscape.	This Enhancement Site is mapped as non-remnant vegetation.	No
Signal gantry at chainage 599.360KM	No rivers, creeks or other water bodies are present within the Enhancement Site. A small wetland is located within 1km of the Enhancement Site.	Not located within Biodiversity Values boundary.	Highly fragmented. Located within an urban environment with a range of artificial barriers and minimal vegetation.	This Enhancement Site is mapped as non-remnant vegetation.	No
Signal gantry at chainage 583.076KM	No rivers, creeks or other water bodies are present within the Enhancement Site.	Not located within Biodiversity Values boundary.	Highly fragmented. Located within an urban environment with a range of artificial barriers and minimal vegetation.	This Enhancement Site is mapped as non-remnant vegetation.	No
Signal gantry at chainage 554.226KM	No rivers, creeks or other water bodies are present within the Enhancement Site. An artificial dam is located within 1km of the Enhancement Site.	Not located within Biodiversity Values boundary.	Highly fragmented. Located within an urban environment with a range of artificial barriers and minimal vegetation.	This Enhancement Site is mapped as non-remnant vegetation.	No
Signal gantry at chainage 538.413KM	No rivers, creeks or other water bodies are present within the Enhancement Site.	Not located within Biodiversity Values boundary.	Highly fragmented. Located within an urban environment with a range of artificial barriers and minimal vegetation.	This Enhancement Site is mapped as non-remnant vegetation.	No
Signal gantry at chainage 531.256KM	No rivers, creeks or other water bodies are present within the Enhancement Site.	Not located within Biodiversity Values boundary.	Highly fragmented. Located within an urban environment with a range of artificial barriers and minimal vegetation.	This Enhancement Site is mapped as non-remnant vegetation.	No
Signal gantry at chainage 523.871KM	No rivers, creeks or other water bodies are present within the Enhancement Site.	Not located within Biodiversity Values boundary.	Highly fragmented. Located within an urban environment with a range of artificial barriers and minimal vegetation.	This Enhancement Site is mapped as non-remnant vegetation.	No
Signal gantry at chainage 523.683KM	No rivers, creeks or other water bodies are present within the Enhancement Site.	Not located within Biodiversity Values boundary.	Highly fragmented. Located within an urban environment with a range of artificial barriers and minimal vegetation.	This Enhancement Site is mapped as non-remnant vegetation.	No
Signal gantry at chainage 499.145KM	No rivers, creeks or other water bodies are present within the Enhancement Site.	Not located within Biodiversity Values boundary.	Highly fragmented. Located amongst cropping agriculture landscape with minimal native vegetation.	This Enhancement Site is mapped as non-remnant vegetation.	No
Signal gantry at chainage 583.99KM	No rivers, creeks or other water bodies are present within the Enhancement Site.	Not located within Biodiversity Values boundary.	Highly fragmented. Located within a semi-urban environment with a range of artificial barriers and minimal vegetation.	This Enhancement Site is mapped as non-remnant vegetation.	No

Structure*	Rivers, streams, estuaries and wetlands	Biodiversity Values Map	Landscape Connectivity	Mapped Plant Community Type	Associated Threatened Ecological Community
Signal gantry at chainage 553.841KM	No rivers, creeks or other water bodies are present within the Enhancement Site. The Enhancement Site is adjacent to several large dams and vegetated wetland areas.	Not located within Biodiversity Values boundary.	The immediate area lacks woody vegetation and is highly fragmented. However, several woodlands exist in close proximity to the Enhancement Site. The broader landscape has been subject to extensive clearing for urban development and agricultural expansion.	This Enhancement Site is mapped as non-remnant vegetation.	No
Signal gantry at chainage 553.319KM	No rivers, creeks or other water bodies are present within the Enhancement Site. The Enhancement Site is within 1 km of several large dams and vegetated wetland areas.	Not located within Biodiversity Values boundary.	The immediate area lacks woody vegetation and is highly fragmented. However, several woodlands exist in close proximity to the Enhancement Site. The broader landscape has been subject to extensive clearing for urban development and agricultural expansion.	This Enhancement Site is mapped as non-remnant vegetation.	No
Signal gantry at chainage 553.040KM	No rivers, creeks or other water bodies are present within the Enhancement Site. The Enhancement Site is within 1 km of several large dams and vegetated wetland areas.	Not located within Biodiversity Values boundary.	The immediate area lacks woody vegetation and is highly fragmented. However, several woodlands exist in close proximity to the Enhancement Site. The broader landscape has been subject to extensive clearing for urban development and agricultural expansion.	This Enhancement Site is mapped as non-remnant vegetation.	No
Signal gantry at chainage 488.892KM	No rivers, creeks or other water bodies are present within the Enhancement Site.	Not located within Biodiversity Values boundary.	Highly fragmented. Located within an urban environment with a range of artificial barriers and minimal vegetation.	This Enhancement Site is mapped as non-remnant vegetation.	No

** The estimated number and the identification of these trackside structures are subject to further design and refinement.*

Table 11 Native Vegetation and Landscape Characteristics for Track Slew Sites

Site	Rivers, Streams, Estuaries and Wetlands	Biodiversity Values Map	Landscape Connectivity	Mapped Plant Community Type	Associated Threatened Ecological Community within Proposal site.
Illabo to Junee	The Illabo to Junee Track Slew Site intercepts (bridges) three (3) permanent watercourses. The Illabo to Junee Track Slew Site intercepts (culverts) four (4) small drainage features, which include artificial channels and natural drainage lines.	Not located within Biodiversity Values boundary. Jeralgambeth Creek (mapped on the Biodiversity Values Map) is located within 100m of the slew site. Billabong Creek is also located within 100m to the north of the A2I Proposal site.	Highly fragmented. Located within cleared cropping farmland and urban environment with a range of artificial barriers and minimal patchy vegetation	The majority of the area is mapped as non-remnant vegetation. However, there is a large area of the Slew Site (~8 ha) that is mapped as PCT 76. PCT 76: Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions A small area of the Track Slew Site (~<1 ha) is mapped as PCT 276. PCT 276: Yellow Box grassy tall woodland on alluvium or parna loams and clays on flats in NSW South Western Slopes Bioregion Also, remnant vegetation is mapped along several sections of the Track Slew Site boundary.	No. Two (2) woodland patches characterised by PCT 277 was recorded adjacent to the slew site. These woodland patches aligned with the species composition and community structure of the White Box – Yellow Box – Blakely's Red Gum Woodland TEC as listed under the BC Act.
Junee	No rivers, creeks or other water bodies are present within this Ttrack Slew Site.	Not located within Biodiversity Values boundary.	Highly fragmented. Located within an urban environment with a range of artificial barriers and minimal patchy vegetation.	Mapped as non-remnant vegetation.	No
Harefield	No rivers, creeks or other water bodies are present within this Track Slew Site.	Not located within Biodiversity Values boundary.	Highly fragmented. Located within an industrial environment with a range of artificial barriers and minimal patchy vegetation.	The majority of the area is mapped as non-remnant vegetation. Parts of the southern boundary is mapped as PCT 276. PCT 276: Yellow Box grassy tall woodland on alluvium or parna loams and clays on flats in NSW South Western Slopes Bioregion	No
Bomen	No rivers, creeks or other water bodies are present within this Track Slew Site.	Not located within Biodiversity Values boundary.	Highly fragmented. Located within an industrial environment with a range of artificial barriers and minimal patchy vegetation.	The majority of the area is mapped as non-remnant vegetation. The southern boundary is mapped as PCT 277: Blakely's Red Gum – Yellow Box grassy tall woodland of the NSW South-western Slopes Bioregion. This woodland vegetation was not recorded during the field survey and no TEC are reported in this locality.	No
Wagga Wagga	No rivers, creeks or other water bodies are present within this Track Slew Site.	Not located within Biodiversity Values boundary.	Highly fragmented. Located within an urban environment with a range of artificial barriers and minimal vegetation.	Mapped as non-remnant vegetation.	No

Site	Rivers, Streams, Estuaries and Wetlands	Biodiversity Values Map	Landscape Connectivity	Mapped Plant Community Type	Associated Threatened Ecological Community within Proposal site.
Uranquinty	An ephemeral watercourse (Sandy Creek) intercepts this Track Slew Site. No surface water was present during the August 2019 survey although the soil appeared to be moister than the areas immediately adjacent and water dependent flora species such as the River Red Gum (*Eucalyptus camaldulensis*) were also present. It is likely that this watercourse provides important seasonal ecosystem function for local biodiversity.	The riparian vegetation along the ephemeral watercourse is mapped within the Biodiversity Values boundary.	The majority of the area has been subject to extensive clearing and contains numerous planted native trees and shrubs (e.g. *Casuarina cunninghamiana* and *Grevillea* spp). Cleared areas are mostly subject to disturbances (e.g. rail agriculture). Potential frog habitat is present within riparian corridor. The noted presence of ~6 large *Eucalyptus camaldulensis* also provides habitat for *Pteropus poliocephalus*, *Phascolarctos cinereus* and other arboreal mammals. Vegetation along the watercourse is consistent and provides important ecological connectivity. The watercourse is likely an important corridor for local fauna.	The majority of the Track Slew Site is mapped as non-remnant vegetation. The watercourse section that intercepts the Track Slew Site is mapped as PCT 74 (0.21 ha). Several scattered *Eucalyptus melliodora* individuals were present although it is not considered Box-Gum Woodland TEC as there is not a predominately native understorey (EPBC Act) and the areas are unlikely to respond to assisted natural regeneration (BC Act). PCT 74 = Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion	No
Yerong Creek	No rivers, creeks or other water bodies are present within this area. Small farm dams are located within 1km of the Track Slew Site.	Not located within Biodiversity Values boundary. However, located within 100m of a Biodiversity Values area.	Highly fragmented. Located within an urban environment with a range of artificial barriers and minimal vegetation.	This Track Slew Site is mapped as non-remnant vegetation.	No
Henty	Predominately located within an urban environment within minimal aquatic values. However, a vegetated wetland and watercourse is located in close proximity (<100m) to the northern section of the Track Slew Site.	Located within 100m of a Biodiversity Values area.	Highly fragmented. Located within an urban environment with a range of artificial barriers and minimal vegetation.	The Track Slew Site is mapped as non-remnant vegetation. However, immediately adjacent (<1m) to the northern section of the Track Slew Site is mapped as PCT 5. PCT 5 = River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.	No The vegetation immediately adjacent to the Track Slew Site is consistent with PCT 278 (Riparian Blakely's Red Gum – box – shrub – sedge – grass tall open forest of the central NSW South-western Slopes Bioregion), which is associated with Box Gum Woodland TECs. Indirect impacts will need to be considered at this site.
Culcairn	No rivers, creeks or other water bodies are present within the Track Slew Site. A small wetland is located within 1km of the Track Slew Site.	Not located within Biodiversity Values boundary.	Highly fragmented. Located within an urban environment with a range of artificial barriers and minimal vegetation.	This Track Slew Site is mapped as non-remnant vegetation.	No The vegetation immediately adjacent to the Track Slew Site is consistent with PCT 278 (Riparian Blakely's Red Gum – box – shrub – sedge – grass tall open forest of the central NSW South-western Slopes Bioregion), which is associated with Box Gum Woodland TECs. Indirect impacts will need to be considered at this site.
Albury	No rivers, creeks or other water bodies are present within the Track Slew Site. An artificial wetland exists within 1 km north of the Track Slew Site.	Not located within Biodiversity Values boundary.	Highly fragmented. Located within an urban environment with a range of artificial barriers. Some woody vegetation is present, although it is noted as being isolated.	This Track Slew Site is mapped as non-remnant vegetation.	No

4.3 Threatened Ecological Communities

4.3.1 Within the A2I Proposal site

Three (3) woodland patches characterised by PCT 277 intercepts parts of the A2I Proposal site at Wagga Road Bridge - Enhancement Site 4. Enhancement Site 4 was predominately cleared and subject to a range of disturbances such as vehicle tracks, invasive flora infestations, noise pollution and soil erosion. These woodland patches aligned with the species composition and community structure of the Box Gum Woodland TEC as listed under the BC Act based on the following reasons:

- Located within NSW South West Slopes;
- Vegetation patches would likely respond to assisted natural regeneration;
- White Box, Yellow Box or Blakely's Red Gum, or a combination of these species, are or were present; and
- The site is predominantly grassy.

The three (3) woodland patches could not be considered a TEC under the EPBC Act because all patches did not 'have a predominately native understorey'[1]. The understorey at these areas was dominated by non-native grasses and herbaceous weeds. Field survey confirmed less than 50% native species in the ground layer.

As shown in Figure 2, the northern woodland patch is approximately 0.24 ha. The central woodland patch is approximately 0.79 ha. The southern woodland patch is approximately 1.20 ha. Much of these areas extend outside of Enhancement Site 4. The total area of White Box Yellow Box Blakely's Red Gum Woodland (Box-Gum Woodland) TEC within the Enhancement Site 4 itself is 0.45 ha and will be avoided during detailed design. This area must be clearly delineated in the field and on all construction drawings as a no go zone. Further management and mitigation measures will be detailed in the EIS.

It is important to note that there is a Preliminary Determination for changing this EEC from threatened to critically endangered currently on exhibition until 7 Feb 2020. The final listing of this community will be confirmed and addressed within the EIS.

4.3.2 Adjacent to Proposal

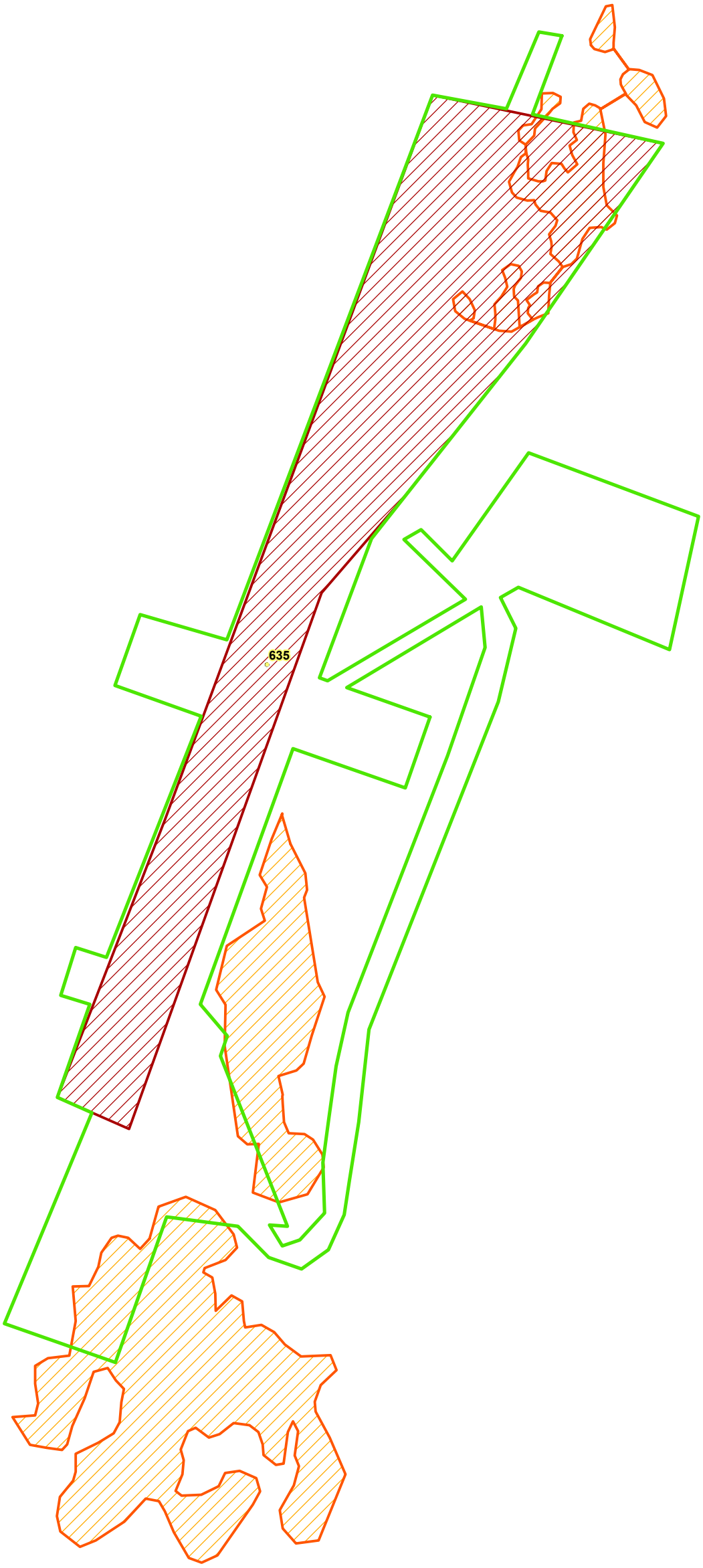
During the field surveys, an additional three (3) woodland patches in proximity to the A2I Proposal site were also identified as potential TECs.

Junee – Illabo Track Slew Site

At the Junee – Illabo Track Slew Site, two (2) *Eucalyptus* woodland patches were identified as likely to meet the TEC criteria under BC Act for a Box Gum Woodland for the following reasons:

- Located within NSW South West Slopes;
- Vegetation patches would likely respond to assisted natural regeneration;
- White Box, Yellow Box or Blakely's Red Gum, or a combination of these species, are or were present; and
- The site is predominantly grassy.

[1] A predominantly native ground layer is one where at least 50% of the perennial vegetation cover in the ground layer is made up of native species.



TEC to be avoided during detailed design

Albury to Illabo | Figure 2 - White Box Yellow Box Blakely's Red Gum Woodland (Box-Gum Woodland) TEC at Enhancement Site 4 | MAP 1 OF 1

0 20 40
m

Coordinate System: GDA 1994 MGA Zone 55

Date: 10/02/2020 Paper: A3
Author: ERM Scale: 1:2,220
Data Sources: DCDB - NSW Gov; ESRI World Imagery; Inset : Bing

LEGEND

- ARTC KM Posts
- Slew
- Enhancement Sites
- White Box Yellow Box Blakely's Red Gum Woodland (Box-Gum Woodland) TEC
- Previous Survey

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596.5

Albury to Illabo

Figure 3 - Box Gum Woodland TEC adjacent to Culcairn Track Slew Site

MAP 1 OF 1

0 20 40 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 10/02/2020 Paper: A3
Author: ERM Scale: 1:2,700

Data Sources: DCDB - NSW Gov; ESRI World Imagery; Inset : Bing

LEGEND

- ARTC KM Posts
- Track Slew
- Enhancement Sites
- Potential Box Gum Woodland TEC
- Previous Survey
- Drainage

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Albury to Illabo

Figure 4 - Box Gum Woodland TEC adjacent to Illabo to Junee Track Slew Site (sheds)

MAP 1 OF 1

0 20 40 m

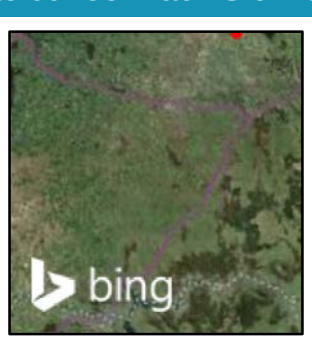
Coordinate System: GDA 1994 MGA Zone 55

LEGEND

- ARTC KM Posts
- Track Slew
- Box Gum Woodland TEC
- Drainage

Date: 10/02/2020 Paper: A3
Author: ERM Scale: 1:3,330

Data Sources: DCDB - NSW Gov; ESRI World Imagery; Inset : Bing



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Albury to Illabo

Figure 5 - Box Gum Woodland TEC adjacent to Illabo to Junee Track Slew Site (farmland)

MAP 1 OF 1

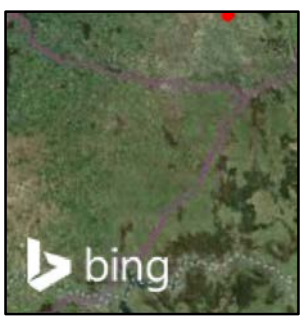
0 20 40
m

Coordinate System: GDA 1994 MGA Zone 55

LEGEND

- ARTC KM Posts
- Track Slew
- Box Gum Woodland TEC
- Drainage

Date: 10/02/2020 Paper: A3
Author: ERM Scale: 1:4,400
Data Sources: DCDB - NSW Gov; ESRI World Imagery; Inset : Bing



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The two (2) woodland patches at the Junee – Illabo Slew Site could not be considered a TEC under the EPBC Act because they did not 'have a predominately native understorey'. The TEC woodland patch adjacent to the large sheds in the town of Illabo was approximately 0.0488 ha (Figure 4). The TEC woodland patch adjacent to the farmland in between Junee and Illabo was approximately 0.32 ha (Figure 5). Both woodland patches are immediately adjacent to the Junee – Illabo Track Slew Site (<5m).

Culcairn Track Slew Site

At the Culcairn Track Slew Site, the *Eucalyptus* woodland was recorded to be consistent with PCT 278 (Riparian Blakely's Red Gum – box – shrub – sedge – grass tall open forest of the central NSW South-western Slopes Bioregion), which is also associated with Box Gum Woodland TECs (Figure 3).

The woodland patch was approximately 0.85 ha. The woodland patch is immediately adjacent (<5m) to the Culcairn Track Slew Site with many trees overhanging. The patch contained several *Eucalyptus blakelyi* and had an established understorey. Additional botanical surveys should be undertaken within this area to determine if it does meet the criteria of a TEC.

4.4 Aquatic Habitat Values

The A2I Proposal site is located within the Murray – Darling Basin and covers two sub-catchments, which include the Mid Murray and Murrumbidgee. Due to the linear nature of the Proposal, the Proposal site is intercepted and in close proximity to many watercourses, drainage features, wetlands, artificial dams and canals. Watercourses include major rivers such as the Murray River and several minor streams. A review of the Department of Primary Industries Key Fish Habitat maps (refer to Appendix F) confirm that these waterways have the potential to provide important aquatic habitat resources and will be addressed within the EIS.

Field surveys did not aim to assess aquatic fauna and flora communities, rather they aimed to identify aquatic areas with high biodiversity value.

Murray River Bridge - Enhancement Site 1 incorporates riparian and aquatic habitat along the Murray River and Oddies Creek. Field surveys identified that Enhancement Site 1 contained robust banks with a multitude of microhabitats presents (e.g. logs, macrophytes). It is likely that Enhancement Site 1 would be considered important for local aquatic fauna and flora.

Plate 1: Murray River

Plate 2: Oddies Creek

Pearson Street Bridge - Enhancement Site 6 incorporates one (1) artificially constructed wetland and is immediately adjacent to another artificially constructed wetland. These wetlands contain native riparian vegetation and native macrophytes. Bank erosion is minimal. Although these are artificially constructed, they would likely be considered important for local aquatic fauna and flora.

Plate 3: Artificial wetlands at Pearson Street Bridge - Enhancement Site 6

Plate 4: Artificial wetlands at Pearson Street Bridge - Enhancement Site 6

The Uranquinty Track Slew Site intercepts a moderately vegetated ephemeral watercourse with several *Eucalyptus camaldulensis* and non-native grasses and herbs. At present, a railway bridge extends over this watercourse and will need to be replaced. No surface water was present but the soil appeared to be moister (waterlogged) than the areas immediately adjacent. Water dependent flora species were also present such as the River Red Gum (*Eucalyptus camaldulensis*). It is likely that this watercourse provides important seasonal ecosystem function for local biodiversity.

Plate 5: Ephemeral watercourse at Uranquinty Track Slew Site. Bridge to be replace at this location.

Plate 6: Ephemeral watercourse at Uranquinty Track Slew Site

Henty Track Slew Site, Culcairn Track Slew Site, Culcairn Footbridge - Enhancement Site 5, are all located in close proximity to vegetated wetland and vegetated watercourses. These aquatic features would be unlikely to interact with these Enhancement Sites and Trackside structures, however, these areas could be impacted by future development activity and mitigation measures should be considered.

4.5 Terrestrial and Riparian Habitat Values

Six (6) Rapid Woodland Habitat Assessments were undertaken at three (3) Enhancement Sites that contained sufficient woodland habitat to assess. In summary:

- Murray River has some conservation value but with significant levels of disturbance.
- Oddies Creek is degraded with significant loss of resilience and no regeneration occurring.
- Open woodland habitats at Wagga Road Bridge - Enhancement Site 4 and Pearson Street Bridge – Enhancement Site 6 had some disturbance and some loss of resilience but should be considered ecologically important.

Potential and confirmed frog habitat was also identified at 15 locations within the A2I Proposal site. Frog habitat varied from established permanent wetlands and dams to small grassy inundated areas. The aquatic habitat identified in Murray River Bridge - Enhancement Site 1 and Pearson Street Bridge – Enhancement Site 6 would likely be considered important frog habitat (refer to Figure 6). As identified in Table 12, the A2I Proposal site also contained several semi-permanent and permanent water sources, which could be utilised during times of drought for the BC Act and EPBC Act listed *Crinia sloanei* (Sloane's Froglet).

The riparian vegetation at Murray River Bridge - Enhancement Site 1 contained many large hollow logs and some dead woody vegetation, which could provide refuge habitat to a range of fauna species. Enhancement Site 4 also contained some small hollow logs that could be used has habitat for reptile and small mammal species.

Pearson Street Bridge – Enhancement Site 6 contained a large hollow bearing tree, which could provide habitat for arboreal mammals or birds, although this area was highly disturbed by urban impacts. Another hollow bearing tree was identified at the Bomen Track Slew Site. The biodiversity value of this hollow bearing tree may be limited as it was isolated and within an industrialised environment. The Junee to Illabo Slew Site had many large hollow bearing trees adjacent to the boundary. These trees likely provide important biodiversity benefits, particularly for birds and arboreal mammals.

A total of two (2) cup shaped nests were recorded during the field surveys. Both were small and found in mid-storey *Acacia saligna*. One (1) nest was found at Murray River Bridge - Enhancement Site 1 and the other found at Pearson Street Bridge – Enhancement Site 6. In addition to the cup shaped nests, 21 mud nests were found within culverts throughout the A2I Proposal site. Culverts were also inspected for microbats. Many of the culverts inspected contained suitable microbat roosting habitat although no evidence of microbat roosts were identified.

Mistletoe was occasionally identified throughout the Proposal site (Junee to Illabo Track Slew Site, Enhancement Sites 1, 2 and 9). It is likely that the mistletoe provides an additional food source for many bird and mammal species.

Albury to Illabo

Figure 6 - Frog Habitat within A2I Proposal site

MAP 1 OF 7

0 20 40 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 12/02/2020 Paper: A3

Author: ERM Scale: 1:1,260

Data Sources: DCDB - NSW Gov; ESRI World Imagery; Inset : Bing

LEGEND

- Frog Habitat
- ARTC KM Posts
- Slew
- Enhancement Sites
- Previous Survey
- Drainage

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Albury to Illabo Figure 6 - Frog Habitat within A2I Proposal site MAP 2 OF 7

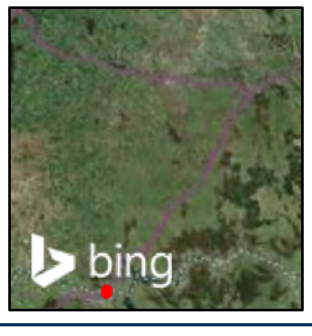
0 20 40
m

Coordinate System: GDA 1994 MGA Zone 55

Date: 12/02/2020 Paper: A3
Author: ERM Scale: 1:5,590
Data Sources: DCDB - NSW Gov; ESRI World Imagery; Inset : Bing

LEGEND

- Frog Habitat
- ARTC KM Posts
- Slew
- Enhancement Sites
- Previous Survey
- Drainage



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635

Albury to Illabo

Figure 6 - Frog Habitat within A2I Proposal site

MAP 3 OF 7

0 20 40 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 12/02/2020 Paper: A3
Author: ERM Scale: 1:1,850
Data Sources: DCDB - NSW Gov; ESRI World Imagery; Inset : Bing

LEGEND

- Frog Habitat
- ARTC KM Posts
- Slew
- Enhancement Sites
- Previous Survey
- Drainage

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Albury to Illabo

Figure 6 - Frog Habitat within A2I Proposal site

MAP 4 OF 7

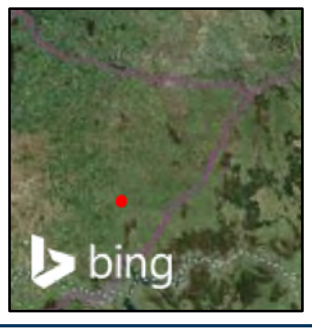
0 20 40 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 12/02/2020 Paper: A3
Author: ERM Scale: 1:2,700
Data Sources: DCDB - NSW Gov; ESRI World Imagery; Inset : Bing

LEGEND

- Frog Habitat
- ARTC KM Posts
- Slew
- Enhancement Sites
- Previous Survey
- Drainage



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Albury to Illabo

Figure 6 - Frog Habitat within A2I Proposal site

MAP 5 OF 7

0 20 40 m

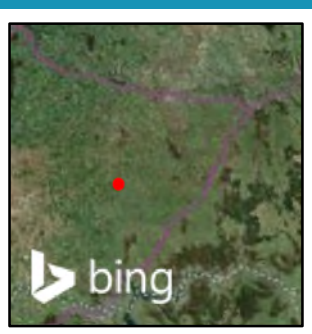
Coordinate System: GDA 1994 MGA Zone 55

LEGEND

- Frog Habitat
- ARTC KM Posts
- Slew
- Previous Survey
- Drainage

Date: 12/02/2020 Paper: A3
Author: ERM Scale: 1:2,210

Data Sources: DCDB - NSW Gov; ESRI World Imagery; Inset : Bing



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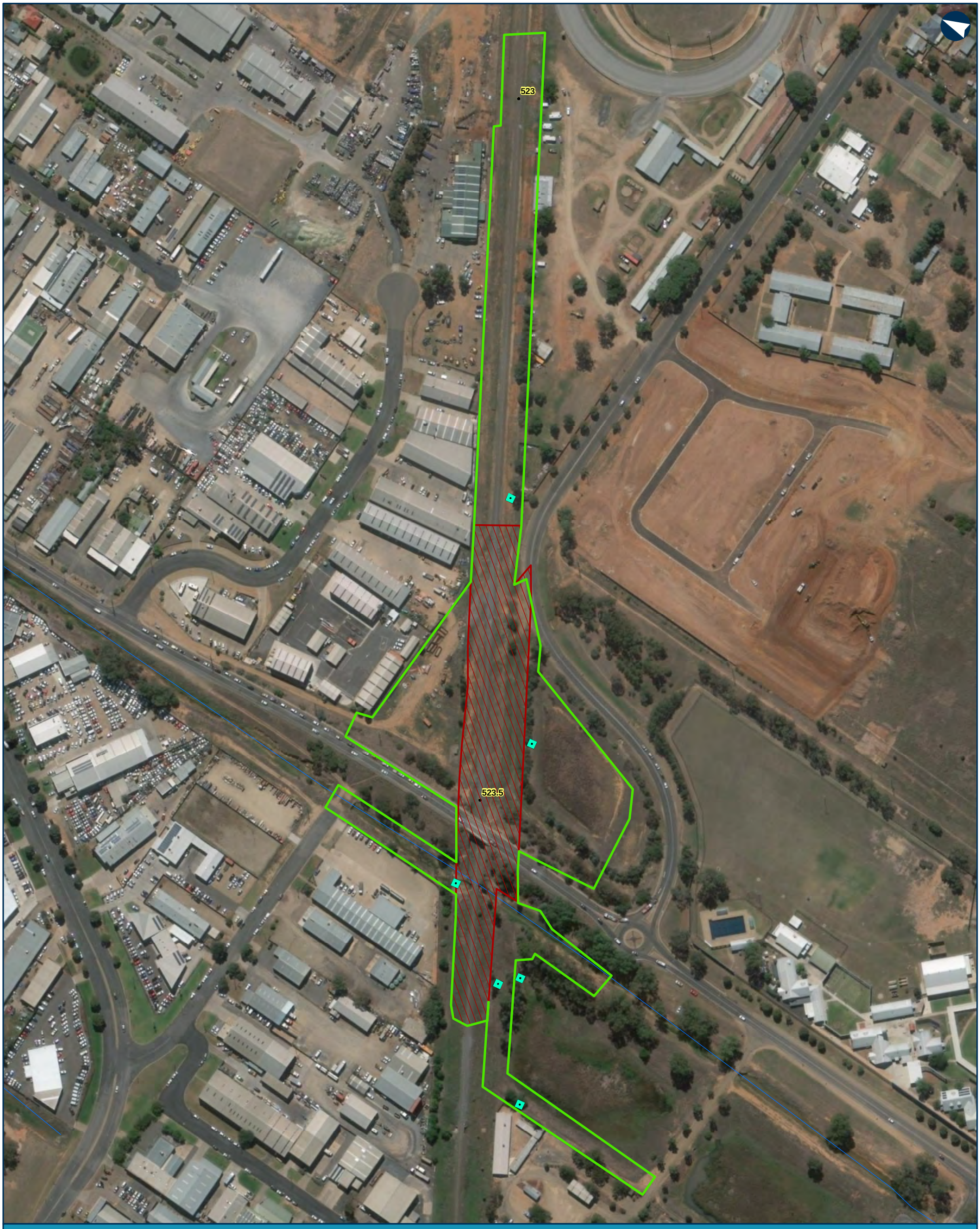

Albury to Illabo Figure 6 - Frog Habitat within A2I Proposal site MAP 6 OF 7

0 20 40 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 12/02/2020 Paper: A3
Author: ERM Scale: 1:2,520
Data Sources: DCDB - NSW Gov; ESRI World Imagery; Inset : Bing

LEGEND

- Frog Habitat
- ARTC KM Posts
- Slew
- Enhancement Sites
- Previous Survey
- Drainage

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Albury to Illabo

Figure 6 - Frog Habitat within A2I Proposal site

MAP 7 OF 7

0 20 40 m

Coordinate System: GDA 1994 MGA Zone 55

LEGEND

- Frog Habitat
- ARTC KM Posts
- Slew
- Previous Survey
- Drainage

Date: 12/02/2020 Paper: A3
Author: ERM Scale: 1:3,320
Data Sources: DCDB - NSW Gov; ESRI World Imagery; Inset : Bing

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4.6 Fauna Species Recorded

A total of 52 birds species, two (2) mammal species, zero (0) reptiles and three (3) amphibian species were recorded during the August 2019 Rapid Biodiversity Assessments. Fauna species were identified opportunistically throughout these assessments noting that no targeted surveys were undertaken.

4.6.1 Birds

A combined total of 52 bird species were identified during the August 2019 survey (Appendix A).

Birds were recorded in a variety habitats including, the railway corridor, dams, riparian corridors, woodlands, urban environments, gardens, non-native grasslands and shrublands. Two (2) cup shaped nests and 21 mud nests were identified within the A2I Proposal site.

Bird diversity was greatest within the very limited areas of woody vegetation and aquatic habitats. Adjacent areas of larger, more intact woodlands were also noted to contain a high diversities of birds which may utilise the resources present within the rail corridor occasionally as a small part of a large home range.

No EPBC listed Migratory species were identified during the field surveys. Eight (8) EPBC Marine listed species were identified during the field surveys. The A2I Proposal site is not located or likely to impact any Commonwealth Marine Protected Areas. Therefore, an impact assessment under the EPBC Act of these Marine Species is not required.

One (1) species of conservation significance was identified during the field surveys, which was the Superb Parrot (*Polytelis swainsonii*). A total of six (6) Superb Parrot individuals including both females and males were detected within and immediately adjacent to the A2I Proposal site. Five individuals were detected within 250m of the Harefield Track Slew Site and one (1) individual was detected in the Illabo to Junee Track Slew Site (Figure 7 and Figure 8).

Plate 7: Male Superb Parrot

Plate 8: Female Superb Parrot

Albury to Illabo Figure 7 - Superb Parrot *(Polytelis swainsonii)* sightings at Harefield Track Slew Site MAP 1 OF 1

0 50 100 150 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 10/02/2020 Paper: A3
Author: ERM Scale: 1:4,580
Data Sources: DCDB - NSW Gov; ESRI World Imagery; Inset : Bing

LEGEND

- Superb Parrot Sighting
- ARTC KM Posts
- Track Slew
- Previous Survey
- Riverina SVM PCT (PCT ID)

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Albury to Illabo

Figure 8 - Superb Parrot *(Polytelis swainsonii)* sightings at Illabo to Junee Track Slew Site

MAP 1 OF 1

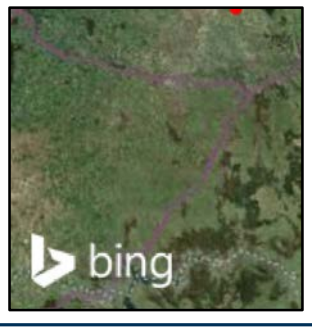
0 50 100 150 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 10/02/2020 Paper: A3
Author: ERM Scale: 1:3,360
Data Sources: DCDB - NSW Gov; ESRI World Imagery; Inset : Bing

LEGEND

- Superb Parrot Sighting
- ARTC KM Posts
- Track Slew
- Previous Survey
- Riverina SVM PCT (PCT ID)



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The majority of bird species identified during the field surveys were woodland species. Five (5) bird of prey species were identified during the surveys, which included the Collared Sparrowhawk (*Accipiter cirrocephalus*), Brown Goshawk (*Accipiter fasciatus*), Brown Falcon (*Falco berigora*), Nankeen Kestrel (*Falco cenchroides*) and Black Kite (*Milvus migrans*).

Nine (9) parrot species were detected during the surveys, which included the Sulphur-crested Cockatoo (*Cacatua galerita*), Galah (*Eolophus roseicapilla*), Eastern Bluebonnet (*Northiella haematogaster*), Cockatiel (*Nymphicus hollandicus*), Crimson Rosella (*Platycercus elegans*), Eastern Rosella (*Platycercus eximius*), Red-rumped Parrot (*Psephotus haematonotus*), Superb Parrot (*Polytelis swainsonii*) and Rainbow Lorikeet (*Trichoglossus moluccanus*).

Nine (9) wetland species were detected during the surveys, which included the Pacific Black Duck (*Anas superciliosa*), Australian Wood duck (*Chenonetta jubata*), White-faced Heron (*Egretta novaehollandiae*), Little Pied Cormorant (*Microcarbo melanoleucos*), Little Black Cormorant (*Phalacrocorax sulcirostris*), Purple Swamphen (*Porphyrio*), Australian White Ibis (*Threskiornis moluccus*) and Straw-necked Ibis (*Threskiornis spinicollis*).

4.6.2 Mammals

Two (2) mammal species were detected within the A2I Proposal site during the August 2019 field visit. The Eastern Grey Kangaroo (*Macropus giganteus*) and European Rabbit (*Oryctolagus cuniculus*) were observed on several occasions. In addition to these species, there was secondary evidence of other mammal species (identification not confirmed) within the A2I Proposal site and a network of European Rabbit (*Oryctolagus cuniculus*) burrows was found within Wagga Road Bridge - Enhancement Site 4.

4.6.3 Reptiles

Zero (0) reptiles were recorded during the August 2019 Rapid Biodiversity Assessments.

4.6.4 Amphibians

Three (3) amphibian species were recorded during the August 2019 Rapid Biodiversity Assessments. Amphibians included the Eastern sign-bearing Froglet (*Crinia parinsignifera*), Common Eastern Froglet (*Crinia signifera*) and the Spotted Marsh Frog (*Limnodynastes tasmaniensis*).

4.6.5 Introduced Fauna

Five (5) invasive fauna species were identified during the August 2019 Rapid Biodiversity Assessments. These included the Rock Dove (*Columba livia*), House Sparrow (*Passer domesticus*), Spotted Dove (*Spilopelia chinensis*), Common Starling (*Sturnus vulgaris*) and the European Rabbit (*Oryctolagus cuniculus*).

The Common Starling, House Sparrow and Rock Dove were identified at the majority of the A2I Proposal site and were among the most commonly sighted bird species. These three (3) species are likely compete with native species for resources and habitat.

4.7 Threatened Fauna Species

There are three (3) threatened species known to occur and nine (9) threatened species considered likely to occur within the A2I Proposal site.

There are 47 threatened species considered to have the potential to occur within the A2I Proposal site. The remaining 22 threatened species are considered to be unlikely to occur within the A2I Proposal site. Threatened and migratory species that are known or considered likely to occur within the A2I Proposal site are detailed in Table 12.

Table 12 Threatened and Migratory species known or likely to occur within the A2I Proposal site

Scientific Name	Common Name	BC Act	EPBC Act	Likelihood of Occurrence	Habitat within A2I Proposal site	Vulnerability to Impact
Polytelis swainsonii	Superb Parrot	V	V	Known	Several Superb Parrot individuals were observed within the A2I Proposal site on two (2) occasions. The individuals were all recorded in non-remnant vegetation patches with sporadic *Eucalyptus albens* individuals. Although, the A2I Proposal site is predominately cleared and absent of woody vegetation, there are many areas that contain intermittent *Eucalyptus* individuals (e.g. *E. camaldulensis, E. melliodora* and *E. blakeyi*) with a grassy understory provide suitable foraging habitat for Superb Parrots. This species is known to inhabit White Box-Yellow Box-Blakely's Red Gum Grassy Woodlands, which was present at several locations within the A2I Proposal site.	Habitat loss Loss of hollow bearing trees Impacts on local populations Increased habitat fragmentation Wildlife strike Construction and operational noise, light and vibration impacts
Crinia sloanei	Sloane's Froglet	V	E	Likely	The field surveys identified numerous areas within the A2I Proposal site that would provide suitable and preferred habitat for this species. Along the railway corridor many grassland areas of low gradient will be periodically subject to inundation, which would be preferable habitat for this species. The A2I Proposal site contained several semi-permanent and permanent water sources, which could be utilised during times of drought for this species.	Habitat loss Changes to hydrology through run off, sedimentation and erosion Use of chemicals and herbicides. Increased edge effects (specifically spread of weeds and pathogens)
Apus pacificus	Fork-tailed Swift	-	Mi	Likely	The Fork-tailed Swift is known to inhabit a broad range of habitat types whilst in Australia, many of which are represented within the A2I Proposal site (e.g. dry open habitats, low scrub, treeless grassland, open farmland, urban areas, open forest). The A2I Proposal site would also likely be capable of supporting a reliable food source (insects) for this species.	Impacts on local populations Wildlife strike

Scientific Name	Common Name	BC Act	EPBC Act	Likelihood of Occurrence	Habitat within A2I Proposal site	Vulnerability to Impact
Glossopsitta pusilla	Little Lorikeet	V	-	Likely	The Little Lorikeet primarily inhabits the canopy of open *Eucalyptus* woodlands and forests, which is present in a few isolated patches throughout the A2I Proposal site. The species is known to utilise isolated flowering trees in open country (e.g. paddocks, roadside remnants and urban areas). The A2I Proposal site contains an abundance of isolated flowering trees. A range of other lorikeet and parrot species were regularly identified utilising isolated flowering *Eucalyptus* trees throughout the A2I Proposal site.	Habitat loss Loss of hollow bearing trees Increased habitat fragmentation Wildlife strike Construction and operational noise, light and vibration impacts
Hirundapus caudacutus	White-throated Needletail	-	V, Mi	Likely	The White-throated Needletail is known to inhabit a broad range of habitat types whilst in Australia, many of which are represented within the A2I Proposal site (e.g. woodlands, farmlands, grasslands, edges of vegetation, cleared areas). The A2I Proposal site could support a reliable food source (insects) for this species.	Habitat loss Increased habitat fragmentation Wildlife strike
Lophochroa leadbeateri	Major Mitchell's Cockatoo	V	-	Likely	The Major Mitchell's Cockatoo would be able to intermittently utilise the majority of treeless habitat areas within the A2I Proposal site as it provides some food sources and is close proximity to permanent water sources (e.g. rivers, streams, dams, wetlands). The areas containing a greater abundance of woody vegetation would provide a greater food source variety for this species and would be preferred.	Habitat loss Loss of hollow bearing trees Increased habitat fragmentation Wildlife strike
Neophema pulchella	Turquoise Parrot	V	-	Likely	The Turquoise Parrot utilises the edges of *Eucalyptus* woodland habitats adjoined to clearings (e.g. farmland, watercourses, timbered ridges). A lot of the A2I Proposal site is cleared areas with some adjacent to *Eucalyptus* woodlands. The A2I Proposal site also contains grasslands adjacent to these *Eucalyptus* woodlands suitable for foraging. During the field visits a range of parrot species were regularly observed in these clearings foraging.	Habitat loss Loss of hollow bearing trees Increased habitat fragmentation Wildlife strike

Scientific Name	Common Name	BC Act	EPBC Act	Likelihood of Occurrence	Habitat within A2I Proposal site	Vulnerability to Impact
Stagonopleura guttata	Diamond Firetail	V	-	Likely	The Diamond Firetails is predominately found in grassy *Eucalyptus* woodlands, particularly Box-Gum Woodlands, which are present in a few locations within the A2I Proposal site. This species is found in riparian areas and lightly wooded farmland, which is present and in close proximity to a lot of the A2I Proposal site. Additionally, the A2I Proposal site contains large grassy expanses, which could act as reliable food source (grass seeds, insects) for this species.	Habitat loss Increased habitat fragmentation Wildlife strike
Leucochrysum albicans var. tricolor	Hoary Sunray	-	E	Likely	The Hoary Sunray is known to inhabit several habitat types (e.g. grasslands, woodland, modified habitats, semi-urban areas, roadsides) that are present throughout the A2I Proposal site. The majority of the A2I Proposal site is subject to anthropogenic disturbances and this species is known to respond positively to disturbed areas.	Habitat loss Increased edge effects (specifically spread of weeds and pathogens)
Petaurus norfolcensis	Squirrel Glider	V and E[2]	-	Known	The Squirrel Glider has been identified within the locality of the A2I Proposal site over 900 times forms part of the endangered population (Wagga Wagga Local Government Area - endangered population listing under BC Act). The species can utilise *Eucalyptus* woodlands that are present in a few areas within the A2I Proposal site. The existing Kapooka Squirrel Glider Crossing (Chainage 527.500 km; Olympic Highway Overbridge) that intercepts the A2I Proposal site is under the 7.1m clearance there would likely be a requirement to relocate the glider crossing. This will require consultation and agreement with the relevant road authority.	Loss of hollow bearing trees Impacts on local populations Increased habitat fragmentation Wildlife strike Construction and operational noise, light and vibration impacts

[2] The Wagga Wagga Squirrel Glider (P*etaurus norfolcensisl)* population is considered Endangered in accordance with the BC Act.

Scientific Name	Common Name	BC Act	EPBC Act	Likelihood of Occurrence	Habitat within A2I Proposal site	Vulnerability to Impact
Pteropus poliocephalus	Grey-headed Flying-fox	V	V	Likely	The Grey-headed Flying-fox utilises a broad range of habitat types and many are present within the A2I Proposal site (e.g. woodlands, swamps, urban gardens). It is likely that this species would feed on flowering *Eucalyptus* and *Melaleuca* individuals within the A2I Proposal site.	Impacts on local populations Increased habitat fragmentation Wildlife strike Construction and operational noise, light and vibration impacts
Pomatostomus temporalis	Grey-crowned Babbler (eastern subspecies)	V	-	Known	This species has been previously recorded within the rail corridor at Kapooka within characteristic nests occurring within 100m of the Proposal site (pers. comm. David Sharpe).	Impacts on local populations Increased habitat fragmentation Wildlife strike Construction and operational noise, light and vibration impacts on breeding populations

5. CONSIDERATION OF MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE (MNES)

Based on the results of the desktop assessment and the field survey, a preliminary assessment of Matters of National Environmental Significance (MNES) within the A2I Proposal site has been provided in Table 13.

Table 13 MNES within the A2I Proposal site (known and likely)

MNES	Relevance to the A2I Proposal site
World heritage properties	There are no world heritage properties within the A2I Proposal site.
National heritage properties	There are no national heritage properties within the A2I Proposal site.
Wetlands of international importance	There are no wetlands of international importance associated with the A2I Proposal site.
Threatened species and ecological communities	Threatened Species (Known): ■ Superb Parrot (*Polytelis swainsonii*); Threatened Species (Likely): ■ Sloane's Froglet (*Crinia sloanei*); ■ White-throated Needletail (*Hirundapus caudacutus*); ■ Hoary Sunray (*Leucochrysum albicans var. tricolor*); and ■ Grey-headed Flying-fox (*Pteropus poliocephalus*). *Note: None of the vegetation communities recorded within the A2I Proposal site are consistent with any of the EPBC listed TEC due the highly disturbed groundcover (<50% native).*
Migratory species	Likely: ■ Fork-tailed Swift (*Apus pacificus*); and ■ White-throated Needletail (*Hirundapus caudacutus*).
Commonwealth marine area	There are no Commonwealth marine areas within the A2I Proposal site
The Great Barrier Reef Marine Park	N/A to this Proposal
Nuclear actions	N/A to this Proposal.
Water resources	N/A to this Proposal.

Under the EPBC Act a referral is required to the Australian Government Department of the Environment and Energy (DoEE) for projects, or 'actions', that are likely to have a significant impact on a MNES or the environment on Commonwealth land. The Australian Government Minister for the Environment determines whether or not the Proposal will need formal assessment and approval under the EPBC Act. If so, that Proposal is a controlled action under the EPBC Act.

The findings of preliminary environmental investigations carried out to date have confirmed the presence of threatened species listed under the EPBC Act in the A2I Proposal site. Therefore, the proposal is being referred to the Australian Government Minister for the Environment and Energy through the preparation of a separate referral. The Proposal is not considered likely to affect MNES or environment on Commonwealth land. Whilst it is considered unlikely the SSI Proposal is a Controlled Action, a referral is being made in any event, to confirm that formal EPBC Act assessment and approval is not required.

6. IMPACT ASSESSMENT

While the risk of significant impacts is considered unlikely, the potential impact of the Proposal on threatened species and communities listed under the BC Act and the EPBC Act will need to be considered as part of the EIS in accordance with the EP&A Act.

Given that significant impact on threatened species is unlikely within the already highly disturbed operational alignment, ARTC will to seek a determination (BDAR waiver) from the Secretary under section 7.9(2) of the BC Act:

> *"Any such application [SSI] is to be accompanied by a biodiversity development assessment report unless the Planning Agency Head and the Environment Agency Head determine that the proposed development is not likely to have any significant impact on biodiversity values."*

If such a determination is made, the impacts to threatened species will still need to be considered in the EIS, but not in the form of a BDAR. In addition, Section. 7.14 of the BC Act, would not apply.

Noting there is already an existing impact associated with the existing rail line, the focus of the impact assessment is on any additional impacts associated with the Proposal. Species will be selected for further assessment by considering how they and their habitat might be affected by the Proposal. In this instance the main potential impacts of the Proposal during construction and operation that will need to be assessed include:

- 0.45 ha of BC Act listed White Box Yellow Box Blakely's Red Gum Woodland (Box-Gum Woodland) mapped at Wagga Road - Enhancement Site 4 will be avoided during detailed design. This area must be clearly delineated in the field and on all construction drawings as a no go zone. Further management and mitigation measures will be detailed in the EIS;
- Clearance of <0.5 ha of isolated and regrowth woodland trees;
- Loss of some, albeit limited fauna habitat and impacts on local populations of threatened species, particularly the Superb Parrot which was confirmed on site during the field surveys;
- Disturbance to natural and constructed aquatic habitats. Any waterway crossings will need to consider an appropriately designed structure that does not obstruct fish passage and will be designed in accordance with the Policy and Guidelines for Fish Habitat Conservation and Management and the Policy and Guidelines for Fish Friendly Waterway Crossings;
- Increased habitat fragmentation; and
- Increased potential for wildlife to be struck by the potential higher frequency of trains and use of double deck rolling stock. The squirrel glider in particular will require detailed assessment and mitigation. The design of any recommended glider poles must consider:
  - potential habitat within the locality to identify 'hot spots' for installation of crossings; and
  - gliding ability to determine the required pole height and distance between poles, allowing for clearance of double-stacked containers.

Potential indirect impacts may result from the Proposal and include:

- Changes to hydrology through run off, sedimentation and erosion from construction works;
- Impacts to Groundwater Dependant Ecosystems. The assignment of an ecological value to GDEs allows management needs to be prioritised. To assign a value to individual GDEs, NSW DPIE has adopted the high ecological value aquatic ecosystem (HEVAE) framework that may be considered within the EIS;
- Soil or water contamination from construction incidents/spills;
- Construction and operational noise, light and vibration impacts; and

- Increased edge effects (specifically spread of weeds) and any inadvertent impacts on adjacent habitat or vegetation.

Given the high levels of disturbance within the A2I Proposal site, there is also the risk that weeds may be transported off-site. Mitigation measures to reduce the chance of weed spread should be considered within the EIS.

7. RECOMMENDATIONS

Field surveys were undertaken over four (4) days from the 26th of August 2019 to the 29st of August 2019 by two ERM ecologists. The primary focus of the field surveys was to undertake a rapid assessment and to identify areas and matters of significant biodiversity value within the A2I Proposal site.

Following the field survey, the Superb Parrot was the only Matter of National Environmental Significance identified within the A2I Proposal site. In addition to this, the Superb Parrot and White Box Yellow Box Blakely's Red Gum Woodland (Box-Gum Woodland) TEC were the two (2) Matters of State Environment significance confirmed within the A2I Proposal site.

The Superb Parrot was identified at two locations within and immediately adjacent to the A2I Proposal site. On both occasions, the Superb Parrots were foraging in habitat within or adjacent to the A2I Proposal site. In addition to the Superb Parrot, both the Squirrel Glider and Grey-crowned Babbler have been previously recorded within the rail corridor and the following species are considered 'likely' to occur within the A2I Proposal site based on their habitat preferences. All of these species will need to be addressed in detail within the EIS:

- Sloane's Froglet;
- Fork-tailed Swift;
- Little Lorikeet;
- White-throated Needletail;
- Major Mitchell's Cockatoo;
- Turquoise Parrot; and
- Diamond Firetail;
- Hoary Sunray;
- Grey-headed Flying-fox.

Based on the investigations undertaken to date, the following recommendations are provided for additional survey(s) to provide further detail on biodiversity features/values and to inform the EIS.

- Avoid areas of TEC where possible during detailed design;
- To better understand the use of the A2I Proposal site by Superb Parrots, Squirrel Glider and Grey-crowned Babbler, additional surveys and detailed habitat assessments (including mapping of key habitat resources) is recommended;
- Undertake a detailed habitat assessment and fauna survey, which includes targeted survey methods for species considered likely to occur. These may need to consider the requirements of the BAM (unless a BDAR Waiver is approved, refer to Section 6), as well as other guidance documents including; but not limited to:
  - The 'Species credit' threatened bats and their habitats - NSW survey guide for the Biodiversity Assessment Method (https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Threatened-species/species-credit-threatened-bats-survey-guide-180466.pdf);
  - Survey guidelines for Australia's threatened bats: Guidelines for detecting bats listed as threatened under the EPBC Act (https://www.environment.gov.au/resource/survey-guidelines-australias-threatened-bats-guidelines-detecting-bats-listed-threatened);
  - Survey guidelines for Australia's threatened birds: Guidelines for detecting birds listed as threatened under the EPBC Act (https://www.environment.gov.au/epbc/publications/survey-guidelines-australias-threatened-birds-guidelines-detecting-birds-listed-threatened);
  - Survey guidelines for Australia's threatened frogs: Guidelines for detecting frogs listed as threatened under the EPBC Act (https://www.environment.gov.au/resource/survey-guidelines-australias-threatened-frogs-guidelines-detecting-frogs-listed-threatened);
  - Survey guidelines for Australia's threatened fish: Guidelines for detecting fish listed as threatened under the Environment Protection and Biodiversity Conservation Act 1999; and

- Lintermans (2014) Finding the needle in the haystack: comparing sampling methods for detecting an endangered freshwater fish.

- Survey the A2I Proposal site for bat roosts and roost zones. This would be limited to the bridges within the enhancement sites as well as hollow bearing trees to be removed;
- Undertake targeted amphibian searches within the areas of suitable habitat;
- Undertake detailed floristic surveys within the small areas (<1 ha total) of native vegetation (woodland remnants); and
- Undertake targeted flora survey in areas of potential habitat in accordance with the NSW Guide to Surveying Threatened Plants (https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Threatened-species/guide-surveying-threatened-plants-160129.pdf).

8. REFERENCES

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DoEE (2019a) SPRAT: White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland. On-line resource accessed via: http://www.environment.gov.au/cgi-bin/sprat/public/publicshowcommunity.pl?id=43

DoEE (2019b) SPRAT: Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia. On-line resource accessed via: http://www.environment.gov.au/cgi-bin/sprat/public/publicshowcommunity.pl?id=86&status=Endangered

DoEE (2019c) SPRAT: Natural Grasslands of the Murray Valle Plains. On-line resource accessed via: http://www.environment.gov.au/cgi-bin/sprat/public/publicshowcommunity.pl?id=117

DoEE (2019d) SPRAT: Weeping Myall Woodlands. On-line resource accessed via: http://www.environment.gov.au/cgi-bin/sprat/public/publicshowcommunity.pl?id=98

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APPENDIX A PROPOSAL SITE FIGURES

HUME HIGHWAY

HUME HIGHWAY

MURRAY RIVER

Albury to Illabo

1. A2I Study Area - Murray River Bridge Precinct (Enhancement Site 1)

MAP 1 OF 21

0 20 40 60 m

Coordinate System: GDA 1994 MGA Zone 55

LEGEND

- ARTC KM Posts
- Enhancement Sites
- Track Slew Site
- Previous Survey
- Primary Road/Motorway
- Major Road
- Minor Road
- Watercourse

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Date: 10/02/2020 Paper: A3

Author: ERM Scale: 1:1,260

Data Sources: DCDB - NSW Gov; ESRI World Imagery; Inset : Bing

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Albury to Illabo | 2. A2I Study Area - Albury Station Precinct (Enhancement Sites 2 and 3) | MAP 2 OF 21

0 20 40 60
m

Coordinate System: GDA 1994 MGA Zone 55

Date: 10/02/2020 Paper: A3
Author: ERM Scale: 1:5,590
Data Sources: DCDB - NSW Gov; ESRI World Imagery; Inset : Bing

LEGEND

- ARTC KM Posts
- Enhancement Sites
- Track Slew Site
- Previous Survey
- Primary Road/Motorway
- Major Road
- Minor Road
- Watercourse

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Albury to Illabo | 3. A2I Study Area - Wagga Road Bridge (Enhancement Site 4) | MAP 3 OF 21

0 20 40 60 m

Coordinate System: GDA 1994 MGA Zone 55

LEGEND

- ARTC KM Posts
- Enhancement Sites
- Track Slew Site
- Previous Survey
- Primary Road/Motorway
- Major Road
- Minor Road
- Watercourse

Date: 10/02/2020 Paper: A3
Author: ERM Scale: 1:1,850
Data Sources: DCDB - NSW Gov; ESRI World Imagery; Inset : Bing

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Albury to Illabo

4. A2I Study Area - Trackside Structures at chainage 632.86

MAP 4 OF 21

0 20 40 60 m

Coordinate System: GDA 1994 MGA Zone 55

LEGEND

- ARTC KM Posts
- Enhancement Sites
- Track Slew Site
- Previous Survey
- Trackside Structures
- Primary Road/Motorway
- Major Road
- Minor Road
- Watercourse

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Date: 10/02/2020 Paper: A3
Author: ERM Scale: 1:1,870

Data Sources: DCDB - NSW Gov; ESRI World Imagery; Inset : Bing

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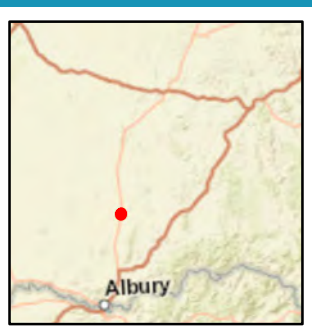
Albury to Illabo | 5. A2I Study Area - Culcairn Footbridge (Enhancement Site 5) | MAP 5 OF 21

0 20 40 60 m

Coordinate System: GDA 1994 MGA Zone 55

LEGEND

- ARTC KM Posts
- Enhancement Sites
- Track Slew Site
- Previous Survey
- Trackside Structures
- Primary Road/Motorway
- Major Road
- Minor Road
- Watercourse



Date: 10/02/2020 Paper: A3
Author: ERM Scale: 1:2,700
Data Sources: DCDB - NSW Gov; ESRI World Imagery; Inset : Bing

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Albury to Illabo 6. A2I Study Area - Henty Track Slew MAP 6 OF 21

0 20 40 60 m

Coordinate System: GDA 1994 MGA Zone 55

LEGEND

- ARTC KM Posts
- Track Slew Site
- Previous Survey
- Trackside Structures
- Primary Road/Motorway
- Major Road
- Minor Road
- Watercourse

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Date: 10/02/2020 Paper: A3
Author: ERM Scale: 1:3,880
Data Sources: DCDB - NSW Gov; ESRI World Imagery; Inset : Bing

T:\01_Projects\Temporary\0520125 - Newcastle ARTC\GIS\MXD\Biodiversity Assessment\0520125m_A2I_G001_R2.mxd

564.5

565

565.5

OLYMPIC HIGHWAY

COX STREET

COLE STREET

PLUNKETT STREET

SANDY CREEK

Albury to Illabo

7. A2I Study Area - Yerong Creek Track Slew

MAP 7 OF 21

0 20 40 60
m

Coordinate System: GDA 1994 MGA Zone 55

LEGEND

- ARTC KM Posts
- Track Slew Site
- Previous Survey
- Primary Road/Motorway
- Major Road
- Minor Road
- Watercourse

Date: 10/02/2020 Paper: A3
Author: ERM Scale: 1:3,930
Data Sources: DCDB - NSW Gov; ESRI World Imagery; Inset : Bing

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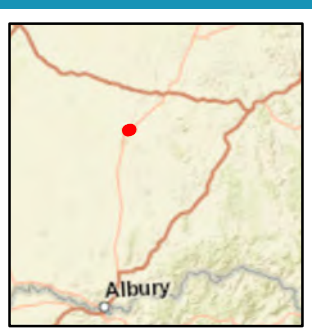
Albury to Illabo | 8. A2I Study Area - Trackside Structures near The Rock | MAP 8 OF 21

0 20 40 60
m

Coordinate System: GDA 1994 MGA Zone 55

LEGEND

- ARTC KM Posts
- Enhancement Sites
- Track Slew Site
- Previous Survey
- Trackside Structures
- Primary Road/Motorway
- Major Road
- Minor Road
- Watercourse



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Date: 10/02/2020 Paper: A3
Author: ERM Scale: 1:5,820
Data Sources: DCDB - NSW Gov; ESRI World Imagery; Inset : Bing

T:\01_Projects\Temporary\0520125 - Newcastle ARTC\GIS\MXD\Biodiversity Assessment\0520125m_A2I_G001_R2.mxd

URANQUINTY CROSS ROAD
YARRAGUNDRY STREET
OLYMPIC HIGHWAY
535
535.5
MORGAN STREET
RYAN STREET
KEY STREET
536
SANDY CREEK
536.5
537
OLYMPIC HIGHWAY
SANDY CREEK

Albury to Illabo

9. A2I Study Area - Uranquinty Track Slew

MAP 9 OF 21

0 20 40 60
m

Coordinate System: GDA 1994 MGA Zone 55

LEGEND

- ARTC KM Posts
- Track Slew Site
- Previous Survey
- Trackside Structures
- Primary Road/Motorway
- Major Road
- Minor Road
- Watercourse

Date: 10/02/2020 Paper: A3
Author: ERM Scale: 1:6,060
Data Sources: DCDB - NSW Gov; ESRI World Imagery; Inset : Bing

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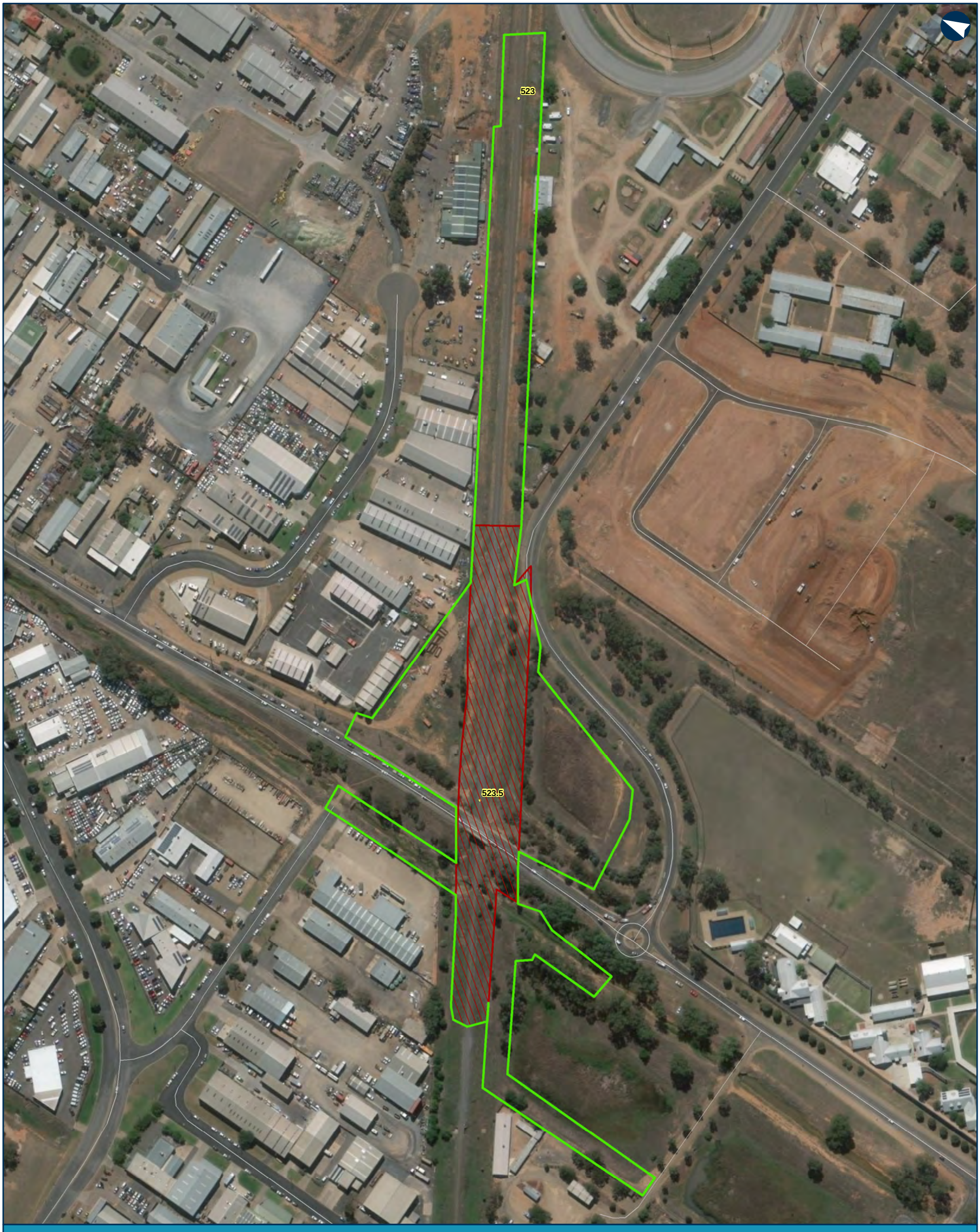

Albury to Illabo | 10. A2I Study Area - Pearson Street Bridge (Enhancement Site 6) | MAP 10 OF 21

0 20 40 60 m

Coordinate System: GDA 1994 MGA Zone 55

LEGEND

- ARTC KM Posts
- Enhancement Sites
- Track Slew Site
- Previous Survey
- Primary Road/Motorway
- Major Road
- Minor Road
- Watercourse

Date: 10/02/2020 Paper: A3
Author: ERM Scale: 1:2,520
Data Sources: DCDB - NSW Gov; ESRI World Imagery; Inset : Bing

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Albury to Illabo — 11. A2I Study Area - Wagga Wagga Station Precinct (Enhancement Sites 7, 8 and 9) — MAP 11 OF 21

0 20 40 60
m

Coordinate System: GDA 1994 MGA Zone 55

Date: 10/02/2020 Paper: A3
Author: ERM Scale: 1:4,840
Data Sources: DCDB - NSW Gov; ESRI World Imagery; Inset : Bing

LEGEND

- ARTC KM Posts
- Enhancement Sites
- Track Slew Site
- Previous Survey
- Primary Road/Motorway
- Major Road
- Minor Road
- Watercourse

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Albury to Illabo 12. A2I Study Area - Bomen Track Slew MAP 12 OF 21

0 20 40 60 m

Coordinate System: GDA 1994 MGA Zone 55

LEGEND

- ARTC KM Posts
- Track Slew Site
- Previous Survey
- Primary Road/Motorway
- Major Road
- Minor Road
- Watercourse

Date: 10/02/2020 Paper: A3
Author: ERM Scale: 1:3,320
Data Sources: DCDB - NSW Gov; ESRI World Imagery; Inset : Bing

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Albury to Illabo 13. A2I Study Area - Harefield Track Slew MAP 13 OF 21

0 20 40 60 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 10/02/2020 Paper: A3
Author: ERM Scale: 1:3,070
Data Sources: DCDB - NSW Gov; ESRI World Imagery; Inset : Bing

LEGEND

- ARTC KM Posts
- Track Slew Site
- Previous Survey
- Trackside Structures
- Primary Road/Motorway
- Major Road
- Minor Road
- Watercourse

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Albury to Illabo 14. A2I Study Area - Kemp Street Bridge (Enhancement Site 10) MAP 14 OF 21

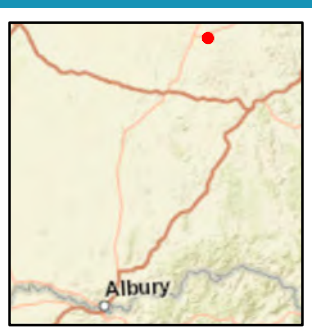
0 20 40 60 m

LEGEND

- ARTC KM Posts
- Enhancement Sites
- Track Slew Site
- Previous Survey
- Primary Road/Motorway
- Major Road
- Minor Road
- Watercourse

Coordinate System: GDA 1994 MGA Zone 55

Date: 10/02/2020 Paper: A3
Author: ERM Scale: 1:1,110
Data Sources: DCDB - NSW Gov; ESRI World Imagery; Inset : Bing



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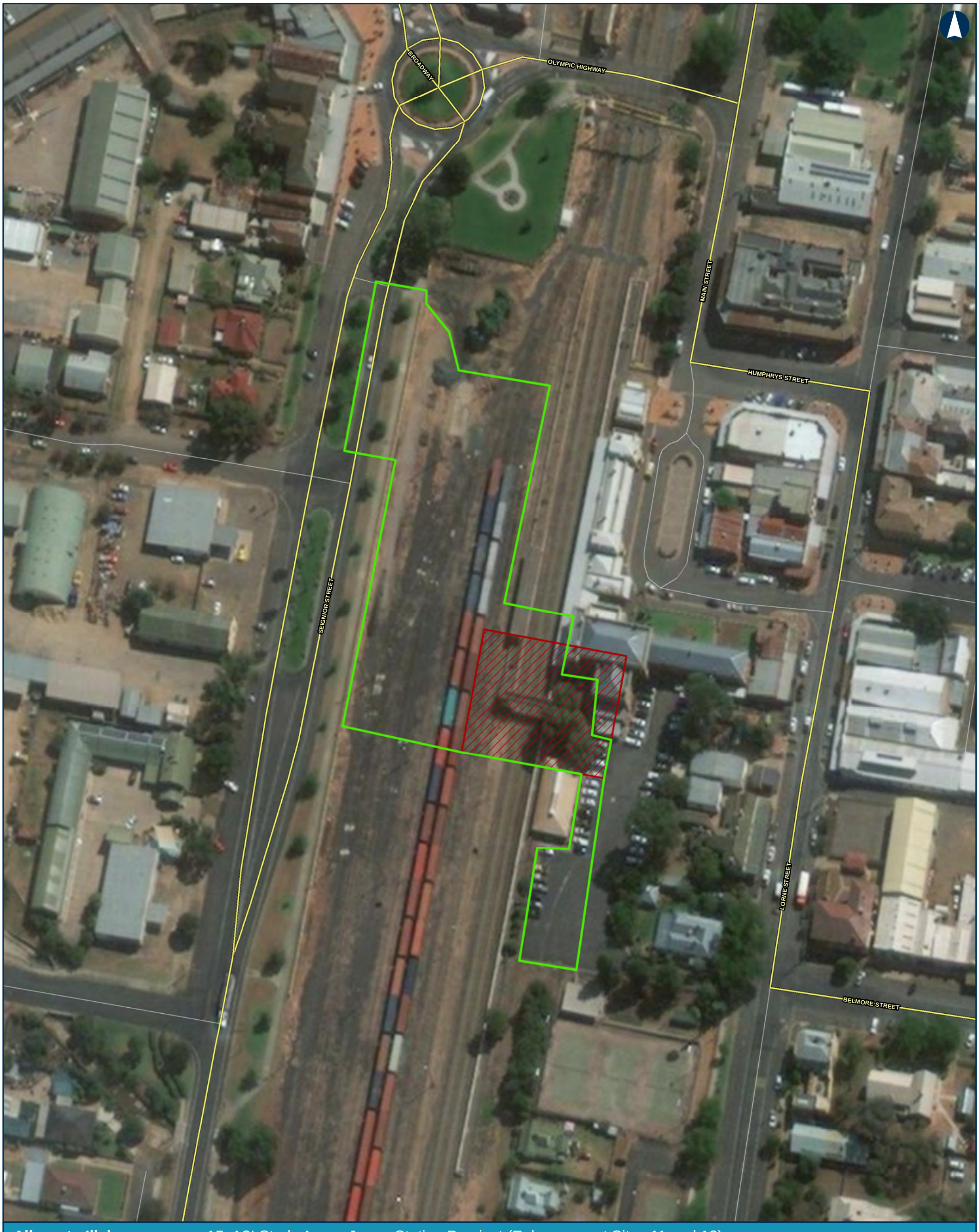

Albury to Illabo 15. A2I Study Area - Junee Station Precinct (Enhancement Sites 11 and 12) MAP 15 OF 21

0 20 40 60 m

Coordinate System: GDA 1994 MGA Zone 55

LEGEND

- ARTC KM Posts
- Enhancement Sites
- Track Slew Site
- Previous Survey
- Primary Road/Motorway
- Major Road
- Minor Road
- Watercourse

Date: 10/02/2020 Paper: A3
Author: ERM Scale: 1:1,160
Data Sources: DCDB - NSW Gov; ESRI World Imagery; Inset : Bing

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Albury to Illabo 16. A2I Study Area - Junee Track Slew MAP 16 OF 21

0 20 40 60
m

Coordinate System: GDA 1994 MGA Zone 55

Date: 10/02/2020 Paper: A3
Author: ERM Scale: 1:4,870
Data Sources: DCDB - NSW Gov; ESRI World Imagery; Inset : Bing

LEGEND

- ARTC KM Posts
- Track Slew Site
- Previous Survey
- Primary Road/Motorway
- Major Road
- Minor Road
- Watercourse

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Albury to Illabo 17. A2I Study Area - Illabo to Junee Track Slew MAP 17 OF 21

0 200 400 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 10/02/2020 Paper: A3
Author: ERM Scale: 1:14,880
Data Sources: DCDB - NSW Gov; ESRI World Imagery; Inset : Bing

LEGEND

- ARTC KM Posts
- Track Slew Site
- Previous Survey
- Primary Road/Motorway
- Major Road
- Minor Road
- Watercourse

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Albury to Illabo

18. A2I Study Area - Illabo to Junee Track Slew

MAP 18 OF 21

0 240 460
m

Coordinate System: GDA 1994 MGA Zone 55

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Author: ERM Scale: 1:17,950
Data Sources: DCDB - NSW Gov; ESRI World Imagery; Inset : Bing

LEGEND

- ● ARTC KM Posts
- ▭ Track Slew Site
- ▨ Previous Survey
- Primary Road/Motorway
- Major Road
- Minor Road
- Watercourse

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T:\01_Projects\Temporary\0520125 - Newcastle ARTC\GIS\MXD\Biodiversity Assessment\0520125m_A2I_G001_R2.mxd

STANYER ROAD
OLYMPIC HIGHWAY
TURLAND STREET
CROWTHER STREET
MORRIS STREET
EURONGILLY ROAD
BRABINS ROAD
JERALCAMBETH CREEK
467.5
468
468.5
469
469.5
470
470.5
471
471.5
472

Albury to Illabo

19. A2I Study Area - Illabo to Junee Track Slew

MAP 19 OF 21

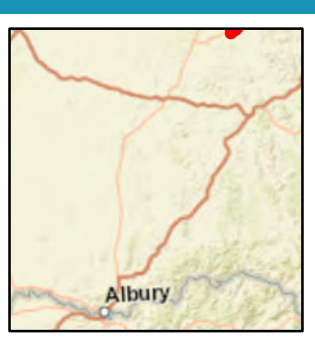
0 200 400 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 10/02/2020 Paper: A3
Author: ERM Scale: 1:14,290
Data Sources: DCDB - NSW Gov; ESRI World Imagery; Inset : Bing

LEGEND

- ARTC KM Posts
- Track Slew Site
- Previous Survey
- Primary Road/Motorway
- Major Road
- Minor Road
- Watercourse



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Albury to Illabo | 20. A2I Study Area - Illabo to Junee Track Slew | MAP 20 OF 21

0 2 4 6 8 10
m

Coordinate System: GDA 1994 MGA Zone 55

Date: 10/02/2020 Paper: A3
Author: ERM Scale: 1:11,470
Data Sources: DCDB - NSW Gov; ESRI World Imagery; Inset : Bing

LEGEND

- ARTC KM Posts
- Track Slew Site
- Previous Survey
- Primary Road/Motorway
- Major Road
- Minor Road
- Watercourse

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Albury to Illabo | 21. A2I Study Area - Trackside Structures at chainage 531.256 | MAP 21 OF 21

0 20 40 60
m

Coordinate System: GDA 1994 MGA Zone 55

LEGEND

- ARTC KM Posts
- Track Slew Site
- Previous Survey
- Power Crossing
- Primary Road/Motorway
- Major Road
- Minor Road
- Watercourse

INLAND RAIL | ARTC

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Date: 10/02/2020 Paper: A3
Author: ERM Scale: 1:5,200
Data Sources: DCDB - NSW Gov; ESRI World Imagery; Inset : Bing

T:\01_Projects\Temporary\0520125 - Newcastle ARTC\GIS\MXD\Biodiversity Assessment\0520125m_A2I_G001_R2.mxd

APPENDIX B FAUNA SPECIES OBSERVED DURING FIELD SURVEYS, AUGUST 2019

Scientific name	Common name	EPBC Act	BC Act
Birds			
Acanthiza chrysorrhoa	Yellow Rumped Thornbill	-	-
Accipiter cirrocephalus	Collared Sparrowhawk	-	-
Accipiter fasciatus	Brown Goshawk	Ma	-
Anas superciliosa	Pacific Black Duck	-	-
Anthochaera carunculata	Red Wattle Bird	-	-
Cacatua galerita	Sulphur-crested Cockatoo	-	-
Chenonetta jubata	Australian Wood Duck	-	-
Cisticola exilis	Golden Headed Cistocola	-	-
Colluricincla harmonica	Grey Shrike Thrush	-	-
*Columba livia**	Rock Dove	-	-
Corcorax melanorhamphos	White-winged Chough	-	-
Cormobates leucophaea	White-throated Tree Creeper	-	-
Corvus coronoides	Australian Raven	-	-
Corvus mellori	Little Raven	Ma	-
Cracticus tibicen	Australian Magpie	-	-
Cracticus torquatus	Grey Butcherbird	-	-
Dacelo novaeguineae	Laughing Kookaburra	-	-
Egretta novaehollandiae	White-faced Heron	-	-
Entomyzon cyanotis	Blue-faced Honeyeater	-	-
Eolophus roseicapilla	Galah	-	-
Falco berigora	Brown Falcon	-	-
Falco cenchroides	Nankeen Kestrel	Ma	-
Fulica atra	Eurasian Coot	-	-
Geopelia placida	Peaceful Dove	-	-
Grallina cyanoleuca	Magpie lark	-	-
Hirundo neoxena	Welcome Swallow	Ma	-
Lichenostomus fuscus	Fuscous Honeyeater	-	-
Malurus cyaneus	Superb Fairy Wren	-	-
Manorina melanocephala	Noisy Miner	-	-
Microcarbo melanoleucos	Little Pied Cormorant	-	-
Milvus migrans	Black Kite	-	-
Northiella haematogaster	Eastern Bluebonnet	-	-
Nymphicus hollandicus	Cockatiel	-	-

Scientific name	Common name	EPBC Act	BC Act
Ocyphaps lophotes	Crested Pigeon	-	-
*Passer domesticus**	House Sparrow	-	-
Petrochelidon ariel	Fairy Martin	-	-
Petrochelidon nigricans	Tree Martin	Ma	
Phalacrocorax sulcirostris	Little Black Cormorant	-	-
Platycercus elegans	Crimson Rosella	-	-
Platycercus eximius	Eastern Rosella	-	-
Polytelis swainsonii	Superb Parrot	V	V
Porphyrio	Purple Swamphen	Ma	-
Psephotus haematonotus	Red-rumped Parrot	-	-
Rhipidura albiscapa	Grey Fantail	-	-
Rhipidura leucophrys	Willie Wag Tail	-	-
*Spilopelia chinensis**	Spotted Dove	-	-
Strepera graculina	Pied Currawong	-	-
Struthidea cinerea	Apostlebird	-	-
*Sturnus vulgaris**	Common Starling	-	-
Threskiornis moluccus	Australian White Ibis	Ma	-
Threskiornis spinicollis	Straw-necked Ibis	Ma	-
Trichoglossus moluccanus	Rainbow Lorikeet	-	-
Amphibians			
Crinia parinsignifera	Eastern sign-bearing Froglet	-	-
Crinia signifera	Common Eastern Froglet	-	-
Limnodynastes tasmaniensis	Spotted Marsh Frog	-	-
Mammals			
*Oryctolagus cuniculus**	European Rabbit	-	-
Macropus giganteus	Eastern Grey Kangaroo	-	-

CE = Critically Endangered; E = Endangered; V = Vulnerable; Mi = Migratory; Ma = Marine - = not listed, * = introduced species.

APPENDIX C FLORA SPECIES OBSERVED DURING FIELD SURVEYS, AUGUST 2019

Scientific name	Common name	EPBC Act	BC Act
*Salix nigra**	Black Willow	-	-
*Ligustrum lucidum**	Broad-leaved Privet	-	-
*Cirsium vulgare**	Spear Thistle	-	-
Rumex brownii	Hooded Dock	-	-
*Solanum mauritianum**	Wild Tobacco	-	-
Eucalyptus camaldulensis	River Red Gum	-	-
Acacia dealbata	Silver Wattle	-	-
Acacia saligna	Coojong	-	-
Eucalyptus blakelyi	Blakely's Red Gum	-	-
Acacia deanei	Deane's Wattle	-	-
Eucalyptus bridgesiana	Apple Box	-	-
Eucalyptus albens	White Box	-	-
Casuarina cunninghamiana	River Oak	-	-
Grevillea sp.	-	-	-
Typha orientalis	Bulrush	-	-
Eucalyptus melliodora	Yellow Box	-	-
Acacia sp.	-	-	-
*Lycium ferocissimum**	African boxthorn	-	-
Eucalyptus leucoxylon	Yellow Gum	-	-
Bursaria spinosa	Native Blackthorn	-	-
Melaleuca armillaris	Bracelet Honey-myrtle	-	-
Brachychiton populneus	Kurrajong	-	-
Grevillea robusta	Southern Silky Oak	-	-
Melaleuca styphelioides	Prickly-leaved Paperbark	-	-
Callistemon sp.	-	-	-
Eucalyptus sideroxylon	Mugga	-	-
Allocasuarina torulosa	Rose She-oak	-	-
Melaleuca sp.		-	-
*Osteospermum sp.**	African daisy	-	-
*Asparagus aethiopicus**	Climbing asparagus	-	-
Melaleuca decora	White Feather Honeymyrtle	-	-
Melaleuca salicina	White Bottlebrush	-	-
Acacia verniciflua	Varnish Wattle	-	-
Eucalyptus pulverulenta	Silver-leaved Mountain Gum	-	-

Scientific name	Common name	EPBC Act	BC Act
Callitris sp.	-	-	-
Dianella sp.	-	-	-
Corymbia maculata	Spotted Gum	-	-
Ligustrum sinense	Small Leaved Privet	-	-

CE = Critically Endangered; E = Endangered; V = Vulnerable; Mi = Migratory; Ma = Marine - = not listed, * = introduced species.

APPENDIX D RAPID WOODLAND HABITAT ASSESSMENT

Table D1 Rapid Woodland and Forest Habitat Assessment Results

Assessment	1	2	3	4	5	6
Waypoint	2	3	12	16	29	37
Site Description	Enhancement Site 1 (Murray River)	Enhancement Site 1 (Oddies Creek)	Enhancement Site 4	Enhancement Site 4 (north)	Enhancement Site 6	Enhancement Site 6 (wetland)
Date	26/08/2019	26/08/2019	26/08/2019	26/08/2019	26/08/2019	26/08/2019
Surveyor	Sebastian + Tom	Sebastian + Tom	Sebastian + Tom	Sebastian + Tom	Sebastian + Tom	Sebastian + Tom
Connectivity (internal)	3	3	2	4	3	2
Connectivity (external)	4	5	4	4	4	4
Bare soil (%)	3	1	1	1	1	2
Litter (%)	3	1	2	2	4	2
Rock (%)	1	1	1	1	1	1
Herbs (%)	1	3	1	2	1	1
Grass (%)	1	2	3	5	2	3
Shrubs (%)	2	3	1	1	2	2
Mid storey trees (%)	2	2	2	2	2	3
Upper trees (%)	2	2	4	2	3	2
Logs (%)	1	2	2	1	1	1
Classification	Riparian Woodland	Riparian Woodland	Open Woodland	Semi-cleared woodland	Semi-cleared woodland	Open woodland
Successional Stage	Predominately mixed regrowth and old individuals	Predominately mixed regrowth and old individuals	Predominately mixed regrowth and old individuals	Predominately mixed regrowth and old individuals	Predominately mixed regrowth and old individuals	Predominately old individuals
Hollow present	1	1	1	2	1	1
Water Sources	2	3	4	4	1	1

Assessment	1	2	3	4	5	6
Weeds (herbaceous)	5	5	2	2	3	2
Weeds (woody)	5	5	1	1	3	3
Other disturbances	Littering, noise/ vibration pollution, fragmentation, weeds	Littering, noise/ vibration pollution, fragmentation, weeds	Fenced, Fragmented	Cleared patches, dirt track through woodland	Poisoning of Eucalyptus individuals, dirt tracks, litter	Fencing, historic earthworks (filling)
Conservation Rating	3	4	2	3	3	3
Conservation Trends	3	4	3	3	3	3

Connectivity

1 Homogenous and/or continuous habitat
2 Low level of fragmentation including roads
3 Intermediate fragmentation and clearing with adequate stepping stones
4 Significant fragmentation and clearing with inadequate habitat stepping stones
5 Cleared land

Habitat layers

1 0 – 5 %
2 6 – 25 %
3 26 – 50 %
4 51 – 75 %
5 76 – 100 %

Hollows

1 None
2 Few
3 Some
4 Most
5 All

Water sources

1 At least one dam
2 Permanent stream present
3 Perennial stream
4 Nearby permanent water sources
5 No nearby permanent water sources

Conservation status

1 High quality, self-regenerating, high resilience
2 Some disturbance and some loss of resilience
3 Some conservation value but with significant levels of disturbance
4 Degraded with significant loss of resilience, no regeneration occurring
5 Highly degraded, restoration needed rather than regeneration

Weeds

1 None
2 Perimeter only
3 Light
4 Heavy
5 Very Heavy

Conservation Trends

1 Self-sustaining and pristine or near pristine under current management
2 Under appropriate management will return to 1 through regeneration strategies
3 Balanced between being able to return to 2 and then 1 or to further degraded and eventually require restoration
4 Trending to localised extinction. Requires high cost restoration strategies.

APPENDIX E LIKELIHOOD OF OCCURENCE

Scientific Name	Common Name	Status (BC Act)	Status (EPBC Act)	Bionet Records with 10km	Habitat Summary	Likelihood of Occurrence	Recorded During Field Surveys
Amphibians							
Crinia sloanei	Sloane's Froglet	V	E	78	The Sloane's Froglet is a small ground dwelling frog. It is typically associated with periodically inundated areas in grassland, woodland and disturbed habitats. Sloane's Froglet has been recorded from widely scattered sites in the floodplains of the Murray-Darling Basin, with the majority of records in the Darling Riverine Plains, NSW South Western Slopes and Riverina bioregions in New South Wales.	Considering the records within the locality and the presence of preferred habitat, this species has is **likely** to occur within the A2I Proposal site.	No
Litoria raniformis	Southern Bell Frog	E	V	1	The Southern Bell Frog is usually found in or around permanent or ephemeral Black Box/Lignum/Nitre Goosefoot swamps, Lignum/Typha swamps and River Red Gum swamps or billabongs along floodplains and river valleys. They are also found in irrigated rice crops, particularly where there is no available natural habitat. Breeding occurs during the warmer months and is triggered by flooding or a significant rise in water levels. The species has been known to breed anytime from early spring through to late summer/early autumn (Sept to April) following a rise in water levels. During the breeding season animals are found floating amongst aquatic vegetation (especially cumbungi (*Typha* spp.) or Common Reeds) within or at the edge of slow-moving streams, marshes, lagoons, lakes, farm dams and rice crops. Outside the breeding season animals disperse away from the water and take shelter beneath ground debris such as fallen timber and bark, rocks, grass clumps and in deep soil cracks.	Considering records mostly not associated with the locality of the A2I Proposal site and the presence of suitable habitat, this species has the **potential** to occur within the A2I Proposal site.	No
Birds							
Anseranas semipalmata	Magpie Goose	V	-	1	The Magpie Goose is a large, distinctive black and white water-bird. The Magpie Goose is mainly found in shallow wetlands (less than 1 m deep) with dense growth of rushes or sedges. Equally at home in aquatic or terrestrial habitats; often seen walking and grazing on land; feeds on grasses, bulbs and rhizomes. Activities are centred on wetlands, mainly those on floodplains of rivers and large shallow wetlands formed by run-off; breeding can occur in both summer and winter dominated rainfall areas and is strongly influenced by water level; most breeding now occurs in monsoonal areas; nests are formed in trees over deep water; breeding is unlikely in south-eastern NSW. Often seen in trios or flocks on shallow wetlands, dry ephemeral swamps, wet grasslands and floodplains; roosts in tall vegetation.	Considering the records within the locality and the presence of suitable habitat, this species has the **potential** to occur within the A2I Proposal site.	No
Anthochaera phrygia	Regent Honeyeater	CE	CE	2	The Regent Honeyeater mainly inhabits temperate woodlands and open forests, particularly Box – Ironbark woodland and riparian forests of River Sheoak. The species inhabits woodlands that support a significantly high abundance and species richness of birds. These type of woodlands have significantly large numbers of mature trees, high canopy cover and abundance of mistletoes. The species can also be found in drier coastal woodlands and forests in some years. Non-breeding flocks of the species can be seen foraging in flowering coastal Swamp Mahogany and Spotted Gum forests. Although the species is a generalist forager, it feeds mainly on the nectar from a small number of eucalypts that produce high volumes of nectar (e.g. Mugga Ironbark, Yellow Box, White Box and Swamp Mahogahy).	Considering the records within the locality and the presence of suitable habitat, this species has the **potential** to occur within the A2I Proposal site.	No
Apus pacificus	Fork-tailed Swift	-	Mi	3	The Fork-tailed Swift is a migratory bird that visits Australia during its non-breeding season. The species is almost exclusively aerial, flying from less than 1 metre to at least 300 metres above ground. It is an aerial eater believed to forage on insects.	Considering the records within the locality and the presence of preferred habitat, this species is **likely** to occur within the A2I Proposal site.	No
Artamus cyanopterus	Dusky Woodswallow	V	-	5	The Dusky Woodswallow primarily inhabit dry, open eucalypt forests and woodlands, including mallee associations, with an open or sparse understorey of eucalypt saplings, acacias and other shrubs, and ground-cover of grasses or sedges and fallen woody debris. It has also been recorded in shrublands, heathlands and very occasionally in moist forest or rainforest. Also found in farmland, usually at the edges of forest or woodland. The species forages on invertebrates, mainly insects, which are captured whilst hovering or sallying above the canopy or over water. It builds an open, cup-shape nest made of twigs, grass, fibrous rootlets and occasionally casuarina needles. Generally, nests are located on shrubs or low trees, living or dead, horizontal or upright forks in braches, spouts, hollow stumps or logs, behind loose bark or in a hollow in the top of a wooden fence post.	Considering the records within the locality and the presence of suitable habitat, this species has the **potential** to occur within the A2I Proposal site.	No

Scientific Name	Common Name	Status (BC Act)	Status (EPBC Act)	Bionet Records with 10km	Habitat Summary	Likelihood of Occurrence	Recorded During Field Surveys
Burhinus grallarius	Bush Stone-curlew	E	-	6	The Bush Stone-curlew is a ground bird that inhabits open forests and woodlands with a sparse grassy groundlayer and fallen timber. It is largely nocturnal, being especially active on moonlit nights. It feeds on insects and small vertebrates, such as frogs, lizards and snakes. It builds its nest on the ground in a scrape or small bare patch. Two eggs are laid in spring and early summer.	Considering the records within the locality and the presence of suitable habitat, this species has the **potential** to occur within the A2I Proposal site.	No
Botaurus poiciloptilus	Australasian Bittern	E	E	0	The Australasian Bittern is a large, stocky bird that favours permanent freshwater wetlands with tall, dense vegetation, particularly bullrushes (*Typha* spp.) and spikerushes (*Eleocharis* spp.) as habitat. It hides during the day amongst dense reeds or rushes and feed mainly at night on frogs, fish, yabbies, spiders, insects and snails. The bird's feeding platforms may be constructed over deeper water from reeds trampled by the bird; platforms are often littered with prey remains. Breeding occurs in summer from October to January; nests are built in secluded places in densely-vegetated wetlands on a platform of reeds; there are usually six olive-brown eggs to a clutch.	Considering the lack of records within the locality and the presence of suitable habitat, this species is **unlikely** to occur within the A2I Proposal site.	No
Calidris acuminata	Sharp-tailed Sandpiper	-	Mi	7	The Sharp-tailed Sandpiper is a migratory wader bird that occurs across Australia, including inland and coastal areas during its non-breeding season. In Australasia, the Sharp-tailed Sandpiper prefers muddy edges of shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh or other low vegetation. This includes lagoons, swamps, lakes and pools near the coast, and dams, waterholes, soaks, bore drains and bore swamps, saltpans and hypersaline saltlakes inland. They also occur in saltworks and sewage farms. They use flooded paddocks, sedgelands and other ephemeral wetlands, but leave when they dry. They use intertidal mudflats in sheltered bays, inlets, estuaries or seashores, and also swamps and creeks lined with mangroves. They tend to occupy coastal mudflats mainly after ephemeral terrestrial wetlands have dried out, moving back during the wet season. They may be attracted to mats of algae and water weed either floating or washed up around terrestrial wetlands, and coastal areas with much beachcast seaweed. Sometimes they occur on rocky shores and rarely on exposed reefs.	Considering the records within the locality and presence of suitable habitat, this species has **potential** to occur within the A2I Proposal site.	No
Callocephalon fimbriatum	Gang-gang Cockatoo	V	-	8	The Gang-gang Cockatoo is distributed from southern Victoria through south- and central-eastern New South Wales. In New South Wales, the Gang-gang Cockatoo is distributed from the south-east coast to the Hunter region, and inland to the Central Tablelands and south-west slopes. It occurs regularly in the Australian Capital Territory. It is rare at the extremities of its range, with isolated records known from as far north as Coffs Harbour and as far west as Mudgee (OEH 2019). In spring and summer, the species is generally found in tall mountain forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests. In autumn and winter, the species often moves to lower altitudes in drier more open eucalypt forests and woodlands, particularly box-gum and box-ironbark assemblages, or in dry forest in coastal areas and often found in urban areas. It may also occur in sub-alpine Snow Gum (*Eucalyptus pauciflora*) woodland and occasionally in temperate rainforests. The species favours old growth forest and woodland attributes for nesting and roosting. Nests are located in hollows that are 10 cm in diameter or larger and at least 9 m above the ground in eucalypts	Considering the records within the locality and the presence of suitable habitat, this species has the **potential** to occur within the A2I Proposal site.	No
Calyptorhynchus lathami	Glossy Black-Cockatoo	V	-	9	The glossy black-cockatoo lives in coastal woodlands and drier forest areas, open inland woodlands, or timbered watercourses where its main food source, the casuarina (she-oak) is common. The glossy black-cockatoo generally prefers to feed from the seeds of mature Allocasuarina trees and to a lesser extent Casuarina trees. The birds' presence is often indicated by a layer of cracked cones and fragments that have accumulated under favoured casuarina trees. The glossy black-cockatoo prefers to nest in the hollows of large, old eucalypt trees, alive or dead. The typical nest site will be around 3 to 30 metres above the ground, and the nest hollow is generally lined with decayed debris.	Considering the records within the locality and the presence of suitable habitat, this species has the **potential** to occur within the A2I Proposal site.	No

Scientific Name	Common Name	Status (BC Act)	Status (EPBC Act)	Bionet Records with 10km	Habitat Summary	Likelihood of Occurrence	Recorded During Field Surveys
Chthonicola sagittata	Speckled Warbler	V	-	10	The Speckled Warbler lives in a wide range of Eucalyptus dominated communities that have a grassy understorey, often on rocky ridges or in gullies. Typical habitat would include scattered native tussock grasses, a sparse shrub layer, some eucalypt regrowth and an open canopy. Large, relatively undisturbed remnants are required for the species to persist in an area. The diet consists of seeds and insects, with most foraging taking place on the ground around tussocks and under bushes and trees. Pairs are sedentary and occupy a breeding territory of about ten hectares, with a slightly larger home-range when not breeding. The rounded, domed, roughly built nest of dry grass and strips of bark is located in a slight hollow in the ground or at the base of a low dense plant, often among fallen branches and other litter. A side entrance allows the bird to walk directly inside. A clutch of 3-4 eggs is laid, between August and January, and both parents feed the nestlings. Speckled Warblers often join mixed species feeding flocks in winter, with other species such as Yellow-rumped, Buff-rumped, Brown and Striated Thornbills.	Considering the records within the locality (including nearby at Kappoka) and the presence of suitable habitat, this species has the **potential** to occur within the A2I Proposal site.	No
Circus assimilis	Spotted Harrier	V	-	11	The Spotted Harrier is a predatory bird that occurs throughout the Australian mainland, except in densly forested or wooded habitats of the coast, escarpment and ranges, and rarely in Tasmania. Individuals disperse widely in NSW and comprise a single population. Occurs in grassy open woodland including *Acacia* and mallee remnants, inland riparian woodland, grassland and shrub steppe. It is found most commonly in native grassland, but also occurs in agricultural land, foraging over open habitats including edges of inland wetlands. Builds a stick nest in a tree and lays eggs in spring (or sometimes autumn), with young remaining in the nest for several months. Preys on terrestrial mammals (eg bandicoots, bettongs, and rodents), birds and reptile, occasionally insects and rarely carrion.	Considering the records within the locality and the presence of suitable habitat, this species has the **potential** to occur within the A2I Proposal site.	No
Climacteris picumnus	Brown Treecreeper	V	-	2	The Brown Treecreeper (eastern subspecies) is found in eucalypt woodlands (including Box-Gum Woodland) and dry open forest of the inland slopes and plains inland of the Great Dividing Range; mainly inhabits woodlands dominated by stringybarks or other rough-barked eucalypts, usually with an open grassy understorey, sometimes with one or more shrub species; also found in mallee and River Red Gum (*Eucalyptus camaldulensis*) Forest bordering wetlands with an open understorey of acacias, saltbush, lignum, cumbungi and grasses; usually not found in woodlands with a dense shrub layer; fallen timber is an important habitat component for foraging; also recorded, though less commonly, in similar woodland habitats on the coastal ranges and plains. It is considered resident of areas where it occurs and is usually observed in pairs or small groups of 8 to 12 birds. It forages on trunks and branches of trees and among fallen timber. Hollows in standing dead or live trees and stumps are essential for nesting.	Considering the records within the locality and the presence of suitable habitat, this species has the **potential** to occur within the A2I Proposal site.	No
Daphoenositta chrysoptera	Varied Sittella	V	-	3	Varied Sittella inhabits eucalypt forests and woodlands, especially those containing rough-barked species and mature smooth-barked gums with dead branches, mallee and *Acacia* woodland. It feeds on arthropods gleaned from crevices in rough or decorticating bark, dead branches, standing dead trees and small branches and twigs in the tree canopy. It builds a cup-shaped nest of plant fibres and cobwebs in an upright tree fork high in the living tree canopy, and often re-uses the same fork or tree in successive years. Generation length is estimated to be 5 years. The Varied Sittella is sedentary and inhabits most of mainland Australia except the treeless deserts and open grasslands. Distribution in NSW is nearly continuous from the coast to the far west.	Considering the records within the locality and the presence of suitable habitat, this species has the **potential** to occur within the A2I Proposal site.	No
Epthianura albifrons	White-fronted Chat	V	-	5	The White-fronted Chat is found across the southern half of Australia, from southernmost Queensland to southern Tasmania, and across to Western Australia as far north as Carnarvon. Found mostly in temperate to arid climates and very rarely sub-tropical areas, it occupies foothills and lowlands up to 1000 m above sea level. In NSW, it occurs mostly in the southern half of the state, in damp open habitats along the coast, and near waterways in the western part of the state. Gregarious species, usually found foraging on bare or grassy ground in wetland areas, singly or in pairs. They are insectivorous, feeding mainly on flies and beetles caught from or close to the ground.	Considering the records within the locality and presence of suitable habitat, this species is **Potential** to occur within the A2I Proposal site.	No

Scientific Name	Common Name	Status (BC Act)	Status (EPBC Act)	Bionet Records with 10km	Habitat Summary	Likelihood of Occurrence	Recorded During Field Surveys
Falco hypoleucos	Grey Falcon	E	-	6	The Grey Falcon is sparsely distributed in NSW, chiefly throughout the Murray-Darling Basin, with the occasional vagrant east of the Great Dividing Range. Usually restricted to shrubland, grassland and wooded watercourses of arid and semi-arid regions, although it is occasionally found in open woodlands near the coast. Also occurs near wetlands where surface water attracts prey. Preys primarily on birds, especially parrots and pigeons, using high-speed chases and stoops; reptiles and mammals are also taken.	Considering the records within the locality and the presence of suitable habitat, this species has the **potential** to occur within the A2I Proposal site.	No
Falco subniger	Black Falcon	V	-	7	The Black Falcon is a bird of prey which is widely, but sparsely, distributed in New South Wales, mostly occurring in inland regions. In New South Wales there is assumed to be a single population that is continuous with a broader continental population, given that falcons are highly mobile, commonly travelling hundreds of kilometres. The Black Falcon occurs as solitary individuals, in pairs, or in family groups of parents and offspring.	Considering the records within the locality and the presence of suitable habitat, this species has the **potential** to occur within the A2I Proposal site.	No
Gallinago hardwickii	Latham's Snipe	V	-	8	Latham's Snipe is a wader and the largest snipe in Australia. It is a non-breeding visitor to south-eastern Australia and an occasional visitor to Norfolk Island, Lord Howe Island and possibly to Macquarie Island. It usually occurs singly or in small, loose groups of less than a dozen birds. Migrating flocks may contain up to 200 birds when they arrive in Australia. In Australia, Latham's Snipe occurs in permanent and ephemeral wetlands up to 2000 m above sea-level. They usually inhabit open, freshwater wetlands with low, dense vegetation (e.g. swamps, flooded grasslands or heathlands, around bogs and other water bodies). However, they can also occur in habitats with saline or brackish water, in modified or artificial habitats, and in habitats located close to humans or human activity. Other freshwater habitats that can be used by the species include bogs, waterholes, billabongs, lagoons, lakes, creek or river margins, river pools and floodplains. Latham's Snipe occurs in temperate and tropical regions of Australia. Its altitudinal range extends from sea-level (i.e. the coast) or possibly below. There are records from near Lake Eyre.	Considering the records within the locality and presence of suitable habitat, this species is **potential** to occur within the A2I Proposal site.	No
Glossopsitta pusilla	Little lorikeet	V	-	9	The Little Lorikeet is a small parrot distributed widely across the coast and Great Divide regions. The species forages primarily in the canopy of open Eucalyptus forests and woodland. It also forages in *Angophora*, *Melaeuca* and other species including paddock, roadside remnants and urban trees. It feeds mainly on nectar and pollen, occasionally on native fruits.	Considering the records within the locality and the presence of preferred habitat, this species is **likely** to occur within the A2I Proposal site.	No
Grantiella picta	Painted Honeyeater	V	V	2	The Painted Honeyeater inhabits Boree/ Weeping Myall (*Acacia pendula*), Brigalow (*A. harpophylla*) and Box-Gum Woodlands and Box-Ironbark Forests. A specialist feeder on the fruits of mistletoes growing on woodland eucalypts and acacias. Prefers mistletoes of the genus *Amyema*. Insects and nectar from mistletoe or eucalypts are occasionally eaten. Nest from spring to autumn in a small, delicate nest hanging within the outer canopy of drooping eucalypts, she-oak, paperbark or mistletoe branches.	Considering the records within the locality and the presence of suitable habitat, this species has the **potential** to occur within the A2I Proposal site.	No
Grus rubicunda	Brolga	V	-	1	The Brolga was formerly found across Australia, except for the south-east corner, Tasmania and the south-western third of the country. It is still abundant in the northern tropics, but very sparse across the southern part of its range. Though Brolgas often feed in dry grassland or ploughed paddocks or even desert claypans, they are dependent on wetlands too, especially shallow swamps, where they will forage with their head entirely submerged. They feed using their heavy straight bill as a 'crowbar' to probe the ground or turn it over, primarily on sedge roots and tubers. They will also take large insects, crustaceans, molluscs and frogs.	Considering the records within the locality and the presence of suitable habitat, this species has the **potential** to occur within the A2I Proposal site.	No
Haliaeetus leucogaster	White-bellied Sea-Eagle	V	-	2	The White-bellied Sea-eagle is a large eagle that occurs around the Australian coast, including most of NSW and its oceanic waters. The species may be solitary, or live in pairs or small family groups consisting of a pair of adults and dependent young. Habitats are characterised by the presence of large areas of open water including larger rivers, swamps, lakes, and the sea. Occurs at sites near the sea or sea-shore, such as around bays and inlets, beaches, reefs, lagoons, estuaries and mangroves; and at, or in the vicinity of freshwater swamps, lakes, reservoirs, billabongs and saltmarsh. Terrestrial habitats include coastal dunes, tidal flats, grassland, heathland, woodland, and forest (including rainforest). Breeding habitat consists of mature tall open forest, open forest, tall woodland, and swamp sclerophyll forest close to foraging habitat. Nest trees are typically large emergent eucalypts and often have emergent dead branches or large dead trees nearby which are used as 'guard roosts'. Nests are large structures built from sticks and lined with leaves or grass. Feed mainly on fish and freshwater turtles, but also waterbirds, reptiles, mammals and carrion	Considering the records within the locality and the presence of suitable habitat, this species has the **potential** to occur within the A2I Proposal site.	No

Scientific Name	Common Name	Status (BC Act)	Status (EPBC Act)	Bionet Records with 10km	Habitat Summary	Likelihood of Occurrence	Recorded During Field Surveys
Hieraaetus morphnoide	Little Eagle	V	-	3	The Little Eagle is a forest bird found throughout the Australian mainland excepting the most densely forested parts of the Dividing Range escarpment. It occurs as a single population throughout NSW. Occupies open eucalypt forest, woodland or open woodland. Sheoak or *Acacia* woodlands and riparian woodlands of interior NSW are also used. It nests in tall living trees within a remnant patch, where pairs build a large stick nest in winter. Females lay two or three eggs during spring, and young fledge in early summer. The species preys on birds, reptiles and mammals, occasionally adding large insects and carrion (OEH 2019).	Considering the records within the locality (including nearby at Kapooka) and the presence of suitable habitat, this species has the **potential** to occur within the A2I Proposal site.	No
Hirundapus caudacutus	White-throated Needletail	-	V, Mi	4	The White-throated Needletail is a large swift widespread in eastern and south-eastern Australia during its non-breeding season. The species breeds in Asia. In eastern Australia, it is recorded in all coastal regions of Queensland and NSW, extending inland to the western slopes of the Great Divide and occasionally onto the adjacent inland plains. In Australia, the White-throated Needletail is almost exclusively aerial, from heights of less than 1 m up to more than 1000 m above the ground. In Australia, White-throated Needletails almost always forage aerially, at heights up to 'cloud level', above a wide variety of habitats ranging from heavily treed forests to open habitats, such as farmland, heathland or mudflats.	Considering the records within the locality and the presence of preferred habitat, this species is **likely** to occur within the A2I Proposal site	No
Lathamus discolor	Swift Parrot	E	CE	5	The Swift Parrot breeds in Tasmania and migrates to south-east Australia during its non-breeding stage (March to October). In the mainland, the species occurs in areas where eucalypts are flowering profusely or where there are abundant lerp infestations. Favoured feed trees include Swamp Mahogany (*Eucalyptus robusta*), Spotted Gum (*Corymbia maculata*), Red Bloodwood (*C. gummifera*), Mugga Ironbark (*E. sideroxylon*) and White Box (*E. albens*).	Considering the records within the locality c (including nearby at Kapooka) and the presence of suitable habitat, this species has the **potential** to occur within the A2I Proposal site.	No
Lophochroa leadbeateri	Major Mitchell's Cockatoo	V	-	6	The Major Mitchell's Cockatoo is found across the arid and semi-arid inland, from south-western Queensland south to north-west Victoria, through most of South Australia, north into the south-west Northern Territory and across to the west coast between Shark Bay and about Jurien. In NSW it is found regularly as far east as about Bourke and Griffith, and sporadically further east than that. The species inhabits a wide range of treed and treeless inland habitats, always within easy reach of water. It feeds mostly on the ground, especially on the seeds of native and exotic melons and on the seeds of species of saltbush, wattles and cypress pines. The species is normally found in pairs or small groups, though flocks of hundreds may be found where food is abundant. It nests in tree hollows and nesting occurs throughout the second half of the year; nests are at least 1 km apart, with no more than one pair every 30 square kilometres	Considering the records within the locality (including nearby at Kapooka) and the presence of preferred habitat, this species is **likely** to occur within the A2I Proposal site.	No
Melanodryas cucullata	Hooded Robin (south-eastern form)	V	-	7	The Hooded Robin is a large Australian robin with widespread distribution. It is found across Australia, except for the driest deserts and the wetter coastal areas - northern and eastern coastal Queensland and Tasmania. The south-eastern form (subspecies *cucullata*) is found from Brisbane to Adelaide and throughout much of inland NSW, with the exception of the extreme north-west, where it is replaced by subspecies *picata*. Two other subspecies occur outside NSW. Prefers lightly wooded country, usually open eucalypt woodland, acacia scrub and mallee, often in or near clearings or open areas. Requires structurally diverse habitats featuring mature eucalypts, saplings, some small shrubs and a ground layer of moderately tall native grasses. Often perches on low dead stumps and fallen timber or on low-hanging branches, using a perch-and-pounce method of hunting insect prey. Territories range from around 10 ha during the breeding season, to 30 ha in the non-breeding season.	Considering the records within the locality and the presence of suitable habitat, this species has the **potential** to occur within the A2I Proposal site.	No
Melithreptus gularis	Black-chinned Honeyeater (eastern subspecies)	V	-	8	In NSW, the Black-chinned Honeyeater is widespread, with records from the tablelands and western slopes of the Great Dividing Range to the north-west and central-west plains and the Riverina. It is rarely recorded east of the Great Dividing Range, although regularly observed from the Richmond and Clarence River areas. It has also been recorded at a few scattered sites in the Hunter, Central Coast and Illawarra regions, though it is very rare in the latter.	Considering the records within the locality and the presence of preferred habitat, this species is **likely** to occur within the A2I Proposal site.	No

Scientific Name	Common Name	Status (BC Act)	Status (EPBC Act)	Bionet Records with 10km	Habitat Summary	Likelihood of Occurrence	Recorded During Field Surveys
					Occupies mostly upper levels of drier open forests or woodlands dominated by box and ironbark eucalypts, especially Mugga Ironbark (*Eucalyptus sideroxylon*), White Box (*E. albens*), Inland Grey Box (E. microcarpa), Yellow Box (*E. melliodora*), Blakely's Red Gum (*E. blakelyi*) and Forest Red Gum (*E. tereticornis*). Also inhabits open forests of smooth-barked gums, stringybarks, ironbarks, river sheoaks (nesting habitat) and tea-trees. It is a gregarious species usually seen in pairs and small groups of up to 12 birds. Feeding territories are large making the species locally nomadic. Recent studies have found that the Black-chinned Honeyeater tends to occur in the largest woodland patches in the landscape as birds forage over large home ranges of at least 5 hectares. Moves quickly from tree to tree, foraging rapidly along outer twigs, underside of branches and trunks, probing for insects. Nectar is taken from flowers, and honeydew is gleaned from foliage. Breeds solitarily or co-operatively, with up to five or six adults, from June to December.		
Neophema pulchella	Turquoise Parrot	V	-	3	The Turquoise Parrot's range extends from southern Queensland through to northern Victoria, from the coastal plains to the western slopes of the Great Dividing Range (OEH 2019). The Turquoise Parrot lives on the edges of eucalypt woodland adjoining clearings, timbered ridges and creeks in farmland. Usually seen in pairs or small, possibly family, groups and have also been reported in flocks of up to thirty individuals. It prefers to feed in the shade of a tree and spends most of the day on the ground searching for the seeds or grasses and herbaceous plants, or browsing on vegetable matter. Forages quietly and may be quite tolerant of disturbance. However, if flushed it will fly to a nearby tree and then return to the ground to browse as soon as the danger has passed. It nests in tree hollows, logs or posts, from August to December. It lays four or five white, rounded eggs on a nest of decayed wood dust (OEH 2019).	Considering the records within the locality and the presence of suitable habitat, this species has the potential to occur within the A2I Proposal site.	No
Ninox connivens	Barking Owl	V	-	1	The Barking Owl is found throughout continental Australia except for the central arid regions. It inhabits woodland and open forest, including fragmented remnants and partly cleared farmland. It is flexible in its habitat use, and hunting can extend in to closed forest and more open areas. Sometimes able to successfully breed along timbered watercourses in heavily cleared habitats (e.g. western NSW) due to the higher density of prey on these fertile riparian soils. Roost in shaded portions of tree canopies, including tall midstorey trees with dense foliage such as *Acacia* and *Casuarina* species. During nesting season, the male perches in a nearby tree overlooking the hollow entrance. Preferentially hunts small arboreal mammals such as Squirrel Gliders and Common Ringtail Possums, but when loss of tree hollows decreases these prey populations the owl becomes more reliant on birds, invertebrates and terrestrial mammals such as rodents and rabbits. Can catch bats and moths on the wing, but typically hunts by sallying from a tall perch. Requires very large permanent territories in most habitats due to sparse prey densities. Monogamous pairs hunt over as much as 6000 hectares, with 2000 hectares being more typical in NSW habitats. The species has not been recorded at the site, the nearest records are located at approximately 6.5 km north-west from the site where it was recorded in1985 and 1990.	Considering the records within the locality and the presence of suitable habitat, this species has the **potential** to occur within the A2I Proposal site.	No
Oxyura australis	Blue-billed Duck	V	-	32	The Blue-billed Duck is endemic to south-eastern and south-western Australia. It is widespread in NSW, but most common in the southern Murray-Darling Basin area. The Blue-billed Duck prefers deep water in large permanent wetlands and swamps with dense aquatic vegetation. The species is completely aquatic, swimming low in the water along the edge of dense cover. It will fly if disturbed, but prefers to dive if approached. Blue-billed Ducks will feed by day far from the shore, particularly if dense cover is available in the central parts of the wetland. They feed on the bottom of swamps eating seeds, buds, stems, leaves, fruit and small aquatic insects such as the larvae of midges, caddisflies and dragonflies. Blue-billed Ducks are partly migratory, with short-distance movements between breeding swamps and overwintering lakes with some long-distance dispersal to breed during spring and early summer.	Considering the records within the locality but the lack of suitable habitat, this species is **unlikely** to occur within the A2I Proposal site.	No

Scientific Name	Common Name	Status (BC Act)	Status (EPBC Act)	Bionet Records with 10km	Habitat Summary	Likelihood of Occurrence	Recorded During Field Surveys
Numenius madagascariensis	Far Eastern Curlew	-	CE	0	The Eastern Curlew is a wader bird with primarily coastal distribution in Australia. In NSW the species occurs across the entire coast but is mainly found in estuaries such as the Hunter River, Port Stephens, Clarence River, Richmond River and ICOLLs of the south coast. It generally occupies coastal lakes, inlets, bays and estuarine habitats, and in New South Wales is mainly found in intertidal mudflats and sometimes saltmarsh of sheltered coasts. Occasionally, the species occurs on ocean beaches (often near estuaries), and coral reefs, rock platforms, or rocky islets. It forages in or at the edge of shallow water, occasionally on exposed algal mats or waterweed, or on banks of beach-cast seagrass or seaweed. It roosts on sandy spits and islets, especially on dry beach sand near the high-water mark, and among coastal vegetation including low saltmarsh or mangroves. May also roost on wooden oyster leases or other similar structures. The Eastern Curlew is carnivorous, mainly eating crustaceans (including crabs, shrimps and prawns), small molluscs, as well as some insects.	Considering the lack of records within the locality and lack of suitable habitat, this species is **unlikely** to occur within the A2I Proposal site.	No
Pedionomus forguatus	Plains-wanderer	E	CE	0	The Plains-wanderer is a small quail-like ground-dwelling grassland bird with a very patchy distribution in NSW. The species has a stronghold in the western Riverina bounded by Hay and Narrandera on the Murrunbidgee River in the north, the Cobb Highway in the west, the Billabong Creek in the south, and Urana in the east. Suitable habitat for the species decreases during very wet or dry years when grasslands become too dense or are grazed too bare for Plains-wanderers. Plains-wanderers live in semi-arid, lowland native grasslands that typically occur on hard red-brown soils. These grasslands support a high diversity of plant species, including a number of state and nationally threatened species. Habitat structure appears to play a more important role than plant species composition. Preferred habitat of the Plains-wanderer typically comprises 50% bare ground, 10% fallen litter, and 40% herbs, forbs and grasses. Most of the grassland habitat of the Plains-wanderer is <5 cm high, but some vegetation up to a maximum of 30 cm is important for concealment, as long as grass tussocks are spaced 10-20 cm apart. During prolonged drought, the denudation of preferred habitats may force birds into marginal denser and taller grassland habitats that become temporarily suitable. The average home range of a single bird is about 12 ha. Breeding pairs have overlapping home ranges that total approximately 18 ha.	Considering the lack of records within the locality and presence of suitable habitat, this species is **unlikely** to occur within the A2I Proposal site.	No
Pachycephala inornata	Gilbert's Whistler	V	-	3	The Gilbert's Whistler is sparsely distributed over much of the arid and semi-arid zone of inland southern Australia, from the western slopes of NSW to the Western Australian wheatbelt. The species was probably once distributed almost continuously across the woodlands and mallee of southern NSW, but this range has been greatly reduced, chiefly by clearance of habitat. The Gilbert's Whistler forages on or near the ground in shrub thickets and in tops of small trees. Its food consists mainly of spiders and insects such as caterpillars, beetles and ants, and occasionally, seeds and fruits are eaten.	Considering the records within the locality and the presence of suitable habitat, this species has the **potential** to occur within the A2I Proposal site.	No
Leiopoa ocellata	Malleefowl	E	V	0	The Mallefowl is a large ground-dwelling bird. Predominantly inhabit mallee communities, preferring the tall, dense and floristically-rich mallee found in higher rainfall (300 - 450 mm mean annual rainfall) areas. Utilises mallee with a spinifex understorey, but usually at lower densities than in areas with a shrub understorey. Less frequently found in other eucalypt woodlands, such as Inland Grey Box, Ironbark or Bimble Box Woodlands with thick understorey, or in other woodlands such dominated by Mulga or native Cypress Pine species. Prefers areas of light sandy to sandy loam soils and habitats with a dense but discontinuous canopy and dense and diverse shrub and herb layers.	Considering the lack of records within the locality and the presence of suitable habitat, this species is **unlikely** to occur within the A2I Proposal site.	No
Petroica boodang	Scarlet Robin	V	-	4	The Scarlet Robin lives in dry eucalypt forests and woodlands. The understorey is usually open and grassy with few scattered shrubs. This species lives in both mature and regrowth vegetation. It occasionally occurs in mallee or wet forest communities, or in wetlands and tea-tree swamps. Its habitat usually contains abundant logs and fallen timber: these are important components of its habitat. It breeds on ridges, hills and foothills of the western slopes, the Great Dividing Range and eastern coastal regions; this species is occasionally found up to 1000 metres in altitude. It breeds between July and January. In autumn and winter many Scarlet Robins live in open grassy woodlands, and grasslands or grazed paddocks with scattered trees. It builds nests in the fork of branches, usually more than 2 metres above the ground.	Considering the records within the locality (including nearby at Kappoka) and the presence of suitable habitat, this species has the **potential** to occur within the A2I Proposal site.	No

Scientific Name	Common Name	Status (BC Act)	Status (EPBC Act)	Bionet Records with 10km	Habitat Summary	Likelihood of Occurrence	Recorded During Field Surveys
Petroica phoenicea	Flame Robin	V	-	5	The Flame Robin is a small insectivorous robin endemic to south eastern Australia. In NSW, it breeds in upland areas and in winter, many birds move to the inland slopes and plains. It is likely that there are two separate populations in NSW, one in the Northern Tablelands, and another ranging from the Central to Southern Tablelands. Breeds in upland tall moist eucalypt forests and woodlands, often on ridges and slopes. Prefers clearings or areas with open understoreys. The groundlayer of the breeding habitat is dominated by native grasses and the shrub layer may be either sparse or dense. Occasionally occurs in temperate rainforest, and also in herbfields, heathlands, shrublands and sedgelands at high altitudes. In winter, birds migrate to drier more open habitats in the lowlands (i.e. valleys below the ranges, and to the western slopes and plains). Often occurs in recently burnt areas; however, habitat becomes unsuitable as vegetation closes up following regeneration. In winter lives in dry forests, open woodlands and in pastures and native grasslands, with or without scattered trees. In winter, occasionally seen in heathland or other shrublands in coastal areas. Birds forage from low perches, from which they sally or pounce onto small invertebrates which they take from the ground or off tree trunks, logs and other coarse woody debris.	Considering the records within the locality (including nearby at Kappoka) and the presence of suitable habitat, this species has the **potential** to occur within the A2I Proposal site.	No
Plegadis falcinellus	Glossy Ibis	-	Mi	6	The Glossy Ibis is the smallest ibis known in Australia, where it is generally located east of the Kimberley in Western Australia and Eyre Peninsula in South Australia. The species is also known to be patchily distributed in the rest of Western Australia. The species is rare or a vagrant in Tasmania. The Glossy Ibis' 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. The species is occasionally found in coastal locations such as estuaries, deltas, saltmarshes and coastal lagoons.	Considering the records within the locality and the presence of suitable habitat, this species has the **potential** to occur within the A2I Proposal site.	No
Polytelis swainsonii	Superb Parrot	V	V	7	The Superb Parrot is found throughout eastern inland NSW. On the South-western Slopes their core breeding area is roughly bounded by Cowra and Yass in the east, and Grenfell, Cootamundra and Coolac in the west. Birds breeding in this region are mainly absent during winter, when they migrate north to the region of the upper Namoi and Gwydir Rivers. The other main breeding sites are in the Riverina along the corridors of the Murray, Edward and Murrumbidgee Rivers where birds are present all year round. The Superb Parrot inhabit Box-Gum, Box-Cypress-pine and Boree Woodlands and River Red Gum Forest. In the Riverina the birds nest in the hollows of large trees (dead or alive) mainly in tall riparian River Red Gum Forest or Woodland. On the South West Slopes nest trees can be in open Box-Gum Woodland or isolated paddock trees. Species known to be used are Blakely's Red Gum, Yellow Box, Apple Box and Red Box. Nest in small colonies, often with more than one nest in a single tree. Breed between September and January. May forage up to 10 km from nesting sites, primarily in grassy box woodland.	This species was identified during the August 2019 Field Surveys – **Known**.	Yes
Pomatostomus temporalis	Grey-crowned Babbler (eastern subspecies)	V	-	8	The Grey-crowned Babbler inhabits open Box-Gum Woodlands on the slopes, and Box-Cypress-pine and open Box Woodlands on alluvial plains. Woodlands on fertile soils in coastal regions. Flight is laborious so birds prefer to hop to the top of a tree and glide down to the next one. Birds are generally unable to cross large open areas. It lives in family groups that consist of a breeding pair and young from previous breeding seasons. A group may consist of up to fifteen birds. All members of the family group remain close to each other when foraging. It is insectivorous and it forages on the trunks and branches of eucalypts and other woodland trees or on the ground, digging and probing amongst litter and tussock grasses. It builds nests that are used as dormitory and roosting and uses them all year round. It breeds between July and February. Territory ranges from one to 50 hectares (usually ten hectares) and are defended all year. Grey-crowned Babblers are communal breeders that form a family group, in which offspring from the previous season and other unrelated birds help to raise the current's year's brood. In some populations, breeding success is related to the number of helpers. Young birds stay with the family group for at least one year after fledging and may remain for two or more years acting as non-breeding helpers. As breeding spaces become available in the population, some helpers may disperse to establish their own breeding group. Population viability studies in Victoria suggests that a viable population is likely to contain more than ten family groups, while populations with less than ten family groups are likely to have high rate of extinction.	This species has been previously recorded within the rail corridor at Kapooka within characteristic nests occurring within 100m of the Proposal site (pers. Comm. David Sharpe). **Known**	No

Scientific Name	Common Name	Status (BC Act)	Status (EPBC Act)	Bionet Records with 10km	Habitat Summary	Likelihood of Occurrence	Recorded During Field Surveys
Rostratula australis	Australian Painted-snipe	E	E	0	The Australian Painted Snipe is small freshwater wader. Prefers fringes of swamps, dams and nearby marshy areas where there is a cover of grasses, lignum, low scrub or open timber. Nests on the ground amongst tall vegetation, such as grasses, tussocks or reeds. The nest consists of a scrape in the ground, lined with grasses and leaves. Breeding is often in response to local conditions; generally occurs from September to December. Incubation and care of young is all undertaken by the male only. Forages nocturnally on mud-flats and in shallow water. Feeds on worms, molluscs, insects and some plant-matter.	Considering the lack of records within the locality and lack of suitable habitat, this species is **unlikely** to occur within the A2I Proposal site.	No
Stagonopleura guttata	Diamond Firetail	V	-	9	Diamond Firetails are found in open grassy woodland, heath and farmland or grassland with scattered trees. Diamond Firetails feed on the ground and generally eat ripe or partially ripe seeds and can be seen hopping around on the ground. They occasionally eat insects and their larvae. The Diamond Firetail builds a nest with green grass blades and stems and lines it with fine grasses and feathers. The nest can be found in trees and shrubs with dense foliage and has sometimes been known to build in the base of a hawk's nest.	Considering the records within the locality (including nearby at Kappoka) and the presence of preferred habitat, this species is **likely** to occur within the A2I Proposal site.	No
Monarcha melanopsis	Black-faced Monarch	-	Mi	0	The Black-faced Monarch is an insectivorous bird widespread in eastern Australia. In New South Wales and the Australian Capital Territory, the species occurs around the eastern slopes and tablelands of the Great Divide, inland to Coutts Crossing, Armidale, Widden Valley, Wollemi National Park, Wombeyan Caves and Canberra. It is rarely recorded farther inland (e.g. Munghorn Gap Nature Reserve, and Maules Creek, 50 km south-east of Narrabri. The Black-faced Monarch mainly occurs in rainforest ecosystems, including semi-deciduous vine-thickets, complex notophyll vine-forest, tropical (mesophyll) rainforest, subtropical (notophyll) rainforest, mesophyll (broadleaf) thicket/shrubland, warm temperate rainforest, dry (monsoon) rainforest and (occasionally) cool temperate rainforest. The species also occurs in selectively logged and 20—30 years old regrowth rainforest. It is also sometimes found in nearby open eucalypt forests (mainly wet sclerophyll forests), especially in gullies with a dense, shrubby understorey as well as in dry sclerophyll forests and woodlands, often with a patchy understorey. The species especially occurs in 'marginal' habitats during winter or during passage (migration).	Considering the lack of records within the locality and lack of suitable habitat, this species is **unlikely** to occur within the A2I Proposal site.	No
Motacila flava	Yellow Wagtail	-	Mi	0	The Yellow Wagtail is a non-breeding bird in Australia. It is insectivorous and inhabits open country near water, such as meadows. Its habitat is listed as consist of wetlands (inland), artificial/aquatic and marine, grassland and shrubland. This species occupies a range of damp or wet habitats with low vegetation, from damp meadows, marshes, waterside pastures, sewage farms and bogs to damp steppe and grassy tundra. In the north of its range it is also found in large forest clearings. It feeds on a wide variety of terrestrial and aquatic invertebrates as well as some plant material, particularly seeds. The species is almost wholly migratory with European populations wintering in sub-Saharan Africa, central and eastern populations mainly migrate to South Asia with some moving to Africa. The species is resident in Egypt.	Considering the lack of records within the locality and presence of suitable habitat, this species is **unlikely** to occur within the A2I Proposal site.	No
Rhipidura rufifrons	Rufous Fantail	-	Mi	0	The Rufous Fantail occurs in coastal and near coastal districts of northern and eastern Australia. *Rhipidura rufifrons* has breeding populations occurring from about the South Australia-Victoria border, through south and central Victoria, on and east of the Great Divide in New South Wales (NSW), and north to about the NSW-Queensland border; and *R. r. intermedia* has breeding populations occurring on and east of the Great Divide, from about the NSW-Queensland border, north to the Cairns-Atherton region, Queensland. In east and south-east Australia, the Rufous Fantail mainly inhabits wet sclerophyll forests, often in gullies dominated by eucalypts such as Tallow-wood (*Eucalyptus microcorys*), Mountain Grey Gum (*E. cypellocarpa*), Narrow-leaved Peppermint (*E. radiata*), Mountain Ash (*E. regnans*), Alpine Ash (*E. delegatensis*), Blackbutt (*E. pilularis*) or Red Mahogany (*E. resinifera*); usually with a dense shrubby understorey often including ferns. They also occur in subtropical and temperate rainforests; for example near Bega in south-east NSW, where they are recorded in temperate Lilly Pilly (*Acmena smithi*) rainforest, with Grey Myrtle (*Backhousia myrtifolia*), Sassafras (*Doryphora sassafras*) and Sweet Pittosporum (*Pittosporum undulatum*) subdominants. They occasionally occur in secondary regrowth, following logging or disturbance in forests or rainforests. When on passage, they are sometimes recorded in drier sclerophyll forests and woodlands, including Spotted Gum (*Eucalyptus maculata*), Yellow Box (*E. melliodora*), ironbarks or stringybarks, often with a shrubby or heath understorey. They are also recorded from parks and gardens when on passage.	Considering the lack of records within the locality and presence of suitable habitat, this species is **unlikely** to occur within the A2I Proposal site.	No

Scientific Name	Common Name	Status (BC Act)	Status (EPBC Act)	Bionet Records with 10km	Habitat Summary	Likelihood of Occurrence	Recorded During Field Surveys
Actitis hypoleucos	Common Sandpiper	-	Mi	0	The Common Sandpiper is a migratory bird inhabiting coastal habitats and sometimes freshwater wetlands. It also occurs in non-tidal swamps, streams, lakes and lagoons on the coast and sometimes inland. In Australia, the Common Sandpiper is a non-breeding visitor. It is found along all coastlines of Australia and in many areas inland, the Common Sandpiper is widespread in small numbers. The population when in Australia is concentrated in northern and western Australia. In NSW, there is no areas of national importance with regards to maximum counts of the species.	Considering the lack of records within the locality and presence of suitable habitat, this species is **unlikely** to occur within the A2I Proposal site.	No
Calidris ferrunginea	Curlew Sandpiper	E	CE, Mi	0	The Curlew Sandpiper is a small migratory shorebird that visits Australia during its non-breeding season. The species is present in Australia between August and November. The Curlew Sandpiper is distributed around most of the Australian coastline (including Tasmania). It occurs along the entire coast of NSW, particularly in the Hunter Estuary, and sometimes in freshwater wetlands in the Murray-Darling Basin. Inland records are probably mainly of birds pausing for a few days during migration. It generally occupies littoral and estuarine habitats, and in New South Wales is mainly found in intertidal mudflats of sheltered coasts. It also occurs in non-tidal swamps, lakes and lagoons on the coast and sometimes inland. It forages in or at the edge of shallow water, occasionally on exposed algal mats or waterweed, or on banks of beach-cast seagrass or seaweed. It roosts on shingle, shell or sand beaches; spits or islets on the coast or in wetlands; or sometimes in salt marsh, among beach-cast seaweed, or on rocky shores. Curlew Sandpipers are omnivorous, feeding on worms, molluscs, crustaceans, insects and some seeds.	Considering the lack of records within the locality and lack of suitable habitat, this species is **unlikely** to occur within the A2I Proposal site.	No
Stictonetta naevosa	Freckled Duck	V	-	4	The Freckled Duck is a water bird found primarily in south-eastern and south-western Australia, occurring as a vagrant elsewhere. Prefer permanent freshwater swamps and creeks with heavy growth of Cumbungi, Lignum or Tea-tree. During drier times they move from ephemeral breeding swamps to more permanent waters such as lakes, reservoirs, farm dams and sewage ponds. Generally rest in dense cover during the day, usually in deep water. Feed at dawn and dusk and at night on algae, seeds and vegetative parts of aquatic grasses and sedges and small invertebrates.	Considering the records within the locality and the presence of suitable habitat, this species has the **potential** to occur within the A2I Proposal site.	No
Fish							
Galaxias rostratus	Flathead Galaxias	E (FM Act)	CE	0	Flathead Galaxias are found in still or slow moving water bodies such as wetlands and lowland streams. The species has been recorded forming shoals. They have been associated with a range of habitats including rock and sandy bottoms and aquatic vegetation. Flathead Galaxias spawn in spring and lay slightly adhesive demersal eggs. Flathead Galaxias, also known as Murray jollytail are a small native fish that are known from the southern part of the Murray Darling Basin. They have been recorded in the Macquarie, Lachlan, Murrumbidgee and Murray Rivers in NSW. They have not been recorded and are considered locally extinct in the lower Murray, Murrumbidgee, Macquarie and Lachlan Rivers. The species is now only known from the upper Murray River near Tintaldra and wetland areas near Howlong.	Considering the species is within the distribution as specified by NSW Department of Primary Industries and that the suitable habitat exists, this species has the **potential** to occur within the A2I Proposal site (Murray and Murrumbidgee Rivers).	No
Maccullochella peelii	Murray Cod	-	V	0	The Murray Cod is a large freshwater fish endemic to the Murray-Darling Basin, from south east Queensland, through NSW, into Vitoria and South Australia. The species can grow to 100 kg in the wild. The species requires permanent streams and is highly dependent on instream woody structures for habitat, is highly territorial and very aggressive.	Considering the species is not within the distribution as specified by NSW Department of Primary Industries and that the suitable habitat does not exists, this species is **unlikely** to occur within the A2I Proposal site.	No
Macquaria australasica	Macquarie Perch	E (FM Act)	E	0	Macquarie Perch are found in the Murray-Darling Basin (particularly upstream reaches) of the Lachlan, Murrumbidgee and Murray rivers, and parts of south-eastern coastal NSW, including the Hawkesbury/Nepean and Shoalhaven catchments.	Considering the species is within the distribution as specified by NSW Department of Primary Industries and that the suitable habitat exists, this species has the **potential** to occur within the A2I Proposal site.	No

Scientific Name	Common Name	Status (BC Act)	Status (EPBC Act)	Bionet Records with 10km	Habitat Summary	Likelihood of Occurrence	Recorded During Field Surveys
Flora							
Amphibromus fluitans	Floating Swamp Wallaby-grass	V	V	23	The Floating Swamp Wallaby-grass is a perennial grass that is virtually aquatic, often with only the flower heads above the water. It grows mostly in permanent swamps. The species needs wetlands which are at least moderately fertile and which have some bare ground, conditions which are produced by seasonally-fluctuating water levels. Habitats in south-western NSW include swamp margins in mud, dam and tank beds in hard clay and in semi-dry mud of lagoons with *Potamogeton* and *Chamaeraphis* species. Flowering time is from spring to autumn or November to March. Disturbance regimes are not known, although the species requires periodic flooding of its habitat to maintain wet conditions. It has been observed covering several hectares in area. The species is also recorded as occasional too common in populations.	Considering the records within the locality and the presence of suitable habitat, this species has the **potential** to occur within the A2I Proposal site.	No
Austrostipa wakoolica	A Spear-grass	E	E	0	*Austrostipa wakoolica* is a densely-tufted perennial grass confined to the floodplains of the Murray River tributaries of central-western and south-western NSW, with localities including Manna State Forest, Matong, Lake Tooim, Merran Creek, Tulla, Cunninyeuk and Mairjimmy State Forest (now part of South West Woodland Nature Reserve). Grows on floodplains of the Murray River tributaries, in open woodland on grey, silty clay or sandy loam soils; habitats include the edges of a lignum swamp with box and mallee; creek banks in grey, silty clay; mallee and lignum sandy-loam flat; open Cypress Pine forest on low sandy range; and a low, rocky rise. Associated species include *Callitris glaucophylla, Eucalyptus microcarpa, E. populnea, Austrostipa eremophila, A. drummondii, Austrodanthonia eriantha* and *Einadia nutans*.	Considering the records within the locality and the presence of suitable habitat, this species has the **potential** to occur within the A2I Proposal site.	No
Brachyscome muelleroides	Mueller Daisy	V	V	0	The Claypan Daisy is an annual herb that produces white flowers from September to November. It occurs in the Wagga Wagga, Narranderra, Tocumwal and Walbundrie areas. Also occurs in north-central Victoria (only along the Murray from Tocumwal to the Ovens River). Grows in damp areas on the margins of claypans in moist grassland with *Pycnosorus globosus*, *Agrostis avenacea* and *Austrodanthonia duttoniana*. Also recorded from the margins of lagoons in mud or water, and in association with *Calotis anthemoides*. Victorian collections have generally come from open positions on the Murray River floodplain, swampy River Red Gum (*Eucalyptus camaldulensis*) Forest and damp depressions.	Considering the records within the locality and the presence of suitable habitat, this species has the **potential** to occur within the A2I Proposal site.	No
Caladenia arenaria	Sand-hill Spider Orchid	E	E	0	The Sand-hill Spider-orchid flowers between September and November. The Sand-hill Spider Orchid is currently only known to occur in the Riverina between Urana and Narranderra. Occurs in woodland with sandy soil, especially that dominated by White Cypress Pine (*Callitris glaucophylla*).	Considering the records within the locality and the presence of suitable habitat, this species has the **potential** to occur within the A2IAtudy Area.	No
Caladenia concolor	Crimson Spider Orchid	E	V	3	The Crimson Spider Orchid flowers generally in September. The species is known to occur at Nail Can Hill Crown Reserve near Albury (Albury LGA), a private property near Bethungra (Junee LGA) and at Burrinjuck Nature reserve (Yass Valley LGA). Its habitat is regrowth woodland on granite ridge country that has retained a high diversity of plant species, including other orchids. The dominant trees are Blakely's Red Gum (*Eucalyptus blakelyi*), Red Stringybark (*E. macrorhyncha*), Red Box (*E. polyanthemos*) and White Box (*E. albens*); the diverse understorey includes Silver Wattle (*Acacia dealbata*), Hop Bitter-pea (*Daviesia latifolia*), Common Beard-heath (*Leucopogon virgatus*), Spreading Flax-lily (*Dianella revoluta*) and Poa Tussock (*Poa sieberiana*).	Considering the records within the locality and the presence of suitable (lack of granite geological areas) habitat, this species has the **potential** to occur within the A2I Proposal site.	No
Leucochrysum albicans var. tricolor	Hoary Sunray	-	E	3	The Hoary Sunray is a perennial everlasting daisy. The species is endemic to south-eastern Australia and occurs in the ACT, NSW, Victoria and Tasmania. In NSW, it occurs on the Southern Tablelands and in an area roughly bounded by Albury, Bega and Goulburn. areas Occurs in a wide variety of grassland, woodland and forest habitats, generally on relatively heavy soils. It can occur in modified habitats such as semi-urban areas and roadsides. The species is highly dependent on the presence of bare ground for germination. In some areas, disturbance is required for successful establishment.	Considering the records within the locality and the presence of preferred habitat, this species is **likely** to occur within the A2I Proposal site.	No

Scientific Name	Common Name	Status (BC Act)	Status (EPBC Act)	Bionet Records with 10km	Habitat Summary	Likelihood of Occurrence	Recorded During Field Surveys
Glycine latrobeana	Purple Clover	CE	V	0	The Clover Glycine is a low-growing herb that generally flowers in spring in the lower elevation parts of its range and in summer in higher elevation areas. The Clover Glycine occurs mainly in grassland and grassy woodland habitats, less often in dry forests, and only rarely in heathland. Populations occur from sea level to c. 1,200 m altitude 6 (900 m in Tasmania). In Victoria, plants grow in a range of soil types including alluvial soils, and those derived from sandstones, mudstones, granite and basalt. Soils are usually clay, but may also have high loam content. Tasmanian populations occur on a well-drained basalt, dolerite or sandstone substrates. The NSW population is in subalpine grassland (at about 1300 m asl).	Considering the lack of records within the locality and the presence of suitable habitat, this species is **unlikely** to occur within the A2I Proposal site.	No
Prasophyllum petilum	Tarengo Leek Orchid	-	E	0	The Tarengo Leek Orchid produces a flower-spike in mid spring to early summer. Natural populations of the species are known at five sites in NSW located near Boorowa (Hilltops LGA), in Queanbeyan area (Queanbeyan-Palerang LGA), Ilford (Mid-Western LGA), Delegate (Snowy Monaro LGA) and west of Muswellbrook (Muswellbrook LGA). It grows in open sites within Natural Temperate Grassland at the Boorowa and Delegate sites. Also grows in grassy woodland in association with River Tussock *Poa labillardieri*, Black Gum *Eucalyptus aggregata* and tea-trees *Leptospermum* spp. near Queanbeyan and within the grassy groundlayer dominated by Kanagroo Grass under Box-Gum Woodland at Ilford (and Hall, ACT). Apparently highly susceptible to grazing, being retained only at little-grazed travelling stock reserves (Boorowa & Delegate) and in cemeteries (near Queanbeyan, Ilford and Hall). Flowers in October at Boorowa and Ilford, and December at sites near Queanbeyan and Delegate. Population density at the Boorowa site is higher in the open grassland dominated by wallaby grasses Austrodanthonia spp., compared to that within the denser stands of Kangaroo Grass *Themeda australis*. Highly colonial, with very large numbers present and very conspicuous at the Boorowa site, but cryptic at the Queanbeyan, Ilford and Delegate sites where low numbers are recorded. The population near Muswellbrook is also small.	Considering the lack of records within the locality and the presence of suitable habitat, this species is **unlikely** to occur within the A2I Proposal site.	No
Swainsona murrayana	Slender Darling-pea	V	V	0	The Slender Darling Pea is a forb that produces pink or purple flowers. Found throughout NSW, it has been recorded in the Jerilderie and Deniliquin areas of the southern riverine plain, the Hay plain as far north as Willandra National Park, near Broken Hill and in various localities between Dubbo and Moree. The species has been collected from clay-based soils, ranging from grey, red and brown cracking clays to red-brown earths and loams. Grows in a variety of vegetation types including bladder saltbush, black box and grassland communities on level plains, floodplains and depressions and is often found with Maireana species. Plants have been found in remnant native grasslands or grassy woodlands that have been intermittently grazed or cultivated.	Considering the lack of records within the locality and the presence of suitable habitat, this species is **unlikely** to occur within the A2I Proposal site.	No
Swainsona recta	Small Purple Pea	E	E	0	The Small Purple-pea is a small perennial herb that flowers between late September and early December, with a peak in October. Before European settlement Small Purple-pea occurred in the grassy understorey of woodlands and open-forests dominated by Blakely's Red Gum (*Eucalyptus blakelyi*), Yellow Box (*E. melliodora*), Candlebark Gum (*E. rubida*) and Long-leaf Box (*E. goniocalyx*). Grows in association with understorey dominants that include Kangaroo Grass (*Themeda australis*), poa tussocks (*Poa* spp.) and spear-grasses (*Austrostipa* spp.). Plants die back in summer, surviving as a rootstocks until they shoot again in autumn. Small Purple-pea was recorded historically from places such as Carcoar, Culcairn and Wagga Wagga where it is probably now extinct. Populations still exist in the Queanbeyan and Wellington-Mudgee areas.	Considering the lack of records within the locality and the presence of suitable habitat, this species is **unlikely** to occur within the A2I Proposal site.	No
Senecio garlandii	Woolly Ragwort	V	-	8	This daisy is found between Temora, Bethungra and Albury and possibly Burrinjuck near Yass. The largest populations are at The Rock and Mt Tabletop (and surrounds). There is a single population in Victoria at Chiltern. Woolly Ragwort occurs on sheltered slopes of rocky outcrops	Considering the records within the locality and the presence of suitable habitat, this species has the **potential** to occur within the A2I Proposal site.	No

Scientific Name	Common Name	Status (BC Act)	Status (EPBC Act)	Bionet Records with 10km	Habitat Summary	Likelihood of Occurrence	Recorded During Field Surveys
Tylophora linearis		V	E	0	*Tylophora linearis* is a vine that produces purplish flowers in spring, with flowers recorded in November and May. Grows in dry scrub and open forest. Recorded from low-altitude sedimentary flats in dry woodlands of *Eucalyptus fibrosa, Eucalyptus sideroxylon, Eucalyptus albens, Callitris endlicheri, Callitris glaucophylla* and *Allocasuarina luehmannii*. Also grows in association with *Acacia hakeoides*, *Acacia lineata*, *Melaleuca uncinata*, *Myoporum* species and *Casuarina* species. Majority of records occur in the central western region. Records from Goonoo, Pillaga West, Pillaga East, Bibblewindi, Cumbil and Eura State Forests, Coolbaggie NR, Goobang NP and Beni SCA. Also has been recorded Hiawatha State Forest near West Wyalong in the south and there are old records as far north as Crow Mountain near Barraba and near Glenmorgan in the western Darling Downs.	Considering the lack of records within the locality but presence of preferred habitat, this species has the **potential** to occur within the A2I Proposal site.	No
Insects							
Synemon plana	Golden Sun Moth	E	CE	0	The Golden Sun Moth is a medium-sized, day-flying (diurnal) moth. It occurs in Natural Temperate Grasslands and grassy Box-Gum Woodlands in which ground layer is dominated by wallaby grasses (*Austrodanthonia* spp.). Grasslands dominated by wallaby grasses are typically low and open - the bare ground between the tussocks is thought to be an important microhabitat feature for the Golden Sun Moth, as it is typically these areas on which the females are observed displaying to attract males. Habitat may contain several wallaby grass species, which are typically associated with other grasses particularly spear-grasses (*Austrostipa* spp.) or Kangaroo Grass (*Themeda australis*).	Considering the lack of records within the locality, predicted distribution of the species and the presence of suitable habitat, this species is **unlikely** to occur within the A2I Proposal site.	No
Thaumatoperla alpina	Alpine Stonefly	-	E	0	The Alpine Stonefly is the final instar (growth stage) nymph of an insect of order Plecoptera. The nymph stage is water invertebrate. The Alpine Stonefly is endemic to the Bogong High Plains in the Kiewa River catchment; specifically the Mt McKay and Mt Fainter areas in first order streams (unbranched tributaries) at high altitudes. The species is known from 12 sites that are separated by natural and anthropogenic barriers. The Alpine Stonefly inhabits high altitude areas at least 760 m above sea level, including areas above the treeline. The nymphs are most commonly found in steep, stony, cool streams, often below a cascade of water underneath cobblestones or detritus. Narrower streams of less than 1–2.5 m width are favoured and typically 1 m wide and around 15 cm deep. Nymphs are often found under bigger boulders or stones at these sites. When the nymphs have reached adulthood, they leave the water and inhabit the rocks and vegetation beside the streams. They are often found on the Silky Daisy (*Celmisia sericophylla*), a plant that is endemic to the Bogong High Plains.	Considering the lack of records within the locality and lack of suitable habitat, this species is **unlikely** to occur within the A2I Proposal site.	No
Mammals							
Dasyurus maculatus	Spotted-tailed Quoll	V	E	3	The Spotted-tailed Quoll is recorded across a range of habitat types, including rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline. Individual animals use hollow-bearing trees, fallen logs, small caves, rock outcrops and rocky-cliff faces as den sites. Females occupy home ranges up to about 750 hectares and males up to 3500 hectares. Are known to traverse their home ranges along densely vegetated creeklines.	Considering the records within the locality and the presence of suitable habitat, this species has the **potential** to occur within the A2I Proposal site.	No
Nyctophilus corbeni Corben's	South-eastern Long-eared Bat	V	V		Corben's Long-eared Bat inhabits a variety of vegetation types, including mallee, bulloke *Allocasuarina leuhmanni* and box eucalypt dominated communities, but it is distinctly more common in box/ironbark/cypress-pine vegetation that occurs in a north-south belt along the western slopes and plains of NSW and southern Queensland. It roosts in tree hollows, crevices, and under loose bark. Slow flying agile bat, utilising the understorey to hunt non-flying prey - especially caterpillars and beetles - and will even hunt on the ground. Mating takes place in autumn with one or two young born in late spring to early summer.	Considering the records within the locality and the presence of suitable habitat, this species has the **potential** to occur within the A2I Proposal site.	No

Scientific Name	Common Name	Status (BC Act)	Status (EPBC Act)	Bionet Records with 10km	Habitat Summary	Likelihood of Occurrence	Recorded During Field Surveys
Falsistrellus tasmaniensis	Eastern False Pipistrelle	V	-	4	The Eastern False Pipistrelle is found on the south-east coast and ranges of Australia, from southern Queensland to Victoria and Tasmania (OEH 2019). The species prefers moist habitats, with trees taller than 20 m. It generally roosts in eucalypt hollows, but has also been found under loose bark on trees or in buildings. It hunts beetles, moths, weevils and other flying insects above or just below the tree canopy. Hibernates in winter. Females are pregnant in late spring to early summer (OEH 2019). Only one record of the species exist within the 10km locality.	Considering the records within the locality and the presence of suitable habitat, this species has the **potential** to occur within the A2I Proposal site.	No
Miniopterus orianae oceanensis	Large Bent-winged Bat	V	-	2	Eastern Bentwing-bats occur along the east and north-west coasts of Australia. Caves are the primary roosting habitat, but also use derelict mines, storm-water tunnels, buildings and other man-made structures. Form discrete populations centred on a maternity cave that is used annually in spring and summer for the birth and rearing of young. Maternity caves have very specific temperature and humidity regimes. At other times of the year, populations disperse within about 300 km range of maternity caves. Cold caves are used for hibernation in southern Australia.	Considering the records within the locality and the presence of suitable habitat, this species has the **potential** to occur within the A2I Proposal site.	No
Petauroides volans	Greater Glider	E	V	0	The greater glider is restricted to eastern Australia, occurring from the Windsor Tableland in north Queensland through to central Victoria (Wombat State Forest), with an elevation range from sea level to 1200 m above sea level. The greater glider is an arboreal nocturnal marsupial, largely restricted to eucalypt forests and woodlands. During the day it shelters in tree hollows, with a particular selection for large hollows in large, old trees. The greater glider is considered to be particularly sensitive to forest clearance	Considering the lack of records within the locality and the lack of suitable habitat, this species is **unlikely** to occur within the Proposal site.	No
Myotis macropus	Southern Myotis	V	-	8	The Southern Myotis is found in the coastal band from the north-west of Australia, across the top-end and south to western Victoria. It is rarely found more than 100 km inland, except along major rivers. The Southern Myotis generally roost in groups of 10 - 15 close to water in caves, mine shafts, hollow-bearing trees, storm water channels, buildings, under bridges and in dense foliage. Forage over streams and pools catching insects and small fish by raking their feet across the water surface. In NSW females have one young each year usually in November or December OEH 2019).	Considering the records within the locality and the presence of suitable habitat, this species has the **potential** to occur within the A2I Proposal site.	No
Petaurus norfolcensis	Squirrel Glider	V and E[3]	-	909	The Squirrel Glider is widely though sparsely distributed in eastern Australia, from northern Queensland to western Victoria. Inhabits mature or old growth Box, Box-Ironbark woodlands and River Red Gum forest west of the Great Dividing Range prefers mixed species stands with a shrub or *Acacia* midstorey. Live in family groups of a single adult male one or more adult females and offspring. Require abundant tree hollows for refuge and nest sites. Diet varies seasonally and consists of Acacia gum, eucalypt sap, nectar, honeydew and manna, with invertebrates and pollen providing protein.	Considering the immense records within the locality and the presence of preferred habitat, this species is **known** to occur within the A2I Proposal site.	No
Petrogale penicillata	Brush-tailed Rock-wallaby	E	V	1	In NSW they occur from the Queensland border in the north to the Shoalhaven in the south, with the population in the Warrumbungle Ranges being the western limit. Occupy rocky escarpments, outcrops and cliffs with a preference for complex structures with fissures, caves and ledges, often facing north. Shelter or bask during the day in rock crevices, caves and overhangs and are most active at night when foraging. Browse on vegetation in and adjacent to rocky areas eating grasses and forbs as well as the foliage and fruits of shrubs and trees.	Considering the records within the locality and the presence of suitable habitat, this species has the **potential** to occur within the A2I Proposal site.	No
Phascolarctos cinereus	Koala	V	V	6	The Koala is an arboreal marsupial that inhabits eucalypt woodlands and forests. The species feed on the foliage of more than 70 species of eucalypt and 30 non-eucalypt species. Food sources in the local area include: *Eucalyptus blakelyi, Eucalyptus bridgesiana, Eucalyptus camaldulensis, Eucalyptus dealbata, Eucalyptus dives, Eucalyptus mannifera, Eucalyptus melliodora, Eucalyptus pauciflora, Eucalyptus polyanthemos, Eucalyptus punctate, Eucalyptus rubida, Eucalyptus tereticornis, Eucalyptus viminalis.*	Considering the records within the locality and the presence of suitable habitat, this species has the **potential** to occur within the A2I Proposal site.	No

[3] The Wagga Wagga Squirrel Glider (P*etaurus norfolcensisI)* population is considered Endangered in accordance with the BC Act.

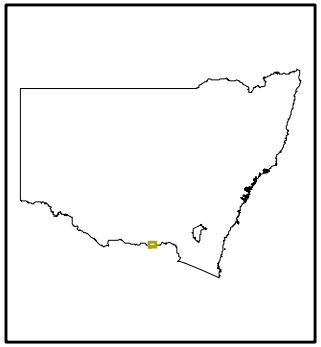
Scientific Name	Common Name	Status (BC Act)	Status (EPBC Act)	Bionet Records with 10km	Habitat Summary	Likelihood of Occurrence	Recorded During Field Surveys
Pteropus poliocephalus	Grey-headed Flying-fox	V	V	344	Grey-headed Flying-foxes are generally found within 200 km of the eastern coast of Australia, from Rockhampton in Queensland to Adelaide in South Australia. Occur in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops. Roosting camps are generally located within 20 km of a regular food source and are commonly found in gullies, close to water, in vegetation with a dense canopy. Feed on the nectar and pollen of native trees, in particular Eucalyptus, Melaleuca and Banksia, and fruits of rainforest trees and vines. Also forage in cultivated gardens and fruit crops.	Considering the immense records within the locality and the presence of preferred habitat, this species is **likely** to occur within the A2I Proposal site.	No
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	V	-	4	The Yellow-bellied Sheathtail-bat is a wide-ranging species found across northern and eastern Australia. Roosts singly or in groups of up to six, in tree hollows and buildings; in treeless areas they are known to utilise mammal burrows. When foraging for insects, flies high and fast over the forest canopy, but lower in more open country. Forages in most habitats across its very wide range, with and without trees; appears to defend an aerial territory.	Considering the records within the locality and the presence of suitable habitat, this species has the **potential** to occur within the A2I Proposal site.	No
Vespadelus baverstocki	Inland Forest Bat	V	-	1	In NSW it has been most regularly captured in the far south west, north from the Murray River to Menindee, and at least as far east as the Balranald-Ivanhoe Road. Roosts in tree hollows and abandoned buildings. Known to roost in very small hollows in stunted trees only a few metres high. The habitat requirements of this species are poorly known but it has been recorded from a variety of woodland formations, including Mallee, Mulga and River Red Gum. Most records are from drier woodland habitats with riparian areas inhabited by the Little Forest Bat. However, other habitats may be used for foraging and/or drinking.	Considering the records within the locality and the presence of suitable habitat, this species has the **potential** to occur within the A2I Proposal site.	No
Reptiles							
Aprasia parapulchella	Pink-tailed Legless Lizard	V	V	64	The Pink-tailed Legless Lizard inhabits sloping, open woodland areas with predominantly native grassy groundlayers, particularly those dominated by Kangaroo Grass (*Themeda australis*). The sites where the species occur are typically well-drained, with rocky outcrops or scattered, partially-buried rocks. It is commonly found beneath small, partially-embedded rocks and appear to spend considerable time in burrows below these rocks; the burrows have been constructed by and are often still inhabited by small black ants and termites. It feeds on the larvae and eggs of the ants with which it shares its burrows. It is thought that this species lays 2 eggs inside the ant nests during summer; the young first appear in March.	Considering the records within the locality and the presence of suitable habitat, this species has the **potential** to occur within the A2I Proposal site.	No
Delma impar	Striped Legless Lizard	V	V	0	The Striped Legless Lizard is found mainly in Natural Temperate Grassland but has also been captured in grasslands that have a high exotic component. It is also found in secondary grassland near Natural Temperate Grassland and occasionally in open Box-Gum Woodland. The species finds suitable habitat where grassland is dominated by perennial, tussock-forming grasses such as Kangaroo Grass (*Themeda australis*), spear-grasses (*Austrostipa* spp.) and poa tussocks (*Poa* spp.), and occasionally wallaby grasses (*Austrodanthonia* spp.) Sometimes present in modified grasslands with a significant content of exotic grasses. Sometimes found in grasslands with significant amounts of surface rocks, which are used for shelter. Actively hunts for spiders, crickets, moth larvae and cockroaches. Two papery eggs are laid in early summer. It goes below ground or under rocks or logs over winter.	Considering the lack of records within the locality and the presence of preferred habitat, this species has the **potential** to occur within the A2I Proposal site	No

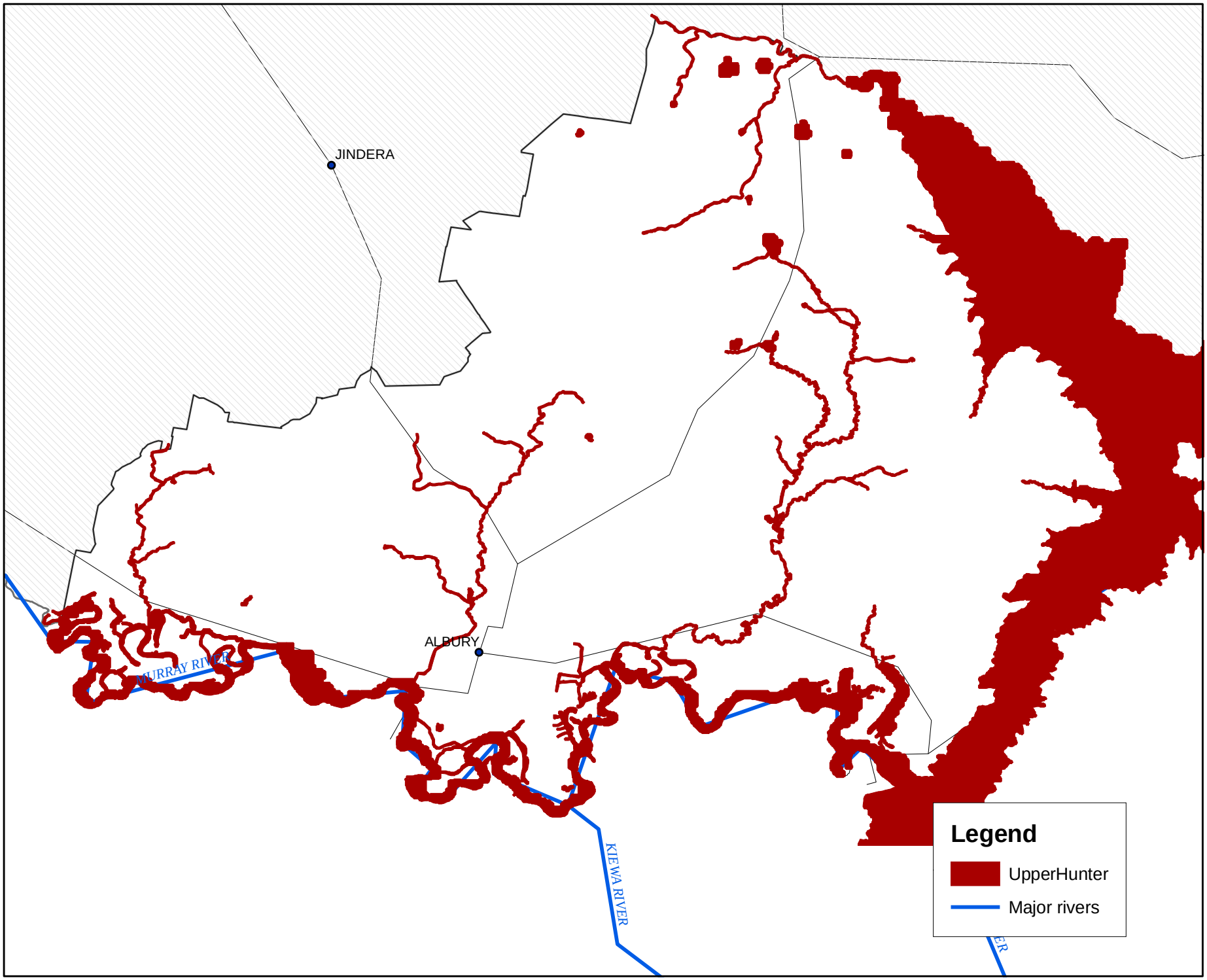
CE = Critically Endangered; E = Endangered; V = Vulnerable; Mi = Migratory

APPENDIX F DPI KEY FISH HABITAT MAPS

Key Fish Habitat

ALBURY

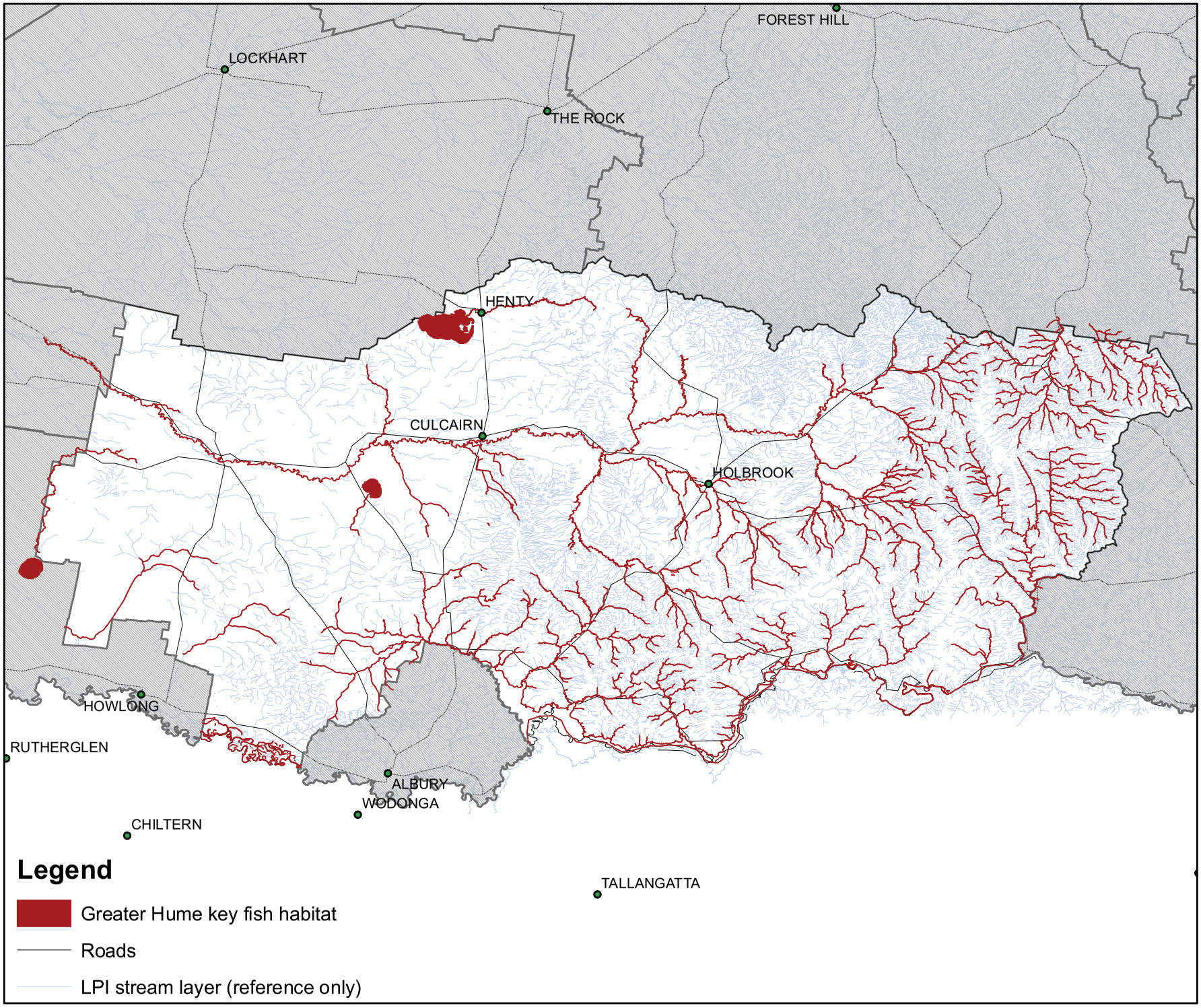




Source: data from the Australian Geoscience, NSW DPI, NSW DECC and NSW LPI
Datum: Geocentric Datum of Australia (GDA)
Grid: Mapping Grid of Australia (MGA94)

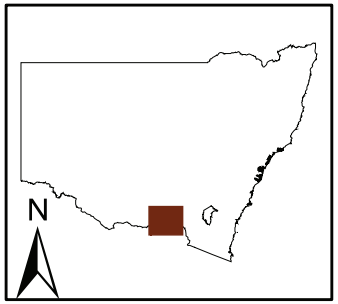
Prepared by GIS section, Fisheries Ecosystems Branch, Division of Agriculture & Fisheries, NSW DPI.

0 1 2 4
Kilometres
N



Key Fish Habitat

GREATER HUME LGA



Source: data from the Australian Geoscience, NSW DPI, NSW DECC and NSW LPI
Datum: Geocentric Datum of Australia (GDA)
Grid: Mapping Grid of Australia (MGA94)

Prepared by GIS section, Fisheries Ecosystems Branch, Division of Fisheries, Compliance and Regional Relations, NSW DPI.

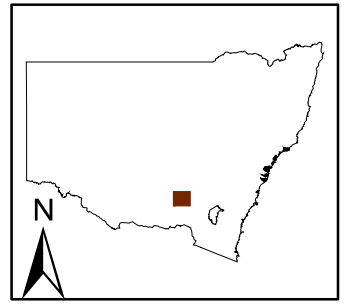
0 4.5 9 18

Kilometres

NSW DEPARTMENT OF PRIMARY INDUSTRIES

Key Fish Habitat

JUNEE LGA



BETHUNGRA MOUNTAIN

BETHUNGRA

MARRAR

JUNEE

ESTELLA

WAGGA WA

Legend

- Junee key fish habitat
- Roads
- LPI stream layer (reference only)

Source: data from the Australian Geoscience, NSW DPI, NSW DECC and NSW LPI
Datum: Geocentric Datum of Australia (GDA)
Grid: Mapping Grid of Australia (MGA94)

Prepared by GIS section, Fisheries Ecosystems Branch, Division of Agriculture & Fisheries, NSW DPI.

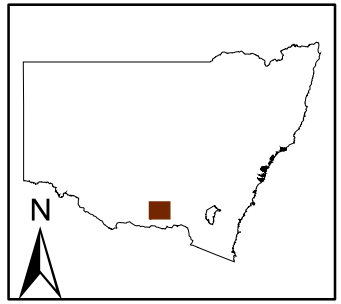
0 2 4 8

Kilometres

NSW DEPARTMENT OF
PRIMARY INDUSTRIES

Key Fish Habitat

LOCKHART LGA



BOREE CREEK

LOCKHART

THE ROCK

THE ROCK HILL

YERONG CREEK

HENTY

RAND

Legend

- Lockhart key fish habitat
- Roads
- LPI stream layer (reference only)

Source: data from the Australian Geoscience, NSW DPI, NSW DECC and NSW LPI
Datum: Geocentric Datum of Australia (GDA)
Grid: Mapping Grid of Australia (MGA94)

Prepared by GIS section, Fisheries Ecosystems Branch, Division of Agriculture & Fisheries, NSW DPI.

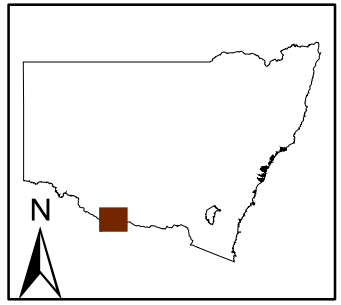
0 3.5 7 14

Kilometres

NSW DEPARTMENT OF
PRIMARY INDUSTRIES

Key Fish Habitat

MURRAY LGA



Source: data from the Australian Geoscience, NSW DPI, NSW DECC and NSW LPI
Datum: Geocentric Datum of Australia (GDA)
Grid: Mapping Grid of Australia (MGA94)

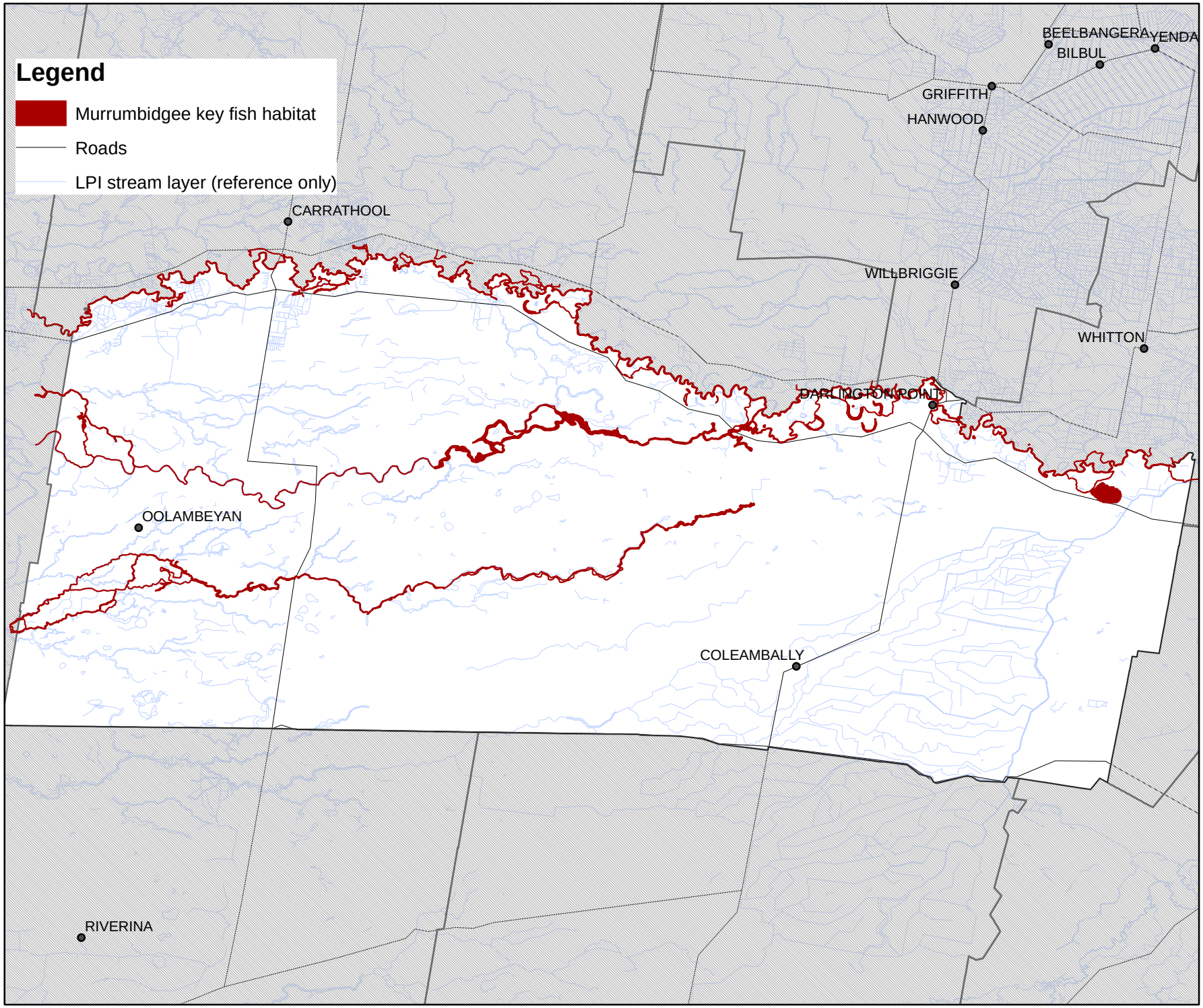
Prepared by GIS section, Fisheries Ecosystems Branch, Division of Fisheries, Compliance and Regional Relations, NSW DPI.

0 2.5 5 10
Kilometres

Legend

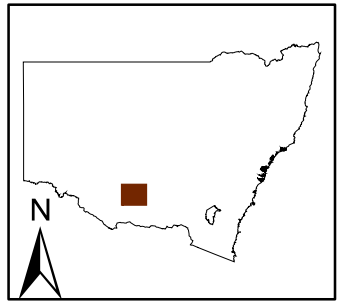
- Murray key fish habitat
- Roads
- LPI stream layer (reference only)
- MurrayWetlands

NSW DEPARTMENT OF
PRIMARY INDUSTRIES



Key Fish Habitat

MURRUMBIDGEE LGA



Source: data from the Australian Geoscience, NSW DPI, NSW DECC and NSW LPI
Datum: Geocentric Datum of Australia (GDA)
Grid: Mapping Grid of Australia (MGA94)

Prepared by GIS section, Fisheries Ecosystems Branch, Division of Agriculture & Fisheries, NSW DPI.

0 2 4 8
Kilometres

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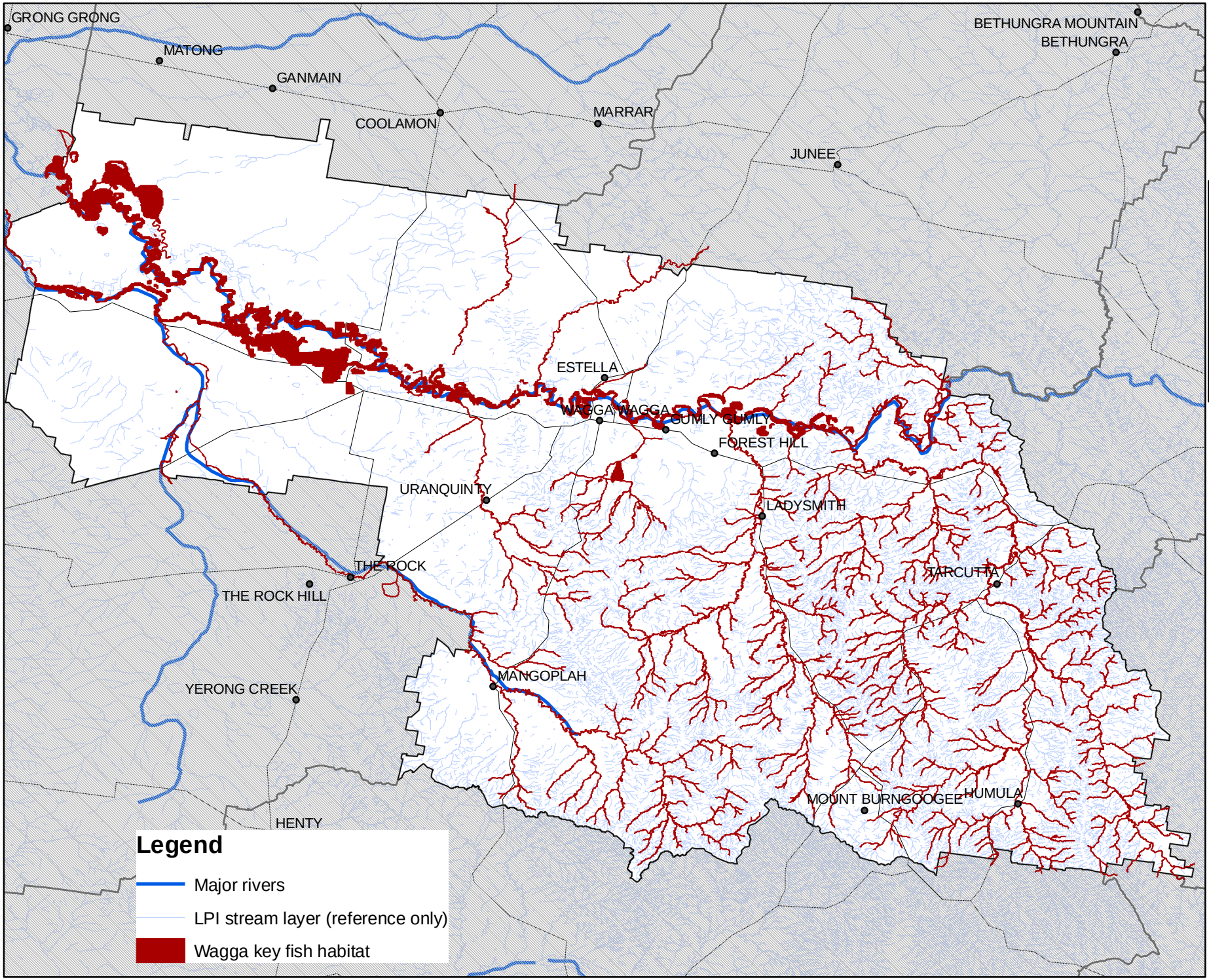
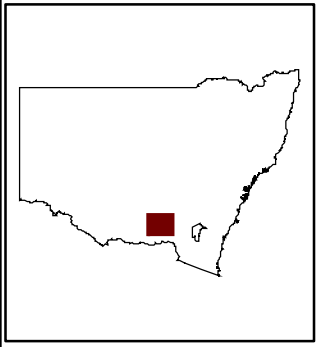


Key Fish Habitat

WAGGA WAGGA LGA



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