APPENDIX G

Revised Technical Paper 8: Biodiversity Development Assessment Report

PART 2 OF 2

ALBURY TO ILLABO PREFERRED INFRASTRUCTURE REPORT—RESPONSE TO SUBMISSIONS

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APPENDIX

G

Revised Technical Paper 8: Biodiversity Development Assessment Report

Appendix C Threatened species

ALBURY TO ILLABO PREFERRED INFRASTRUCTURE REPORT—RESPONSE TO SUBMISSIONS

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APPENDIX C-1
THREATENED FLORA HABITAT SUITABILITY

Table C-1.1 Threatened flora habitat suitability

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	EPBC ACT [2]	SAII	IBRA SUBREGIONS		SOURCE[3]	HABITAT SUITABILITY	OUTCOME
					INLAND SLOPES	LOWER SLOPES			
Acacia ausfeldii	Ausfeld's Wattle	V	–	No	✓	✓	BAM-C	**Habitat description** Grows in eucalypt woodland in sandy soils. Often grows in remnant roadside patches of woodland. Detailed targeted surveys are recommended August – October when plants are in flower/seed but can be surveyed for outside of recommended period. **Inland Slopes** Potentially suitable habitat in the form of PCT 277. **Lower Slopes** Potentially suitable habitat in the form of PCT 277.	**Candidate species** Inland Slopes Lower Slopes **EPBC Assessment** – Not listed under the EPBC Act.
Ammobium craspedioides	Yass Daisy	V	V	No	✓	–	BAM-C, PMST, PlantNet	**Habitat description** Found in moist or dry forest communities, Box-Gum Woodland and secondary grassland derived from clearing of these communities. Detailed targeted surveys during September – November. **Inland Slopes** Potentially suitable habitat in the form of PCT 277	**Candidate species** Inland Slopes **EPBC Assessment** – Moderate likelihood of occurrence in PCT 277 moderate and derived condition. Targeted surveys required.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	EPBC ACT [2]	SAII	IBRA SUBREGIONS		SOURCE[3]	HABITAT SUITABILITY	OUTCOME
					INLAND SLOPES	LOWER SLOPES			
Amphibromus fluitans	River Swamp Wallaby-grass	V	V	No	✓	✓	BioNet, PMST, PlantNet	**Habitat description** Recorded primarily in permanent swamps with seasonally fluctuating water levels that are moderately fertile and have some bare ground. Grows on hard clay soils in habitats including swamp margins in mud, dam and tank beds. Detailed targeted surveys during January – March. **Habitat constraints** Semi-permanent/ephemeral wet areas; Periodically inundated sites (including table drains and farm dams), notably wetlands on riverine floodplain Although no associated vegetation types occur within the study area, this species has been recorded frequently near Billy Hughes bridge and as such was the subject of targeted surveys.	**Candidate species** Inland Slopes Lower Slopes **EPBC Assessment –** Moderate likelihood of occurrence in PCT 5. Targeted surveys required.
Austrostipa wakoolica	A spear-grass	E	E	No	✓	✓	PMST	**Habitat description** Grows on floodplains of the Murray River tributaries, in open woodland on grey, silty clay or sandy loam soils; habitats include the edges of 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. Detailed targeted surveys during October – December.	Not a candidate species **EPBC Assessment –** Considered unlikely to occur. Not considered further.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	EPBC ACT [2]	SAII	IBRA SUBREGIONS		SOURCE[3]	HABITAT SUITABILITY	OUTCOME
					INLAND SLOPES	LOWER SLOPES			
Brachyscome muelleroides	Claypan Daisy	V	V	Yes	–	✓	BioNet, PMST, PlantNet	**Habitat description** Grows in damp areas on margins of claypans and lagoons in mud or water. Often associated with moist grasslands, swampy Red River Gum (*Eucalyptus camaldulensis)* Forest and damp depressions. **Habitat constraints** Grows on grey-brown soils on floodplains and on grey-brown or red-brown clays and claypans in wetland-grassland communities of semi – permanent/ephemeral wet areas. Lacks associated habitat and is excluded due to habitat constraints	Not a candidate species. **EPBC Assessment –** Considered unlikely to occur. Not considered further.
Caladenia arenaria	Sand-hill Spider-orchid	–	E	Yes	✓	✓	BioNet, PMST	**Habitat description** Occurs in woodlands with sandy soil, especially that dominated by White Cypress Pine (*Callitris glaucophylla*). The project disturbance area does not impact and sandy soil woodland communities. Given the lack of optimal habitat and lack of records in the locality this species is considered unlikely to occur.	Not a candidate species Not listed under the BC Act **EPBC Assessment –** Considered unlikely to occur. Not considered further.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	EPBC ACT [2]	SAII	IBRA SUBREGIONS		SOURCE[3]	HABITAT SUITABILITY	OUTCOME
					INLAND SLOPES	LOWER SLOPES			
Caladenia concolor	Crimson Spider Orchid, Marron Spider Orchid	E	V	Yes	✓	✓	BioNet, PMST, PlantNet	**Habitat description** 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*). The project disturbance area does not impact any granite ridge communities. Given the lack of optimal habitat this species is not considered likely to occur within the study area.	Not a candidate species **EPBC Assessment** – Considered unlikely to occur. Not considered further.
Caladenia rosella	Rosella Spider Orchid	E	E	N/A	✓	–	BioNet	**Habitat description** Found in woodlands and low-forests of Red Box (*Eucalyptus polyanthemos*), Long-leafed Box (*E. goniocalyx*) and Red Stringybark (*E. macrorhyncha*) in well-drained, skeletal soils. The single NSW collection of the Rosella Spider Orchid (located in Albury) is undated but is estimated to have been collected before 1896. This species is considered extinct in NSW. Due to the lack of optimal habitat and lack of records within the locality this species is considered unlikely to occur and is not considered further.	Not a candidate species **EPBC Assessment** – Considered unlikely to occur. Not considered further.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	EPBC ACT [2]	SAII	IBRA SUBREGIONS		SOURCE[3]	HABITAT SUITABILITY	OUTCOME
					INLAND SLOPES	LOWER SLOPES			
Cullen parvum	Small Scurf-pea	E	–	No	✓	✓	BAM-C, BioNet	**Habitat description** Found in grassland, River Red Gum (*Eucalyptus camaldulensis*) Woodland or Box Gum woodland, sometimes on grazed land and usually on table drains or adjacent to drain lines or watercourses, in areas with rainfall between 450 and 700 mm. Detailed targeted surveys are recommended December – January when plants are in flower/seed. Survey effort occurred outside of recommended months; however, all three-foliate leaved scramblers were investigated as a potential. **Inland Slopes** Potentially suitable habitat in the form of PCTs 5 and 277. **Lower Slopes** Potentially suitable habitat in the form of PCTs 5 and 277.	**Candidate species** Inland Slopes Lower Slopes **EPBC Assessment –** Not listed under the EPBC Act.
Diuris tricolor	Pine Donkey Orchid	V	–	No	✓	✓	PlantNet	**Habitat description** The Pine Donkey Orchid grows in sclerophyll forest among grass, often with native Cypress Pine (*Callitris* spp.). It is found in sandy soils, either on flats or small rises. Also recorded from a red earth soil in a Bimble Box community in western NSW. Will grow in disturbed areas/grasslands. Due to the lack of optimal habitat and lack of records within the locality this species is considered unlikely to occur and is not considered further.	Not a candidate species **EPBC Assessment –** Not listed under the EPBC Act.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	EPBC ACT [2]	SAII	IBRA SUBREGIONS		SOURCE[3]	HABITAT SUITABILITY	OUTCOME
					INLAND SLOPES	LOWER SLOPES			
Euphrasia arguta	–	CE	CE	Yes	✓	–	BAM -C	**Habitat description** Historic records of the species noted the following habitats: 'in the open forest country around Bathurst in sub humid places', 'on the grassy country near Bathurst', and 'in meadows near rivers'. Targeted survey months November to March **Inland Slopes** Potentially suitable habitat in the form of PCT 277.	**Candidate species** Inland Slopes **EPBC Assessment** – Considered unlikely to occur. Not considered further.
Eucalyptus cadens	Warby Range Swamp Gum	–	V	N/A	–	–	PMST	**Habitat description** Grows in woodlands, often in or around springs, soaks and waterbodies. Known to grow in almost pure stands on seasonally waterlogged sites. The Warby Range Swamp Gum is endemic to north-eastern Victoria from east of the Warby Range to Beechworth in four subcatchments of the Ovens River. Due to the highly endemic nature of this species and its association with the Ovens River catchment it is considered unlikely to grow in the study area and is not considered further.	Not a candidate species Not listed under the BC Act **EPBC Assessment** – Considered unlikely to occur. Not considered further
Glycine latrobeana	–	CE	V	Yes	–	–	PMST	**Habitat description** 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. 1,200m altitude 6 (900m in Tasmania). The NSW population is in subalpine grassland (at about 1300m asl).	Not a candidate species **EPBC Assessment** Considered unlikely to occur. Not considered further.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	EPBC ACT [2]	SAII	IBRA SUBREGIONS		SOURCE[3]	HABITAT SUITABILITY	OUTCOME
					INLAND SLOPES	LOWER SLOPES			
Leucochrysum albicans var. tricolor	Hoary Sunray	–	E	No	–	–	BioNet, PMST	**Habitat description** Occurs in a wide variety of grassland, woodland and forest habitats, generally on relatively heavy soils. Can occur in modified habitats such as semi-urban areas and roadsides. Highly dependent on the presence of bare ground for germination. Due to the lack of optimal habitat and lack of records within the locality this species is considered unlikely to occur and is not considered further.	Not a candidate species. Not listed under the BC Act. **EPBC Assessment** – Considered unlikely to occur. Not considered further.
Pilularia novae-hollandiae	Austral Pillwort	E	–	Yes	✓	✓	BioNet, PlantNet	**Habitat description** Occurs in shallow swamps and waterways, often among grasses and sedges. It is most often recorded in drying mud as this is when it is most conspicuous. Most of the records in the Albury-Urana area were from table drains on the sides of roads. **Lower slopes** Found near rail alignment in Doodle Comer Swamp west of Henty, NSW. Table drains and roadsides around Henty area were inspected. Targeted survey months October – December.	**Candidate species** Lower Slopes **EPBC Assessment** – Not listed under the EPBC Act.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	EPBC ACT [2]	SAII	IBRA SUBREGIONS		SOURCE[3]	HABITAT SUITABILITY	OUTCOME
					INLAND SLOPES	LOWER SLOPES			
Prasophyllum petilum	Tarengo Leek Orchid	E	E	No	✓	–	BAM-C, PMST	**Habitat description** – Grows in patchy woodland in fertile soils. Grows in open sites within Natural Temperate Grassland at the Boorowa and Delegate sites. Also grows in grassy woodland in association with River Tussock *Poa labillardieri*, Black Gum *Eucalyptus aggregata* and tea-trees *Leptospermum* spp. near Queanbeyan and within the grassy groundlayer dominated by Kangaroo Grass under Box-Gum Woodland at Ilford (and Hall, ACT). Targeted seasonal surveys required, for areas south of Queanbeyan, November – December. **Inland Slopes** Potentially suitable habitat in the form of PCT 277 moderate and derived condition.	**Candidate species** Inland Slopes **EPBC Assessment** – Moderate likelihood of occurrence in PCT 277 moderate and derived condition. Targeted surveys required.
Prasophyllum sp. Wybong	Prasophyllum sp. Wybong	–	CE	N/A	–	✓	BAM-C	The NSW Herbarium considers *Prasophyllum* sp. Wybong (C. Phelps ORG5269) and *Prasophyllum petilum* to be synonyms (i.e. the same species).	**Candidate species** Inland Slopes **EPBC Assessment** – Considered unlikely to occur. Not considered further.
Prasophyllum validum	Sturdy Leek-orchid, Mount Remarkable Leek-orchid	–	V	N/A	–	–	PMST	**Habitat description** Occurs of open forest and woodland communities on stony and sandy soil. Only know from the Flinders Ranges, Victorian Midlands and Flinders Lofty Block IBRA bioregions.	Not a candidate species. Not listed under the BC Act. **EPBC Assessment** – Considered unlikely to occur. Not considered further.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	EPBC ACT [2]	SAII	IBRA SUBREGIONS		SOURCE[3]	HABITAT SUITABILITY	OUTCOME
					INLAND SLOPES	LOWER SLOPES			
Pultenaea humilis	Dwarf Bush-pea	V	–	No	✓	–	PlantNet	**Habitat description** Found in dry sclerophyll forest or wet heathland or swamps on sand, loan or clay in isolated remnants of native woodland and forest communities that occur in extensively cleared agricultural landscapes. Occurs on a variety of soils ranging from sandy loams to clays. Due to the lack of optimal habitat and lack of records within the locality this species is considered unlikely to occur and is not considered further.	Not a candidate species **EPBC Assessment –** Not listed under the EPBC Act.
Pultenaea setulosa	Stony Bush-pea	–	V	N/A	–	–	PlantNet	**Habitat description** Grows in dry sclerophyll forest on rocky hillsides. The project disturbance area does not impact any rocky hillside communities. Given the lack of optimal habitat this species is not considered likely to occur within the study area.	Not a candidate species. Not listed under the BC Act. **EPBC Assessment –** Considered unlikely to occur. Not considered further.
Senecio garlandii	Woolly Ragwort	V	–	No	✓	✓	BioNet, PlantNet	**Habitat description** Occurs on sheltered slopes of rocky outcrops. The project disturbance area does not impact any rocky hillside communities. Given the lack of optimal habitat this species is not considered likely to occur within the study area.	Not a candidate species. **EPBC Assessment -** Not listed under the EPBC Act.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	EPBC ACT [2]	SAII	IBRA SUBREGIONS		SOURCE[3]	HABITAT SUITABILITY	OUTCOME
					INLAND SLOPES	LOWER SLOPES			
Senecio psilocarpus	Swamp Fireweed, Smooth-fruited Groundsel	–	V	N/A	–	–	PMST	**Habitat description** Grows in herb-rich winter – wet swamps on volcanic clays or peaty soils. The project disturbance area does not impact any volcanic clays or peaty soils. Given the lack of optimal habitat this species is not considered likely to occur within the study area.	Not a candidate species. Not listed under the BC Act. **EPBC Assessment** – Considered unlikely to occur. Not considered further.
Swainsona murrayana	Slender Darling-pea, Slender Swainson, Murray Swainson-pea	V	V	No	–	✓	PMST	**Habitat description** Has been recorded 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. Due to the lack of optimal habitat and lack of records within the locality this species is considered unlikely to occur and is not considered further.	Not a candidate species. No listed under the BC Act. **EPBC Assessment** – Considered unlikely to occur. Not considered further.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	EPBC ACT [2]	SAII	IBRA SUBREGIONS		SOURCE[3]	HABITAT SUITABILITY	OUTCOME
					INLAND SLOPES	LOWER SLOPES			
Swainsona recta	Small Purple-pea	E	E	No	✓	✓	BAM-C, BioNet, PMST, PlantNet	**Habitat description** Occurs 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. Targeted seasonal survey months September – November **Inland Slopes** Potentially suitable habitat in the form of PCT 277 within the study area. **Lower Slopes** Potentially suitable habitat in the form of PCT 277 within the study area.	**Candidate species** Inland Slopes Lower Slopes **EPBC Assessment** – Moderate likelihood of occurrence in PCT 277 moderate and derived condition. Targeted surveys required.
Swainsona sericea	Silky Swainson-pea	V	–	No	✓	✓	BAM-C, BioNet, PlantNet	**Habitat description** Occurs in grassland and eucalypt woodland. Sometimes found in association with cypress-pines *Callitris* spp. Targeted seasonal survey months September – November **Inland Slopes** Potentially suitable habitat in the form of PCT 277 within the study area. **Lower Slopes** Potentially suitable habitat in the form of PCT 277 within the study area.	**Candidate species** Inland Slopes Lower Slopes **EPBC Assessment** – Not listed under the EPBC Act.

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	EPBC ACT [2]	SAII	IBRA SUBREGIONS		SOURCE[3]	HABITAT SUITABILITY	OUTCOME
					INLAND SLOPES	LOWER SLOPES			
Tylophora linearis	–	V	E	No	✓	✓	PMST	**Habitat description** 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. Study area outside of known distribution. Species not considered further	Not a candidate species. **EPBC Assessment** – Considered unlikely to occur. Not considered further.

APPENDIX C-2
THREATENED FAUNA HABITAT SUITABILITY

Table C-2.1 Threatened fauna habitat suitability

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	EPBC ACT [2]	SOURCE[3]	IBRA SUBREGIONS		HABITAT, ECOLOGY, DISTRIBUTION AND BAM HABITAT CONSTRAINTS[4]	LIKELIHOOD OF OCCURRENCE	OUTCOME
					LOWER SLOPES	INLAND SLOPES			
Amphibians									
Crinia sloanei	Sloane's Froglet	V	E	BioNet PMST BAM-C	✓	✓	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. It is typically associated with periodically inundated areas in grassland, woodland and disturbed habitats.	**High** – Likely to occur where suitable habitat is associated with the study area, due to an abundance of records in lands adjacent to the study area and occasionally within or very closely associated with the study area.	**Candidate credit species**
Litoria booroolongensis	Booroolong Frog	E	E	PMST BAM-C	–	✓	Restricted to tablelands and slopes in NSW and north-east Victoria at 200–1300m above sea level. Occurs along permanent streams with some fringing vegetation cover such as ferns, sedges or grasses.	Low – No suitable habitat associated with the combined study area.	**Candidate credit species**
Litoria raniformis	Southern Bell Frog	E	V	BioNet PMST	–	–	The species is currently widespread throughout the Murray River valley and has been recorded from six Catchment Management Areas in NSW: Lower Murray Darling, Murrumbidgee, Murray, Lachlan, Central West and South East. Found mostly amongst emergent vegetation, including Typha sp. (bullrush), Phragmites sp. (reeds) and Eleocharis sp.(sedges), in or at the edges of still or slow-flowing water bodies such as lagoons, swamps, lakes, ponds and farm dams.	Low – Old records from Albury, Henty and Wagga. Considered unlikely to occur within the combined study area habitats. May still occur in association with overflow areas near the Murray River, but no such habitats within the study area.	Not considered further

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	EPBC ACT [2]	SOURCE[3]	IBRA SUBREGIONS		HABITAT, ECOLOGY, DISTRIBUTION AND BAM HABITAT CONSTRAINTS[4]	LIKELIHOOD OF OCCURRENCE	OUTCOME
					LOWER SLOPES	INLAND SLOPES			
Birds									
Anseranas semipalmata	Magpie Goose	V	–	BioNet	–	–	Mainly found in shallow wetlands (less than 1m 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.	Low – A low number of records across the regions traversed by the study area, but no suitable habitat associated with the combined study area.	Not considered further
Anthochaera phrygia (syn. Xanthomyza phrygia)	Regent Honeyeater	CE	CE	BioNet, PMST BAM-C	✓	✓	Inhabits temperate woodlands and open forests of the inland slopes of south-east Australia. Birds are also found in drier coastal woodlands and forests in some years. There are only three known key breeding regions remaining: north-east Victoria (Chiltern–Albury), and in NSW at Capertee valley and the Bundarra Barraba region. In NSW the distribution is very patchy and mainly confined to the two main breeding areas and surrounding fragmented woodlands. It inhabits dry open forest and woodland, particularly box-ironbark woodland, and riparian forests of river sheoak. Regent honeyeaters inhabit woodlands that support a significantly high abundance and species richness of bird species. These woodlands have significantly large numbers of mature trees, high canopy cover and abundance of mistletoes. It feeds mainly on the nectar from a relatively small number of eucalypts that produce high volumes of nectar. Key eucalypt species include mugga ironbark, yellow box, white box and swamp mahogany. BAM habitat constraint: As per mapped areas (refer to National Recovery Plan)	**Moderate** – potential habitat in association with remnant vegetation. Irregular dispersive movements to habitats associated with the study area cannot be discounted entirely, but there are habitats within the study area are not considered important for this species.	**Considered further as both a predicted ecosystem credit and candidate species credit.**

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	EPBC ACT [2]	SOURCE[3]	IBRA SUBREGIONS		HABITAT, ECOLOGY, DISTRIBUTION AND BAM HABITAT CONSTRAINTS[4]	LIKELIHOOD OF OCCURRENCE	OUTCOME
					LOWER SLOPES	INLAND SLOPES			
Apus pacificus	Fork-tailed Swift	–	M	BioNet, PMST	–	–	Breeds in the northern hemisphere, wintering south to Australia. It is almost exclusively aerial, flying from less than 1m to at least 300m above ground. It mostly occurs over inland plains but sometimes above foothills or in coastal areas over cliffs, beaches, islands and well out to sea. It also occurs over towns and cities. It mostly occurs over dry and/or open habitats, including riparian woodland and tea-tree swamps, low scrub, heathland or saltmarsh, grassland, spinifex sandplains, farmland and sand-dunes. It sometimes occurs above forests. It probably roosts aerially but has occasionally been observed to land.	Low – Likely to occur in aerial habitats above the study area during seasonal movements, but unlikely to use terrestrial habitats associated with the combined study area.	Not considered further
Artamus cyanopterus cyanopterus	Dusky Wood-swallow	V	–	BioNet BAM-C	✓	✓	The Dusky Woodswallow has two separate populations. The eastern population is found from Atherton Tableland, Queensland south to Tasmania and west to Eyre Peninsula, South Australia. The other population is found in south-west Western Australia. The Dusky Woodswallow is found in open forests and woodlands, and may be seen along roadsides and on golf courses.	**Moderate** – A woodland species that occurs widely throughout regions, which the study area traverses and may use woodland fragments occurring throughout the study area.	**Predicted ecosystem credit species**
Botaurus poiciloptilus	Australasian Bittern	E	E	PMST	–	–	Occurs from south-east Queensland to south-east South Australia, Tasmania and the south-west of Western Australia. The Australasian Bittern's preferred habitat is comprised of wetlands with tall dense vegetation, where it forages in still, shallow water up to 0.3m deep, often at the edges of pools or waterways, or from platforms or mats of vegetation over deep water. It favours permanent and seasonal freshwater habitats, particularly those dominated by sedges, rushes and reeds (e.g. Phragmites, Cyperus, Eleocharis, Juncus, Typha, Baumea, Bolboschoenus) or cutting grass (Gahnia) growing over a muddy or peaty substrate	Low – A low number of records occurring around Wagga and a single record at Junee. Preferred habitats are not associated with the combined study area.	Not considered further

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	EPBC ACT [2]	SOURCE[3]	IBRA SUBREGIONS		HABITAT, ECOLOGY, DISTRIBUTION AND BAM HABITAT CONSTRAINTS[4]	LIKELIHOOD OF OCCURRENCE	OUTCOME
					LOWER SLOPES	INLAND SLOPES			
Burhinus grallarius	Bush Stone-curlew	E	–	BioNet BAM-C	✓	✓	Open forests and woodlands with a sparse grassy ground layer and fallen timber. Largely nocturnal, being especially active on moonlit nights. Feed on insects and small vertebrates, such as frogs, lizards and snakes. Nest on the ground in a scrape or small bare patch.	Low – A paucity of records throughout the regions traversed by the study area. No suitable habitat within the study area to support this species.	**Candidate credit species**
Calidris acuminata	Sharp-tailed Sandpiper		M	PMST	–	–	The Sharp-tailed Sandpiper spends the non-breeding season in Australia with small numbers occurring regularly in New Zealand. Most of the population migrates to Australia, mostly to the south-east and are widespread in both inland and coastal locations and in both freshwater and saline habitats. Many inland records are of birds on passage. 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.	Low – A paucity of records throughout the regions traversed by the study area. No suitable habitat within the study area to support this species.	Not considered further

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	EPBC ACT [2]	SOURCE[3]	IBRA SUBREGIONS		HABITAT, ECOLOGY, DISTRIBUTION AND BAM HABITAT CONSTRAINTS[4]	LIKELIHOOD OF OCCURRENCE	OUTCOME
					LOWER SLOPES	INLAND SLOPES			
Calidris ferruginea	Curlew Sandpiper	E	CE	BioNet, PMST	–	–	In Australia, Curlew Sandpipers occur around the coasts of all states and are also quite widespread inland, though in smaller numbers. They occur in Australia mainly during the non-breeding period but also during the breeding season when many non-breeding one year old birds remain. Curlew Sandpipers mainly occur on intertidal mudflats in sheltered coastal areas, such as estuaries, bays, inlets and lagoons, and also around non-tidal swamps, lakes and lagoons near the coast, and ponds in saltworks and sewage farms. They are also recorded inland, though less often, including around ephemeral and permanent lakes, dams, waterholes and bore drains, usually with bare edges of mud or sand. They generally roost on bare dry shingle, shell or sand beaches, sandspits and islets in or around coastal or near-coastal lagoons and other wetlands, occasionally roosting in dunes during very high tides and sometimes in saltmarsh and in mangroves.	Low – No records throughout the regions traversed by the study area. No suitable habitat within the study area to support this species.	Not considered further
Calidris ruficollis	Red-necked Stint		M	BioNet	–	–	It is distributed along most of the Australian coastline with large densities on the Victorian and Tasmanian coasts. The Red-necked Stint breeds in Siberia and sporadically in north and west Alaska, probably from Taymyr region to Anadyr Territory and Koryakland. The Red-necked Stint mostly forages on bare wet mud on intertidal mudflats or sand flats, or in very shallow water; mostly in areas with a film of surface water and mostly close to edge of water. Roosts on sheltered beaches, spits, banks or islets, of sand, mud, coral or shingle, sometimes in saltmarsh or other vegetation.	Low – No records throughout the regions traversed by the study area. No suitable habitat within the study area to support this species.	Not considered further

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	EPBC ACT [2]	SOURCE[3]	IBRA SUBREGIONS		HABITAT, ECOLOGY, DISTRIBUTION AND BAM HABITAT CONSTRAINTS[4]	LIKELIHOOD OF OCCURRENCE	OUTCOME
					LOWER SLOPES	INLAND SLOPES			
Callocephalon fimbriatum	Gang-gang Cockatoo	V	–	BioNet BAM-C	✓	✓	In summer, occupies tall montane forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests with an acacia understorey. Also occur in subalpine Snow Gum woodland and occasionally in temperate or regenerating forest. In winter, occurs at lower altitudes in drier, more open eucalypt forests and woodlands, particularly in box ironbark assemblages, or in dry forest in coastal areas, occasionally feeding on exotic plant species on urban fringe areas. Favours old growth forest and woodland attributes for nesting and roosting. Nesting occurs in Spring and Summer with nests located in hollows that are 10cm in diameter or larger and at least 9m above the ground in eucalypts.	**Moderate** – although no records associated with the study area, remnant habitat patches associated with the study may be used occasionally by this species.	**Considered further as both a predicted ecosystem credit and candidate species credit.**
Calyptorhynchus lathami	Glossy-black Cockatoo	V	–	BioNet	–	–	The species is uncommon although widespread throughout suitable forest and woodland habitats, from the central Queensland coast to East Gippsland in Victoria, and inland to the southern tablelands and central western plains of NSW, with a small population in the Riverina. An isolated population exists on Kangaroo Island, South Australia. Inhabits open forest and woodlands of the coast and the Great Dividing Range where stands of Sheoak occur. Black Sheoak *(Allocasuarina littoralis*) and Forest Sheoak (*A. torulosa*) are important foods. Inland populations feed on a wide range of Sheoaks, including Drooping Sheoak, (*Allocasuarina diminuta* and *A. gymnanthera)*. Belah is also utilised and may be a critical food source for some populations. In the Riverina, birds are associated with hills and rocky rises supporting Drooping Sheoak, but also recorded in open woodlands dominated by Belah (*Casuarina cristata*).	Low – no records associated with the study area. Remnant habitat patches associated within the study area not preferred by this species due to a lack of food tree species.	Not considered further

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	EPBC ACT [2]	SOURCE[3]	IBRA SUBREGIONS		HABITAT, ECOLOGY, DISTRIBUTION AND BAM HABITAT CONSTRAINTS[4]	LIKELIHOOD OF OCCURRENCE	OUTCOME
					LOWER SLOPES	INLAND SLOPES			
Certhionyx variegatus	Pied Honeyeater	V	–	eBird	–	–	Widespread throughout acacia, mallee and spinifex scrubs of arid and semi-arid Australia. Occasionally occurs further east, on the slopes and plains and the Hunter Valley, typically during periods of drought. Inhabits wattle shrub, primarily Mulga (*Acacia aneura*), mallee, spinifex and eucalypt woodlands, usually when shrubs are flowering; feeds on nectar, predominantly from various species of emu-bushes (*Eremophila spp.*); also from mistletoes and various other shrubs (e.g. *Grevillea spp.*); also eats saltbush fruit, berries, seed, flowers and insects. Highly nomadic, following the erratic flowering of shrubs; can be locally common at times.	**Moderate** – unlikely to be resident in the region but is known to occur (in Albury) during extended dry periods when arid country birds are forced toward areas where water and blossom are more reliable. May rarely occur in study area under some climatic conditions.	Predicted ecosystem credit species
Chthonicola sagittata *(Pyrrholaemus sagittatus)*	Speckled Warbler	V	–	BioNet BAM-C	✓	✓	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 re-growth and an open canopy. Large, relatively undisturbed remnants are required for the species to persist in an area. 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 the base of a low dense plant, often among fallen branches and other litter. A side entrance allows the bird to walk directly inside.	Low – Sparsely distributed in higher quality woodlands in regions associated with the study area, but no records associated with the study area. Remnant habitat patches associated with the study area not of sufficient quality for this species.	**Predicted ecosystem credit species**

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	EPBC ACT [2]	SOURCE[3]	IBRA SUBREGIONS		HABITAT, ECOLOGY, DISTRIBUTION AND BAM HABITAT CONSTRAINTS[4]	LIKELIHOOD OF OCCURRENCE	OUTCOME
					LOWER SLOPES	INLAND SLOPES			
Circus assimilis	Spotted Harrier	V	–	BioNet BAM-C	✓	✓	The Spotted Harrier occurs throughout the Australian mainland, except in densely 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.	**Recorded** – One individual observed in grasslands adjacent to the study area at Marinna. Likely to occur seasonally in low numbers across open landscapes associated with study area. Study area habitats not considered to represent important foraging habitat, but may provide trees for breeding purposes.	**Predicted ecosystem credit species**
Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)	V	–	BioNet BAM-C	✓	✓	Endemic to eastern Australia and occurs in eucalypt forests and woodlands of inland slopes of the Great Dividing Range. It is less commonly found on coastal plains and ranges. 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. Hollows in standing dead or live trees and tree stumps are essential for nesting.	Low – Brown Treecreepers associated with the study area localities are not identifiable as the threatened subspecies. The final determination for the listing of the eastern subspecies, notes that the *C. p. victoriae* occurs east of a line extending from Wagga north through Temora and Young. A line of hybridisation, which cannot be identified as the threatened subspecies, with the more westerly nominate race, occurring through those localities.	**Predicted ecosystem credit species**

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					LOWER SLOPES	INLAND SLOPES			
							In the published Final Determination for listing the eastern sub-species of the Brown Treecreeper, this threatened sub-species of the Brown Treecreeper is described as occurring locally as individuals in a hybrid zone with the secure nominate subspecies *C. p. picumnus*, which occurs west from the edge of the Great Dividing Range. Therefore, pure individuals cannot be determined to exist in the study area. The BioNet records for this species and further west are incorrect identifications.		
Daphoenositta chrysoptera	Varied Sittella	V	–	BioNet BAM-C	✓	✓	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. Inhabits eucalypt forests and woodlands, especially those containing rough-barked species and mature smooth-barked gums with dead branches, mallee and Acacia woodland. 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. Nests in an upright tree fork high in the living tree canopy.	Low – Sparsely distributed in continuous woodlands across regions associated with the study area, but no records associated with the study area. Remnant habitat patches associated with the study area not of sufficient quality for this species.	**Predicted ecosystem credit species**

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					LOWER SLOPES	INLAND SLOPES			
Epthianura albifrons	White-fronted Chat	V	–	BioNet	–	–	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 1000m 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. Along the coastline, it is found predominantly in saltmarsh vegetation but also in open grasslands and sometimes in low shrubs bordering wetland areas. 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. Have been observed breeding from late July through to early March, with 'open-cup' nests built in low vegetation. Nests in the Sydney region have also been seen in low isolated mangroves. Nests are usually built about 23cm above the ground (but have been found up to 2.5m above the ground).	**Moderate** – Likely to occur sparsely across open habitats associated with the study area. The study does not represent important foraging habitat for this species, but additional cover provided by unmanaged study area ground-cover layers may be desirable for nesting purposes.	**Predicted ecosystem credit species**
Falco hypoleucos	Grey Falcon	E	V	BioNet, PMST	–	–	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.	Low – Although very rare occurrences in more easterly locations cannot be entirely discounted, the Grey Falcon is an arid country species whose normal NSW distribution is in the far north-western areas of the State.	Not considered further

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					LOWER SLOPES	INLAND SLOPES			
Falco subniger	Black Falcon	V	–	BioNet			Widely, but sparsely, distributed in New South Wales, mostly occurring in inland regions. Some reports of 'Black Falcons' on the tablelands and coast of New South Wales are likely to be referrable to the Brown Falcon. 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 km (Marchant and Higgins 1993). The Black Falcon occurs as solitary individuals, in pairs, or in family groups of parents and offspring.	**Moderate** – Although likely to occur in relatively low numbers, this species occurs widely in open habitats including cropping lands where it preys upon open country birds. Trees within the study area may be used for perching, or rarely for breeding purposes.	**Predicted ecosystem credit species**
Gallinago hardwickii	Latham's Snipe	–	M	BioNet	–	–	Recorded along the east coast of Australia from Cape York Peninsula through to south-eastern South Australia. Occurs in permanent and ephemeral wetlands up to 2000m above sea-level.	Low – May occur at the edges of any wetland habitat within its range. Suitable habitats are scarce within the study area but may very rarely occur in ephemeral water associated with grassy culvert depressions in the study area.	Not considered further
Glossopsitta porphyrocephala	Purple-crowned Lorikeet	V	–	BioNet BAM-C	✓	✓	The Purple-crowned Lorikeet occurs across the southern parts of the continent from Victoria to south-west Western Australia. It is uncommon in NSW, with records scattered across the box-ironbark woodlands of the Riverina and south west slopes, the River Red Gum forests and mallee of the Murray Valley as far west as the South Australian border, and, more rarely, the forests of the South Coast. The species is nomadic and most, if not all, records from NSW are associated with flowering events. Found in open forests and woodlands, particularly where there are large flowering eucalypts. Also recorded from mallee habitats.	**High** – A mobile species that forages on canopy blossom and may occasionally use blossom resources associated with the study area (particularly in the Albury region) when available.	**Predicted ecosystem credit species**

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Glossopsitta pusilla	Little Lorikeet	V	–	BioNet BAM-C	✓	✓	In NSW it is found from the coast to the western slopes of the Great Dividing Range, extending westwards to the vicinity of Albury, Parkes, Dubbo and Narrabri. The species forages primarily in the canopy of dry open eucalypt forest and woodland but also utilises paperbark (Melaleuca sp.) dominated forests. Riparian habitats are particularly used, due to higher soil fertility and hence greater productivity. Isolated flowering trees in open country (e.g. paddocks, roadside remnants) and urban trees also help sustain viable populations of the species. Nests in proximity to feeding areas if possible, most typically selecting hollows in the limb or trunk of smooth-barked eucalypts. Entrance is small (3cm) and usually high above the ground (2–15m). These nest sites are often used repeatedly for decades, suggesting that preferred sites are limited; riparian trees are often chosen, including non-eucalypt species such as she-oaks.	**High** – A mobile species that forages on canopy blossom and may occasionally use blossom resources associated with the study area when available.	**Predicted ecosystem credit species**
Grantiella picta	Painted Honeyeater	V	V	BioNet, PMST BAM-C	✓	✓	The Painted Honeyeater is nomadic and occurs at low densities throughout its range. The greatest concentrations of birds, and almost all breeding, occur on the inland slopes of the Great Dividing Range in NSW, Victoria and southern Queensland. During the winter it is more likely to be found in the north of its distribution. Inhabits Boree, Brigalow 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.	Low – No records associated with the study area. Remnant habitat patches associated with the study area do not contain micro-habitats preferred by this species.	**Predicted ecosystem credit species**

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Grus rubicunda	Brolga	V	–	BioNet	–	–	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.	Low – No records associated with the study area. No suitable habitats for this species within the study area.	Not considered further
Haliaeetus leucogaster	White-bellied Sea-Eagle	V	Ma	BioNet BAM-C	✓	✓	Distributed along the coastline (including offshore islands) of mainland Australia and Tasmania. Found in coastal habitats (especially those close to the sea-shore) and around terrestrial wetlands in tropical and temperate regions of mainland Australia and its offshore islands. Habitats occupied by the sea-eagle are characterised by the presence of large areas of open water (larger rivers, swamps, lakes, and the sea). It feeds opportunistically on a variety of fish, birds, reptiles, mammals and crustaceans, and on carrion. It generally forages over large expanses of open water; this is particularly true of birds that occur in coastal environments close to the sea-shore. However, the it will also forage over open terrestrial habitats (such as grasslands). Nests may be built in a variety of sites including tall trees (especially Eucalyptus species), bushes, mangroves, cliffs, rocky outcrops, caves, crevices, on the ground or even on artificial structures.	**High** – Records associated with the study area at Albury in association with the Murray River. Relatively recent records for Wagga, including Pomalingarna Reserve and there is potential habitat in Henty at Doodle Comer Nature Reserve. This species may occasionally occur over the study area during regional movements, but there are no favourable habitats for this species.	**Considered further as both a predicted ecosystem credit and candidate species credit.**

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Hieraaetus morphnoides	Little Eagle	V	–	BioNet BAM-C	✓	✓	The Little Eagle is 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.	**Recorded** – One individual observed in grasslands adjacent to the Study Area at Illabo. Likely to occur seasonally across open and wooded landscapes associated with study area. Study area habitats not considered to represent important foraging habitat but may provide trees for breeding purposes.	**Considered further as both a predicted ecosystem credit and candidate species credit**.
Hirundapus caudacutus	White-throated Needletail	–	V, M	BioNet, PMST	–	–	Widespread in eastern and south-eastern Australia. Almost exclusively aerial, from heights of less than 1m up to more than 1000m above the ground. They also commonly occur over heathland but less often over treeless areas, such as grassland or swamps.	**Moderate –** potential habitat in association with remnant vegetation. May occur during seasonal movements.	**Considered further in MNES section**
Ixobrychus flavicollis	Black Bittern	V	–	BioNet	–	–	The Black Bittern is found along the coastal plains within NSW, although individuals have rarely been recorded south of Sydney or inland. It inhabits terrestrial and estuarine wetlands such as flooded grasslands, forests, woodlands, rainforests and mangroves with permanent water and dense waterside vegetation. The Black Bittern typically roosts on the ground or in trees during the day and forages at night on frogs, reptiles, fish and invertebrates. The breeding season extends from December to March. Nests are constructed of reeds and sticks in branches overhanging the water.	Low – No records in the regions associated with the study area. Preferred habitats are not associated with the combined study area.	Not considered further

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Lathamus discolor	Swift Parrot	E	CE	BioNet, PMST BAM-C	✓	✓	The swift parrot breeds in Tasmania during the summer and the entire population migrates north to mainland Australia for the winter. Whilst on the mainland the swift parrot disperses widely to forage on flowers and psyllid lerps in eucalypt species, with the majority being found in Victoria and NSW. In NSW they forage in forests and woodlands throughout the coastal and western slopes regions each year. Coastal regions tend to support larger numbers of birds when inland habitats are subjected to drought. Non-breeding birds preferentially feed in inland box-ironbark and grassy woodlands, and coastal swamp mahogany (*E. robusta*) and spotted gum (*Corymbia maculata*) woodland when in flower; otherwise often in coastal forests. On the mainland they occur in areas where eucalypts are flowering profusely or where there are abundant lerp (from sap-sucking bugs) infestations. Favoured feed trees include winter flowering species such as *Eucalyptus robusta, Corymbia maculata, C. gummifera, E. sideroxylon*, and *E. albens*. Commonly used lerp infested trees include *E. microcarpa, E. moluccana* and *E. pilularis*.	**High** – A mobile species that forages on canopy blossom and may occasionally use blossom resources associated with the study area when available.	**Considered further as both a predicted ecosystem credit and candidate species credit.**

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Leipoa ocellata	Malleefowl	V	E	PMST	–	–	The stronghold for this species in NSW is the mallee in the south west centred on Mallee Cliffs NP and extending east to near Balranald and scattered records as far north as Mungo NP. 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.	Low – No records for this species in regional areas traversed by the study area, and not suitable habitat for this species in the study are or its wider locality.	Not considered further
Lophochroa leadbeateri	Major Mitchell's Cockatoo	V	–	BioNet	–	–	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. Inhabits a wide range of treed and treeless inland habitats, always within easy reach of water. Nesting, in tree hollows, occurs throughout the second half of the year; nests are at least 1km apart, with no more than one pair every 30 square km.	Low – The study area regions occur at the limits of this species' distribution and records are very sparse. The study area does not contain suitable habitat for this species.	Not considered further

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Lophoictinia isura	Square-tailed Kite	V	–	BAM-C	✓	✓	The Square-tailed Kite ranges along coastal and subcoastal areas from south-western to northern Australia, Queensland, NSW and Victoria. In NSW, scattered records of the species throughout the state indicate that the species is a regular resident in the north, north-east and along the major west-flowing river systems. It is a summer breeding migrant to the south-east, including the NSW south coast, arriving in September and leaving by March. Found in a variety of timbered habitats including dry woodlands and open forests. Shows a particular preference for timbered watercourses. In arid north-western NSW, has been observed in stony country with a ground cover of chenopods and grasses, open acacia scrub and patches of low open eucalypt woodland. Is a specialist hunter of passerines, especially honeyeaters, and most particularly nestlings, and insects in the tree canopy, picking most prey items from the outer foliage.	**Moderate** – May occur sparsely across the region on a seasonal basis	**Considered further as both a predicted ecosystem credit and candidate species credit**.
Melanodryas cucullata	Hooded Robin (south-eastern form)	V	–	BioNet BAM-C	✓	✓	The Hooded Robin is widespread, found across Australia, except for the driest deserts and the wetter coastal areas – northern and eastern coastal Queensland and Tasmania. However, it is common in few places, and rarely found on the coast. 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. The nest is a small, neat cup of bark and grasses bound with webs, in a tree fork or crevice, from less than 1m to 5m above the ground.	Low – Generally, very sparse regional records in suitable woodland habitats, the study area does not contain habitat of sufficient quality to support this species. May rarely occur where more suitable habitat abuts the study area.	**Predicted ecosystem credit species**

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Melithreptus gularis gularis	Black-chinned Honeyeater (eastern subsp.)	V	–	BioNet BAM-C	–	✓	Extends south from central Queensland, through NSW, Victoria into south eastern South Australia, though it is very rare in the last state. In NSW it is widespread, with records from the tablelands and western slopes of the Great Dividing Range to the north-west and central-west plains and the Riverina. Occupies mostly upper levels of drier open forests or woodlands dominated by box and ironbark eucalypts, especially Mugga Ironbark (*Eucalyptus sideroxylon*), White Box (*E. albens*), Inland Grey Box (*E. microcarpa*), Yellow Box (*E. melliodora*), Blakely's Red Gum (*E. blakelyi*) and Forest Red Gum (*E. tereticornis*). Also inhabits open forests of smooth-barked gums, stringybarks, ironbarks, river sheoaks (nesting habitat) and tea-trees.	Low – Relatively sparse regional records in suitable woodland habitats the study area does not hold habitat of sufficient quality to support this species.	**Predicted ecosystem credit species**
Merops ornatus	Rainbow Bee-eater	–	M	PMST	–	–	Usually occur in open or lightly timbered areas, often near water. Breed in open areas with friable, often sandy soil, good visibility, convenient perches and often near wetlands. Nests in embankments including creeks, rivers and sand dunes. Insectivorous, most foraging is aerial, in clearings.	**Recorded** – foraging within study area.	**Considered further in MNES section**
Neophema pulchella	Turquoise Parrot	V	–	BioNet BAM-C	✓	✓	Range extends from southern Queensland through to northern Victoria, from the coastal plains to the western slopes of the Great Dividing Range. Lives on the edges of eucalypt woodland adjoining clearings, timbered ridges and creeks in farmland.	Low – Relatively sparse regional records in suitable woodland habitats the study area does not hold habitat of sufficient quality to support this species.	**Predicted ecosystem credit species**

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Ninox connivens	Barking Owl	V	–	BioNet BAM-C	–	✓	Found throughout continental Australia except for the central arid regions. 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.	Low – Relatively sparse regional records outside the study area in suitable woodland habitats. The study area does not hold habitat of sufficient quality to support this species although rare occurrences cannot be entirely discounted.	**Considered further as both a predicted ecosystem credit and candidate species credit.**
Ninox strenua	Powerful Owl	V	–	BAM-C	–	✓	Endemic to eastern and south-eastern Australia, mainly on the coastal side of the Great Dividing Range. Inhabits a range of vegetation types, from woodland and open sclerophyll forest to tall open wet forest and rainforest. Nests in large tree hollows (at least 0.5m deep).	Low – Relatively sparse regional records outside the study area in suitable woodland habitats. The study area does not hold habitat of sufficient quality to support this species although rare occurrences cannot be entirely discounted.	**Considered further as both a predicted ecosystem credit and candidate species credit.**
Numenius madagascariensis	Eastern Curlew	–	CE, M	PMST	–	–	Within Australia, the Eastern Curlew has a primarily coastal distribution. The species is found in all states, particularly the north, east, and south-east regions including Tasmania. The Eastern Curlew is most commonly associated with sheltered coasts, especially estuaries, bays, harbours, inlets and coastal lagoons, with large intertidal mudflats or sand flats, often with beds of seagrass.	Low – No records throughout the regions traversed by the study area. No suitable habitat within the study area to support this species.	Not considered further

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	EPBC ACT [2]	SOURCE[3]	IBRA SUBREGIONS		HABITAT, ECOLOGY, DISTRIBUTION AND BAM HABITAT CONSTRAINTS[4]	LIKELIHOOD OF OCCURRENCE	OUTCOME
					LOWER SLOPES	INLAND SLOPES			
Oxyura australis	Blue-billed Duck	V	–	BioNet	–	–	Endemic to south-eastern and south-western Australia. It is widespread in NSW, but most common in the southern Murray-Darling Basin area. Birds disperse during the breeding season to deep swamps up to 300km away. It is generally only during summer or in drier years that they are seen in coastal areas. Prefers deep water in large permanent wetlands and swamps with dense aquatic vegetation. The species is completely aquatic, swimming low in the water along the edge of dense cover. It will fly if disturbed, but prefers to dive if approached. Partly migratory, with short-distance movements between breeding swamps and overwintering lakes with some long-distance dispersal to breed during spring and early summer. Usually nest solitarily in Cumbungi over deep water between September and February. They will also nest in trampled vegetation in Lignum, sedges or Spike-rushes, where a bowl-shaped nest is constructed. The most common clutch size is five or six. Males take no part in nest-building or incubation.	Low – Very sparse regional records in suitable wetland habitats the study area does not contain habitat of sufficient quality to support this species.	Not considered further

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	EPBC ACT [2]	SOURCE[3]	IBRA SUBREGIONS		HABITAT, ECOLOGY, DISTRIBUTION AND BAM HABITAT CONSTRAINTS[4]	LIKELIHOOD OF OCCURRENCE	OUTCOME
					LOWER SLOPES	INLAND SLOPES			
Pachycephala inornata	Gilbert's Whistler	V	–	BioNet BAM-C	–	✓	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 Gilbert's Whistler occurs in a range of habitats within NSW, though the shared feature appears to be a dense shrub layer. It is widely recorded in mallee shrublands, but also occurs in box-ironbark woodlands, Cypress Pine and Belah woodlands and River Red Gum forests, though at this stage it is only known to use this habitat along the Murray, Edwards and Wakool Rivers. Within the mallee the species is often found in association with an understorey of spinifex and low shrubs including wattles, hakeas, sennas and hop-bushes. In woodland habitats, the understorey comprises dense patches of shrubs, particularly thickets of regrowth Callitris pine. Parasitic 'cherries' (Exocarpus species) appear to be an important habitat component in Belah and Red Gum communities, though in the latter case other dense shrubs, such as Lignum and wattles, are also utilised.	Low – Relatively sparse regional records in suitable woodland habitats, the study area does not hold habitat of sufficient quality to support this species.	**Predicted ecosystem credit species**
Petroica phoenicea	Flame Robin	V	–	BioNet BAM-C	✓	✓	The Flame Robin ranges from near the Queensland border to south east South Australia and also in Tasmania. 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.	**High** – Regional records in suitable woodland and open country habitats, and due to its tendency to use open habitat types, likely to seasonally occur in study area habitats.	**Predicted ecosystem credit species**

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					LOWER SLOPES	INLAND SLOPES			
Polytelis swainsonii	Superb Parrot	V	V	BioNet, PMST BAM	✓	✓	Found throughout eastern inland NSW. On the South-western Slopes their core breeding area is roughly bounded by Cowra and Yass in the east, and Grenfell, Cootamundra and Coolac in the west. Inhabit Box-Gum, Box-Cypress-pine and Boree Woodlands and River Red Gum Forest. In the Riverina the birds nest in the hollows of large trees (dead or alive) mainly in tall riparian River Red Gum Forest or Woodland. On the South West Slopes nest trees can be in open Box-Gum Woodland or isolated paddock trees. Species known to be used are Blakely's Red Gum, Yellow Box, Apple Box and Red Box. Nest in small colonies, often with more than one nest in a single tree.	**Recorded** – Occurs widely throughout the regions in which the study area occurs and considered likely to forage and breed	**Considered further as both a predicted ecosystem credit and candidate species credit.**
Pomatostomus temporalis temporalis	Grey-crowned Babbler	V	–	BioNet BAM-C	✓	✓	In NSW, the eastern sub-species occurs on the western slopes of the Great Dividing Range, and on the western plains reaching as far as Louth and Balranald. It also occurs in woodlands in the Hunter Valley and in several locations on the north coast of NSW. It may be extinct in the southern, central and New England tablelands. Inhabits open Box-Gum Woodlands on the slopes, and Box-Cypress-pine and open Box Woodlands on alluvial plains. Build and maintain several conspicuous, dome-shaped stick nests about the size of a football. A nest is used as a dormitory for roosting each night. Nests are usually located in shrubs or sapling eucalypts, although they may be built in the outermost leaves of low branches of large eucalypts. Nests are maintained year-round, and old nests are often dismantled to build new ones.	**Moderate** – There is limited habitat availability for this species in the study area, but local family groups in adjacent habitats may use study area vegetation as part of their home range.	**Predicted ecosystem credit species**

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					LOWER SLOPES	INLAND SLOPES			
Rostratula australis	Australian Painted Snipe	E	E, M	BioNet, PMST, BAM-C	✓	✓	Most records are from south east Australia, particularly the Murray Darling Basin, with scattered records across northern Australia. They generally inhabit shallow terrestrial freshwater (occasionally brackish) wetlands, including temporary and permanent lakes, swamps and claypans. They also use inundated or waterlogged grassland or saltmarsh, dams, rice crops, sewage farms and bore drains. Typical sites include those with rank emergent tussocks of grass, sedges, rushes or reeds, or samphire; often with scattered clumps of lignum Muehlenbeckia or canegrass. Breeding habitat requirements may be quite specific; shallow wetlands with areas of bare wet mud and both low cover and canopy cover nearby; nest records nearly all from or near small islands in freshwater wetlands. Has also been recorded nesting in and near swamps, canegrass swamps, flooded areas including samphire, grazing land, among cumbungi, sedges and grasses; one nest has been found in the centre of a cow-pat in a clump of long grass.	Low – Very marginal habitat opportunities for this species within the study area.	**Predicted ecosystem credit species**
Stagonopleura guttata	Diamond Firetail	V	–	BioNet BAM-C	✓	✓	Found in grassy eucalypt woodlands, including Box-Gum Woodlands and Snow Gum (*Eucalyptus pauciflora*) Woodlands. Also occurs in open forest, mallee, Natural Temperate Grassland, and in secondary grassland derived from other communities. Often found in riparian areas (rivers and creeks), and sometimes in lightly wooded farmland. Nests are globular structures built either in the shrubby understorey, or higher up, especially under hawk's or raven's nests. Birds roost in dense shrubs or in smaller nests built especially for roosting.	**Moderate** – A relatively sparse number of records in the combined study area, may occasionally occur in the study area where more suitable habitat adjoins. The study area habitats are considered of generally poor quality to support this species over much of its length.	**Predicted ecosystem credit species**

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					LOWER SLOPES	INLAND SLOPES			
Stictonetta naevosa	Freckled Duck	V	–	BioNet BAM-C	✓	✓	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.	**Moderate** – May occur in association with the Murray River at Albury, otherwise no suitable habitat for this species within the study area.	**Predicted ecosystem credit species**
Tringa nebularia	Common Greenshank	–	M	BioNet	–	–	The Common Greenshank does not breed in Australia; however, the species occurs in all types of wetlands and has the widest distribution of any shorebird in Australia.	Low – No suitable habitat for this species within the study area.	Not considered further
Tringa stagnatilis	Marsh Sandpiper	–	M	BioNet	–	–	Fresh or brackish (slightly salty) wetlands such as rivers, water meadows, sewage farms, drains, lagoons and swamps.	Low – No suitable habitat for this species within the study area.	Not considered further
Tyrto novaehollandiae	Masked Owl	V	–	BAM-C	✓	✓	Extends from the coast where it is most abundant to the western plains. Overall records for this species fall within about 90% of NSW, excluding the most arid north-western corner. There is no seasonal variation in its distribution. Lives in dry eucalypt forests and woodlands from sea level to 1100m. A forest owl, but often hunts along the edges of forests, including roadsides. The typical diet consists of tree-dwelling and ground mammals, especially rats. Pairs have a large home-range of 500 to 1000 hectares.	Low – A single record to the west of Albury in 2000 associated with extensive riparian vegetation. Considered unlikely to occur in the study area due to the lack of suitable habitats.	**Considered further as both a predicted ecosystem credit and candidate species credit.**

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Pedionomus torquatus	Plains-wanderer	E	CE	PMST	–	–	The Plains-wanderer has declined greatly since European settlement. Areas where the species was formerly common and is now so reduced in numbers that it is effectively extinct include eastern NSW, south-western Victoria, and south-eastern South Australia. Its current stronghold is the western Riverina of southern NSW. Plains-wanderers live in semi-arid, lowland native grasslands that typically occur on hard red-brown soils. 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 <5cm high, but some vegetation up to a maximum of 30cm is important for concealment, as long as grass tussocks are spaced 10–20cm apart. During prolonged drought, the denudation of preferred habitats may force birds into marginal denser and taller grassland habitats that become temporarily suitable.	Low – No records throughout the regions traversed by the study area. No suitable habitat within the study area to support this species.	Not considered further
Petroica boodang	Scarlet Robin	V	–	BioNet BAM-C	✓	✓	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 re-growth vegetation. It occasionally occurs in mallee or wet forest communities, or in wetlands and tea-tree swamps. This species' nest is built in the fork of tree usually more than 2 metres above the ground; nests are often found in a dead branch in a live tree, or in a dead tree or shrub.	**Moderate** – Relatively sparse regional records in suitable woodland habitats and may intermittently occur in study area habitats on a seasonal basis.	**Predicted ecosystem credit species**

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					LOWER SLOPES	INLAND SLOPES			
Invertebrates									
Keyacris scurra	Key's Matchstick Grasshopper	E	–	BAM-C	–	✓	Species is generally reliant on an understorey of tussock grasses, typically *Themeda* for shelter and possibly food (unconfirmed), but may use similar grasses. Food sources include a range of dicotyledon species. Indicator species include the daisy *Chrysocephalum apiculatum*.	**Low** – No local records or records within 100km, though occurs within potential area of occurrence.	**Candidate credit species**
Synemon plana	Golden Sun Moth	E	CE	PMST	–	✓	The Golden Sun Moth's NSW populations are found in the area between Queanbeyan, Gunning, Young and Tumut. The species' historical distribution extended from Bathurst (central NSW) through the NSW Southern Tablelands, through to central and western Victoria, to Bordertown in eastern South Australia. Occurs in Natural Temperate Grasslands and grassy Box-Gum Woodlands in which groundlayer is dominated by wallaby grasses *Rytidosperma* 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*.	Low – NSW populations limited to habitats at high altitudes to the east and north of the combined study area. There are isolated patches of *Rytidosperma* grass spp. within the study area, but no records for this species throughout a 5km buffer of habitats surrounding the combined study area.	**Candidate credit species**
Thaumatoperla alpina	Alpine Stonefly	–	E	PMST	–	–	The Alpine Stonefly, as its name suggests, occurs in the highlands of Victoria. Its habitats is limited to the headwaters of alpine streams associated with alpine heathland.	Low – Highly specific and limited distribution in highland habitats, which do not occur in the locality of the combined study area.	Not considered further

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Mammals									
Cercartetus nanus	Eastern Pygmy-possum	V	–	BAM-C	✓	✓	The Eastern Pygmy-possum is found in south-eastern Australia, from southern Queensland to eastern South Australia and in Tasmania. In NSW it extends from the coast inland as far as the Pilliga, Dubbo, Parkes and Wagga Wagga on the western slopes. Found in a broad range of habitats from rainforest through sclerophyll (including Box-Ironbark) forest and woodland to heath, but in most areas woodlands and heath appear to be preferred, except in north-eastern NSW where they are most frequently encountered in rainforest. Feeds largely on nectar and pollen collected from banksias, eucalypts and bottlebrushes; an important pollinator of heathland plants such as banksias; soft fruits are eaten when flowers are unavailable.	Low – One record in regions associated with the study area from Benambra NP in 1978. No suitable habitat for this species within the study area.	**Candidate credit species**
Chalinolobus dwyeri	Large-eared Pied Bat	V	V	BAM-C	✓	✓	Found mainly in areas with extensive cliffs and caves, from Rockhampton in Queensland south to Bungonia in the NSW Southern Highlands. It is generally rare with a very patchy distribution in NSW. There are scattered records from the New England Tablelands and North West Slopes. Roosts in caves (near their entrances), crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the Fairy Martin (*Petrochelidon ariel*), frequenting low to mid-elevation dry open forest and woodland close to these features. Females have been recorded raising young in maternity roosts (c. 20–40 females) from November through to January in roof domes in sandstone caves and overhangs. They remain loyal to the same cave over many years. Found in well-timbered areas containing gullies (Schultz, Coles, Hoye, & Hall, 1999).	Low – No records in reserves which might contain suitable escarpment habitats proximate to the study area. Cannot be entirely discounted due to mobility, but the study area is unlikely to support this species in isolation from high quality habitats.	**Candidate credit species**

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Chalinolobus picatus	Little Pied Bat	V	–	BAM-C	✓	✓	The Little-Pied Bat is found in inland Queensland and NSW (including Western Plains and slopes) extending slightly into South Australia and Victoria and has been recorded in dry open forest, open woodland, Mulga woodlands, chenopod shrublands, Callitris forest and mallee (Churchill, 1998; Office of Environment and Heritage, 2011). The species roosts and breeds in tree hollows, fissures or cracks, buildings, power poles, fenceposts, caves, cliff crevices, mine shafts and tunnels. Roost sites in caves are usually warm and dry but the species can tolerate roost temperatures of more than 40 degrees Celsius (Office of Environment and Heritage, 2011).	Low – No records in the most suitable habitats in reserves and more extensive woodlands proximate to the study area. Cannot be entirely discounted due to mobility, but the study area is unlikely to support this species in isolation from high quality habitats.	**Predicted ecosystem credit species**
Dasyurus maculatus	Spotted-tailed Quoll	V	E	BioNet, PMST BAM-C	✓	✓	Wet and dry sclerophyll forests and rainforests, and adjacent open agricultural areas. Generally associated with large expansive areas of habitat to sustain territory size. Requires hollow-bearing trees, fallen logs, small caves, rock crevices, boulder fields and rocky-cliff faces as den sites.	Low – No suitable habitat for this species within the study area.	**Predicted ecosystem credit species**
Falsistrellus tasmaniensis	Eastern False Pipistrelle	V	–	BioNet BAM-C	–	✓	Prefers moist habitats, with trees taller than 20m. Generally roosts in eucalypt hollows, but has also been found under loose bark on trees or in buildings.	**High** – Likely that the study area represents part of the seasonal distribution of this species when occurring locally.	**Predicted ecosystem credit species**

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Macrotis lagotis	Bilby	Ex	V	BioNet	–	–	A hundred years ago, Bilbies were common in many habitats throughout Australia, from the dry interior to temperate coastal regions. Changes to the Bilby's habitat have seen their numbers greatly reduced and today the species is nationally listed as vulnerable, and is presumed extinct in NSW. They now occur in fragmented populations in mulga shrublands and spinifex grasslands in the Tanami Desert of the Northern Territory; in the Gibson and Great Sandy Deserts and the Pilbara and Kimberley regions of Western Australia; and the Mitchell Grasslands of southwest Queensland. Once widespread in arid, semi-arid and relatively fertile areas, the Bilby is now restricted to arid regions and remains a threatened species. The Bilby prefers arid habitats because of the spinifex grass and acacia shrub.	Low – No suitable habitat for this species within the project area.	Not considered further
Miniopterus orianae oceanensis	Large Bentwing-bat	V	–	BioNet BAM-C	–	✓	Occurs on east and north west coasts of Australia. Caves are the primary roosting habitat, but also use derelict mines, storm-water tunnels, buildings and other manmade structures.	**High** – There are records in the locality of the study area and it is considered likely that the study area represents part of the seasonal distribution of this species when occurring locally.	**Considered further as both a predicted ecosystem credit and candidate species credit.**
Myotis macropus (Myotis adversus)	Southern Myotis	V	–	BioNet BAM-C	✓	✓	Generally roost in groups close to water in caves, mine shafts, hollow-bearing trees, and storm water channels, buildings, under bridges and in dense foliage. Forages over streams and pools catching insects and small fish.	**Moderate** – Likely that some parts of the study area represent part of the seasonal distribution of this species when occurring locally.	**Candidate credit species**

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Nyctophilus corbeni	Corben's Long-eared Bat	V	V	PMST	–	–	Overall, the distribution of the south eastern form coincides about with the Murray Darling Basin with the Pilliga Scrub region being the distinct stronghold for this species. Inhabits a variety of vegetation types, including mallee, bulloke *Allocasuarina luehmannii* and box eucalypt dominated communities, but it is distinctly more common in box/ironbark/cypress-pine vegetation that occurs in a north-south belt along the western slopes and plains of NSW and southern Queensland. Roosts in tree hollows, crevices, and under loose bark.	Low – No records in the most suitable habitats in reserves and more extensive woodlands proximate to the study area. Cannot be entirely discounted due to mobility, but the study area is unlikely to support this species in isolation from high quality habitats.	Not considered further
Petaurus norfolcensis	Squirrel Glider	V	–	BioNet BAM-C	✓	✓	The species is widely though sparsely distributed in eastern Australia, from northern Queensland to western Victoria. Inhabits mature or old growth Box, Box-Ironbark woodlands and River Red Gum forest west of the Great Dividing Range and Blackbutt-Bloodwood forest with heath understorey in coastal areas. Prefers mixed species stands with a shrub or Acacia midstorey.	**Recorded –** utilising native vegetation in study area	**Candidate credit species**

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Petaurus norfolcensis (endangered population)	Squirrel Glider in the Wagga Wagga Local Government Area	EP	–	BioNet	✓	✓	The extent of the endangered population is legally defined by the boundaries of the Wagga Wagga LGA. The distribution of the Squirrel Glider and its known or potential habitats within, or linked across, this boundary is not well defined. However, potential habitat occurs at low densities and is patchily distributed on public lands (TSRs, NPWS reserves, Bush Heritage Trust reserves), private lands and roadside corridors with remnant vegetation. Inhabits a wide range of open forest, woodland and riverine forest habitats. Utilise remnants of various sizes, including small remnants and even small stands of trees within Travelling Stock Reserves, roadside reserves or private land. Often utilise linear remnant vegetation along roadsides or rivers and streams. Eucalypt species known to provide suitable denning and foraging resources include (but are not restricted to): Blakely's Red Gum (*Eucalyptus blakelyi*), Grey Box (*E. microcarpa*), Red Box (*E. polyanthemos*), Mugga Ironbark (*E. sideroxylon*), River Red Gum (*E. camaldulensis*), White Box (*E. albens*) and Yellow Box (*E. melliodora*).	**Moderate** – Likely that some parts of the study area represent part of the seasonal distribution of this species when occurring locally.	**Candidate credit species**
Petrogale penicillata	Brush-tailed Rock-wallaby	E	V	BioNet BAM-C	–	✓	Range extends from south-east Queensland to the Grampians in western Victoria, roughly following the line of the Great Dividing Range. Occupy rocky escarpments, outcrops and cliffs with a preference for complex structures with fissures, caves and ledges, often facing north. Browse on vegetation in and adjacent to rocky areas eating grasses and forbs as well as the foliage and fruits of shrubs and trees.	Low – No suitable habitat for this species within the study area.	**Candidate credit species**

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Phascolarctos cinereus	Koala	V	V	BioNet, PMST BAM-C	✓	✓	In NSW it mainly occurs on the central and north coasts with some populations in the west of the Great Dividing Range. Inhabit eucalypt woodlands and forests. Feed on the foliage of more than 70 eucalypt species and 30 non-eucalypt species, but in any one area will select preferred browse species.	**Moderate** – Marginal habitat opportunities for this species within the study area, due to the very fragmented nature of woodland habitats associated with the study area. Limited access to woodlands associated closely with the study area due to a lack of connectivity to patches of high-quality habitat. Irregularly occurrences may occur in the study area where feed trees occur.	**Considered further as both a predicted ecosystem credit and candidate species credit.**
Phascolarctos tapoatafa	Brush-tailed Phascogale	V	–	BAM-C	–	✓	Mostly found in dry sclerophyll open forest with sparse groundcover, east of the Great Dividing Range. However, has been recorded in heath, swamps, rainforest and wet sclerophyll forest. Nest and shelter in tree hollows with small entrances (2.5–4cm)	Low – suitable habitat does not occur in the study area and there are no records for Brush-tailed Phascogale in the regions through which the study area traverses.	**Candidate credit species**

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Pteropus poliocephalus	Grey-headed Flying-fox	V	V	BioNet, PMST BAM-C	✓	✓	Generally found within 200km of the eastern coast of Australia, from Rockhampton in Queensland to Adelaide in South Australia. In times of natural resource shortages, they may be found in unusual locations. 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 20km of a regular food source and are commonly found in gullies, close to water, in vegetation with a dense canopy. Individual camps may have tens of thousands of animals and are used for mating, and for giving birth and rearing young.	**Recorded** – foraging on blossom resources within study area vegetation. There are no known Flying-fox camps associated with the study area. There are no known Flying-fox camps associated with the study area.	**Considered further as both a predicted ecosystem credit and candidate species credit.**
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	V	–	BioNet BAM-C	✓	✓	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.	**High** – Likely that the study area represents part of the seasonal distribution of this species when occurring locally.	**Predicted ecosystem credit species**
Scoteanax rueppellii	Greater Broad-nosed Bat	V	–	BioNet	–	–	Utilises a variety of habitats from woodland through to moist and dry eucalypt forest and rainforest, though it is most commonly found in tall wet forest. Although this species usually roosts in tree hollows, it has also been found in buildings.	**Moderate** – Likely that some parts of the study area represent part of the seasonal distribution of this species when occurring locally.	**Predicted ecosystem credit species**

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					LOWER SLOPES	INLAND SLOPES			
Vespadelus baverstocki	Inland Forest Bat	V	–	BioNet	–	–	Because of the difficulty of identification, the distribution of this species, particularly in NSW, is very poorly known. Believed to occur widely in all the mainland states, generally in areas with annual rainfall less than 400 millimetres. 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.	**Moderate** – Record in the wider locality of the study area in The Rock Nature Reserve. Likely that some parts of the study area represent part of the seasonal distribution of this species when occurring locally.	**Predicted ecosystem credit species**
Petauroides volans	Greater Glider	–	V	PMST	–	–	The Greater Glider occurs in eucalypt forests and woodlands along the east coast of Australia from north east Queensland to the Central Highlands of Victoria from sea level to 1200m altitude. It feeds exclusively on eucalypt leaves, buds, flowers and mistletoe and favours forests with a diversity of eucalypt species, due to seasonal variation in its preferred tree species. It roosts in tree hollows, with a particular selection for large hollows in large, old trees. Individuals use multiple hollows and a relatively high abundance of tree hollows (at least 4–8 suitable hollows per hectare) seems to be needed for the species to persist. Individuals occupy relatively small home ranges with an average size of 1 to 3ha but the species has relatively low persistence in small forest fragments, and disperses poorly across vegetation that is not native forest. Forest patches of at least 160km^2 may be required to maintain viable populations.	Low – No suitable habitat for this species within the study area.	Not considered further

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	EPBC ACT [2]	SOURCE[3]	IBRA SUBREGIONS		HABITAT, ECOLOGY, DISTRIBUTION AND BAM HABITAT CONSTRAINTS[4]	LIKELIHOOD OF OCCURRENCE	OUTCOME
					LOWER SLOPES	INLAND SLOPES			
Reptiles									
Aprasia parapulchella	Pink-tailed Legless Lizard	V	V	BioNet PMST BAM-C	✓	✓	The Pink-tailed Legless Lizard is only known from the Central and Southern Tablelands, and the South Western Slopes. There is a concentration of populations in the Canberra/ Queanbeyan Region. Other populations have been recorded near Cooma, Yass, Bathurst, Albury and West Wyalong. This species is also found in the Australian Capital Territory. Inhabits sloping, open woodland areas with a predominantly native grassy groundlayer, particularly those dominated by Kangaroo Grass (*Themeda australis*). Sites are typically well-drained, with rocky outcrops or scattered, partially-buried rocks. 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.	Low – Although there are a number of records for this species associated with hilly woodlands around Albury, such habitats do not occur within the study area and therefore this species is not considered likely to occur.	**Candidate credit species**

SCIENTIFIC NAME	COMMON NAME	BC ACT[1]	EPBC ACT [2]	SOURCE[3]	IBRA SUBREGIONS		HABITAT, ECOLOGY, DISTRIBUTION AND BAM HABITAT CONSTRAINTS[4]	LIKELIHOOD OF OCCURRENCE	OUTCOME
					LOWER SLOPES	INLAND SLOPES			
Delma impar	Striped Legless Lizard	V	V	PMST BAM-C	–	✓	The Striped Legless Lizard occurs in the Southern Tablelands, the South West Slopes and possibly on the Riverina. Populations are known in the Goulburn, Yass, Queanbeyan, Cooma and Tumut areas. Also occurs in the ACT, Victoria and south-eastern South Australia. Found mainly in Natural Temperate Grassland but has also been captured in grasslands that have a high exotic component. Also found in secondary grassland near Natural Temperate Grassland and occasionally in open Box-Gum Woodland. Habitat is where grassland is dominated by perennial, tussock-forming grasses such as Kangaroo Grass *Themeda 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.	Low – No records associated with the study area. Species' range occurs to the east of the study area in higher elevation grasslands. No suitable habitat for this species in the combined study area	**Candidate credit species**

(1) V = Vulnerable, E = Endangered, CE = Critically Endangered, EX = Presumed Extinct under the BC Act

(2) V = Vulnerable, E = Endangered, M = Migratory, Ma = Marine under the Commonwealth EPBC Act, X = Extinct.

(3) Source; Professional opinion = ESS expert advice of predicted threatened species areas provided as spatial data, PMST = The Department of the Environment and Energy's EPBC Protected Matters Search Tool, BioNet = ESS's Bionet Atlas of NSW Wildlife, BAM-C = BAM calculator predictor

APPENDIX C-3
TARGETED SURVEY POINTS

Albury - Murray River Bridge

HUME HIGHWAY

97

96

95

Q1

Targeted survey effort

- Anabat
- BAM integrity plot
- Bird survey
- Call playback
- Frog search
- Habitat assessment
- Hollow-bearing tree
- Rapid data point
- Spotlight transect
- Targeted flora survey tracks
- Threatened species search

Albury to Illabo

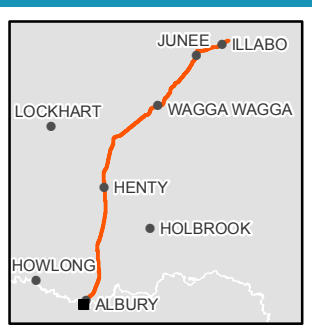
Appendix C3 – Targeted survey effort

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 19/01/2024 Paper: A3
Author: WSP Scale: 1:2,500
Data Sources: ARTC, NSWSS

- Proposal site
- Study area
- Existing railway
- Main road
- Watercourse



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DEAN STREET
HUME STREET
ATKINS STREET
HUME HIGHWAY
3
102
Albury - Albury Station Yard

Targeted survey effort
- Bird survey
- Habitat assessment
- Rapid data point
- Targeted flora survey tracks

Albury to Illabo

Appendix C3 – Targeted survey effort

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 19/01/2024 Paper: A3
Author: WSP Scale: 1:3,000
Data Sources: ARTC, NSWSS

- Proposal site
- Study area
- Existing railway
- Main road

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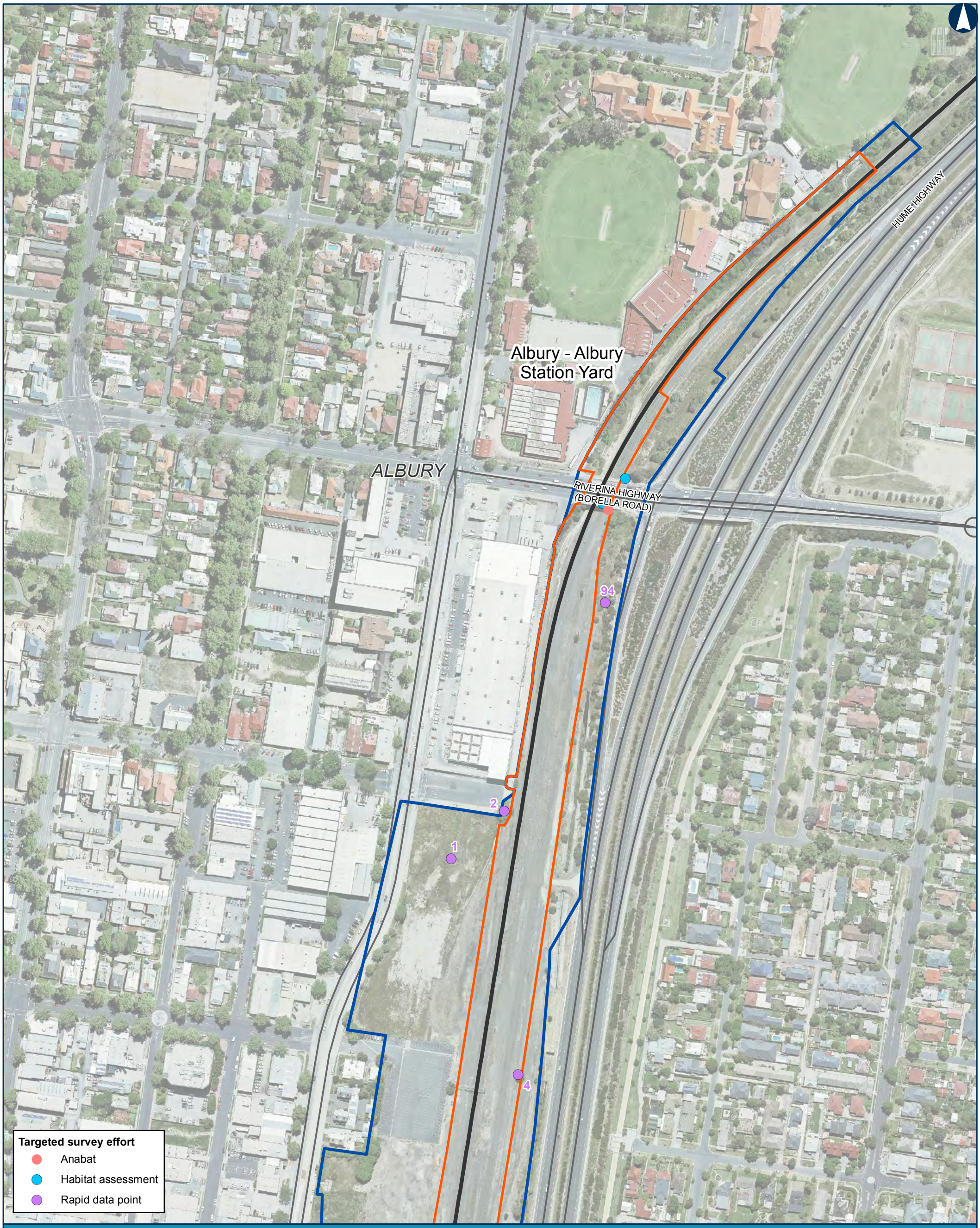

Albury to Illabo | Appendix C3 – Targeted survey effort | MAP 3 OF 27

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 19/01/2024 Paper: A3
Author: WSP Scale: 1:3,000
Data Sources: ARTC, NSWSS

Proposal site
Study area
Existing railway
Main road

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EIGHT MILE CREEK

Albury - Billy Hughes Bridge

Q14

9

8

98

Q4

5

Q2

7

6

Q15

99

100

101

WAGGA ROAD

HUME HIGHWAY

Targeted survey effort

- Anabat
- BAM integrity plot
- Bird survey
- Call playback
- Camera trap
- Habitat assessment
- Harp trap
- Hollow-bearing tree
- Microbat exit survey
- Opportunistic
- Rapid data point
- Spotlight transect
- Targeted flora survey tracks
- Threatened species search

Albury to Illabo

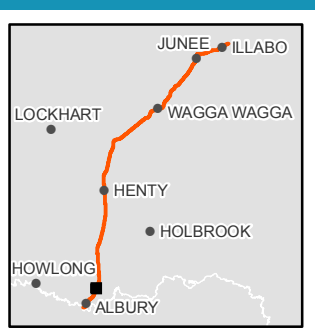
Appendix C3 – Targeted survey effort

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 19/01/2024 Paper: A3
Author: WSP Scale: 1:4,000
Data Sources: ARTC, NSWSS

- Proposal site
- Study area
- Existing railway
- Main road
- Watercourse



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Albury to Illabo

Appendix C3 – Targeted survey effort

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 19/01/2024 Paper: A3
Author: WSP Scale: 1:3,000
Data Sources: ARTC, NSWSS

Proposal site
Study area
Existing railway
Main road

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LGH - Culcairn Station Yard

MELVILLE STREET

BALFOUR STREET

RAILWAY PARADE

13
14
15
12
Q3
11

Targeted survey effort

- BAM integrity plot
- Bird survey
- Frog search
- Habitat assessment
- Hollow-bearing tree
- Hollow-bearing tree (Stag)
- Rapid data point
- Spotlight transect
- Targeted flora survey tracks

Albury to Illabo

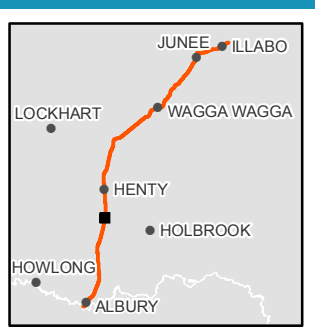
Appendix C3 – Targeted survey effort

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 19/01/2024 Paper: A3
Author: WSP Scale: 1:3,000
Data Sources: ARTC, NSWSS

- Proposal site
- Study area
- Existing railway
- Main road



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HENTY PLEASANT HILLS ROAD

ALLAN STREET

OLYMPIC HIGHWAY

BUCKARGINGAH CREEK

LGH - Henty Yard

SLADEN STREET

RAILWAY PARADE

16

17

18

Targeted survey effort

- Anabat
- Bird survey
- Call playback
- Frog search
- Habitat assessment
- Hollow-bearing tree
- Hollow-bearing tree (Stag)
- Rapid data point
- Spotlight transect
- Targeted flora survey tracks

Albury to Illabo

Appendix C3 – Targeted survey effort

MAP 7 OF 27

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 19/01/2024 Paper: A3
Author: WSP Scale: 1:3,000
Data Sources: ARTC, NSWSS

- Proposal site
- Study area
- Existing railway
- Main road
- Watercourse

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OLYMPIC HIGHWAY

LGH - Yerong Creek Yard

COX STREET

PLUNKETT STREET

COLE STREET

20

19

SANDY CREEK

Targeted survey effort

- Anabat
- Habitat assessment
- Microbat exit survey
- Rapid data point
- Targeted flora survey tracks

Albury to Illabo

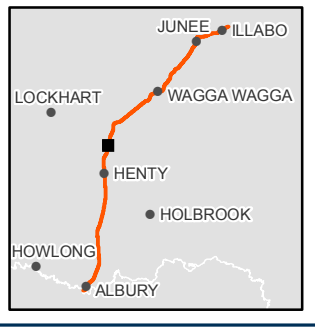
Appendix C3 – Targeted survey effort

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 19/01/2024 Paper: A3
Author: WSP Scale: 1:5,000
Data Sources: ARTC, NSWSS

- Proposal site
- Study area
- Existing railway
- Main road
- Watercourse



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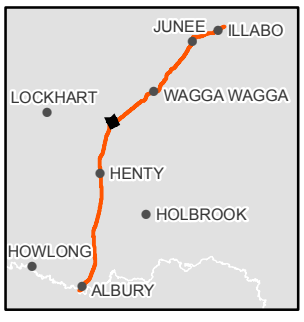
Albury to Illabo | Appendix C3 – Targeted survey effort | MAP 9 OF 27

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 19/01/2024 Paper: A3
Author: WSP Scale: 1:2,500
Data Sources: ARTC, NSWSS

Study area
Existing railway
Main road



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LGH - The Rock Yard

BURKES CREEK

URANA STREET

OLYMPIC HIGHWAY

MANGOPLAH ROAD

RAILWAY STREET

21 24 23 25 22

Targeted survey effort

- Rapid data point
- Targeted flora survey tracks

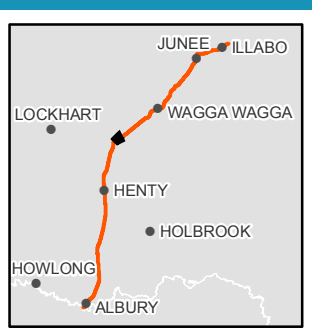
Albury to Illabo | Appendix C3 – Targeted survey effort | MAP 10 OF 27

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 19/01/2024 Paper: A3
Author: WSP Scale: 1:2,500
Data Sources: ARTC, NSWSS

- Proposal site
- Study area
- Existing railway
- Main road
- Watercourse



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40
124
SANDY CREEK
119
122
173
120
121
123
Wagga -
Uranquinty
Yard
OLYMPIC HIGHWAY

Targeted survey effort
- Anabat
- Habitat assessment
- Microbat exit survey
- Rapid data point
- Spotlight transect
- Targeted flora survey tracks

Albury to Illabo

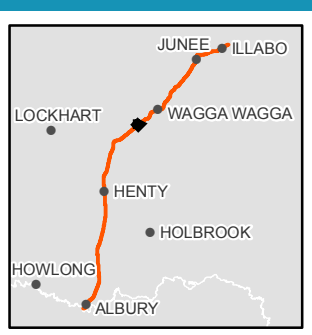
Appendix C3 – Targeted survey effort

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 19/01/2024 Paper: A3
Author: WSP Scale: 1:3,000
Data Sources: ARTC, NSWSS

- Proposal site
- Study area
- Existing railway
- Main road
- Watercourse



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OLYMPIC HIGHWAY

YARRAGUNDRY STREET

RYAN STREET

MORGAN STREET

Wagga - Uranquinty Yard

Q5

36

37

38

39

40

35

Targeted survey effort

- BAM integrity plot
- Bird survey
- Hollow-bearing tree
- Rapid data point
- Spotlight transect
- Targeted flora survey tracks

Albury to Illabo

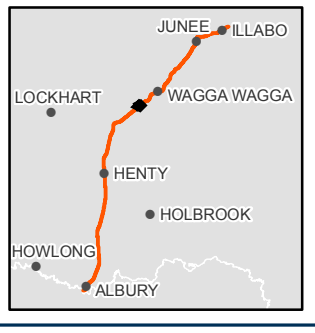
Appendix C3 – Targeted survey effort

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 19/01/2024 Paper: A3
Author: WSP Scale: 1:3,000
Data Sources: ARTC, NSWSS

- Proposal site
- Study area
- Existing railway
- Main road
- Watercourse



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Wagga - Pearson St Bridge

84
118
82
117
138
113
114
115
116
83

Targeted survey effort
- Anabat
- Bird survey
- Habitat assessment
- Rapid data point
- Targeted flora survey tracks

Albury to Illabo

Appendix C3 – Targeted survey effort

MAP 13 OF 27

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 19/01/2024 Paper: A3
Author: WSP Scale: 1:4,000
Data Sources: ARTC, NSWSS

- Proposal site
- Study area
- Existing railway

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DOCKER STREET

BOURKE STREET

Wagga -
Wagga Wagga
Station Yard

Albury to Illabo

Appendix C3 – Targeted survey effort

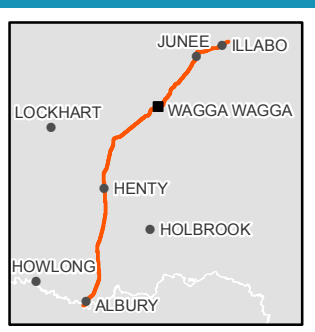
MAP 14 OF 27

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 19/01/2024 Paper: A3
Author: WSP Scale: 1:2,000
Data Sources: ARTC, NSWSS

Proposal site
Study area
Existing railway
Main road



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Wagga -
Wagga Wagga
Station Yard

111
109
110
108
106
107

EDWARD STREET

Targeted survey effort
- Anabat
- Habitat assessment
- Rapid data point
- Targeted flora survey tracks

Albury to Illabo

Appendix C3 – Targeted survey effort

MAP 15 OF 27

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 19/01/2024 Paper: A3
Author: WSP Scale: 1:3,000
Data Sources: ARTC, NSWSS

- Proposal site
- Study area
- Existing railway
- Main road

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Wagga -
Wagga Wagga
Station Yard

EDWARD STREET

BAYLIS STREET

112

111

109

110

108

Targeted survey effort

- Habitat assessment
- Rapid data point
- Targeted flora survey tracks

Albury to Illabo

Appendix C3 – Targeted survey effort

MAP 16 OF 27

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 19/01/2024 Paper: A3
Author: WSP Scale: 1:3,000
Data Sources: ARTC, NSWSS

- Proposal site
- Study area
- Existing railway
- Main road

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Wagga - Bomen Yard

BYRNES ROAD

103
32
104
105
31
30
29
28
27
33

Targeted survey effort
- Anabat
- Bird survey
- Habitat assessment
- Rapid data point
- Targeted flora survey tracks

Albury to Illabo

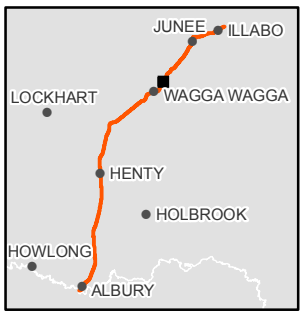
Appendix C3 – Targeted survey effort

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 19/01/2024 Paper: A3
Author: WSP Scale: 1:4,000
Data Sources: ARTC, NSWSS

- Proposal site
- Study area
- Existing railway
- Main road



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HAREFIELD ROAD
PATTERSONS ROAD
BUCKS CREEK
REEDY CREEK
BYRNES ROAD
Junee - Harefield Yard
134
133
146
145
135
34
148
137
147
136

Targeted survey effort
- Anabat
- Bird survey
- Microbat exit survey
- Rapid data point
- Spotlight transect
- Targeted flora survey tracks

Albury to Illabo

Appendix C3 – Targeted survey effort

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 19/01/2024 Paper: A3
Author: WSP Scale: 1:5,000
Data Sources: ARTC, NSWSS

- Proposal site
- Study area
- Existing railway
- Main road
- Watercourse

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BROADWAY
OLYMPIC HIGHWAY
MAIN STREET
SEIGNIOR STREET
HUMPHRYS STREET
LORNE STREET
BELMORE STREET
KEMP STREET
EDGAR STREET
Junee - Junee Station Yard
Junee - Kemp St Bridge

Targeted survey effort
- Anabat
- Habitat assessment
- Microbat exit survey
- Opportunistic
- Spotlight transect
- Targeted flora survey tracks

Albury to Illabo

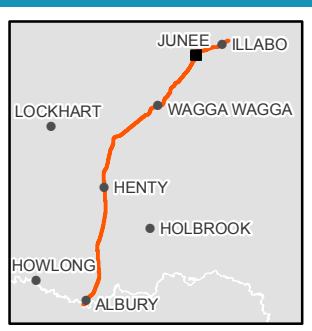
Appendix C3 – Targeted survey effort

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 19/01/2024 Paper: A3
Author: WSP Scale: 1:3,000
Data Sources: ARTC, NSWSS

- Proposal site
- Study area
- Existing railway
- Main road
- Watercourse



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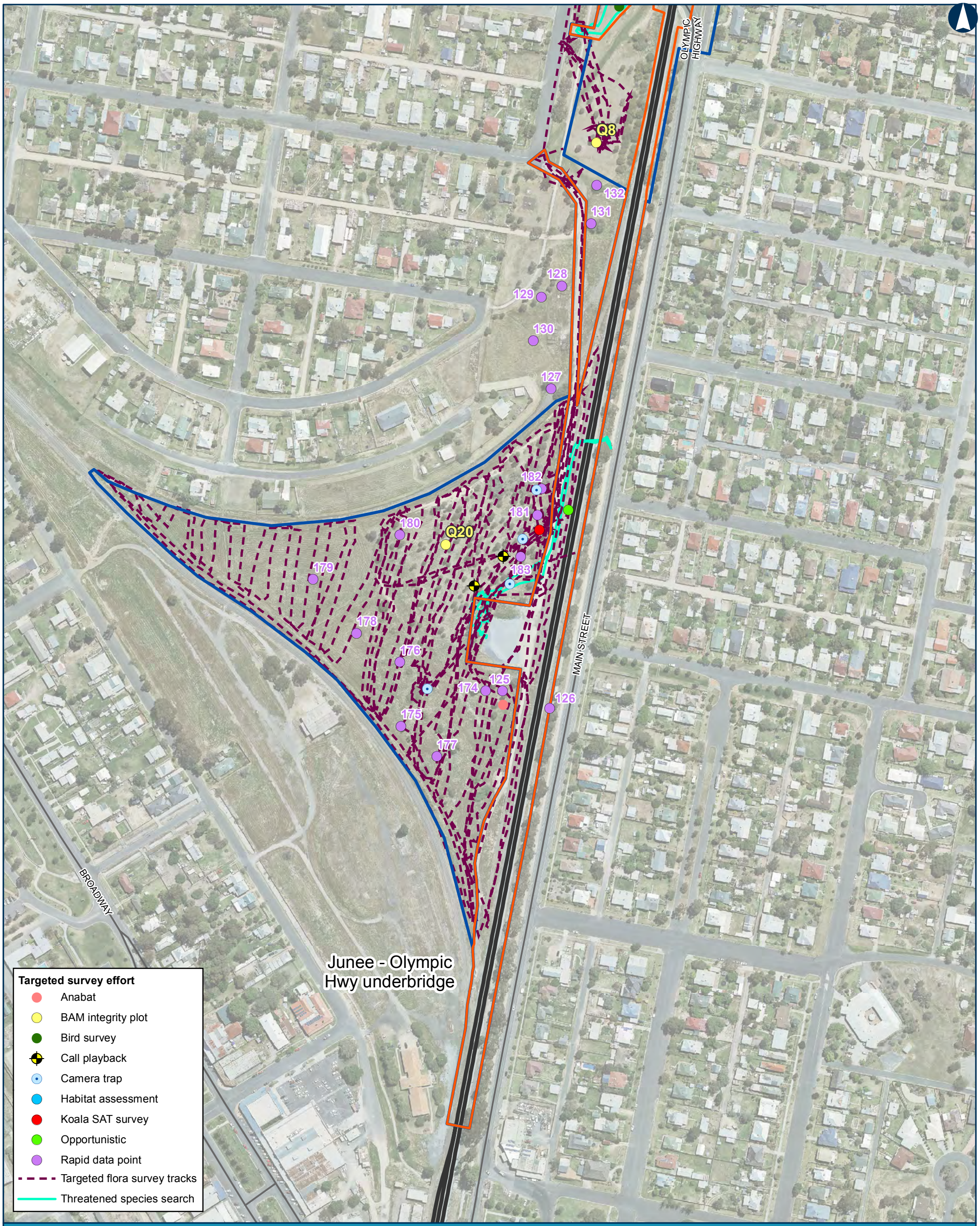

Albury to Illabo Appendix C3 – Targeted survey effort MAP 20 OF 27

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 19/01/2024 Paper: A3
Author: WSP Scale: 1:3,000
Data Sources: ARTC, NSWSS

Proposal site
Study area
Existing railway
Main road

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OLYMPIC HIGHWAY

Junee - Olympic Hwy underbridge

ILLABO ROAD

MAIN STREET

93

Q8

132

131

128

129

130

127

Targeted survey effort

- Anabat
- BAM integrity plot
- Bird survey
- Habitat assessment
- Rapid data point
- Reptile search
- Targeted flora survey tracks
- Threatened species search

Albury to Illabo

Appendix C3 – Targeted survey effort

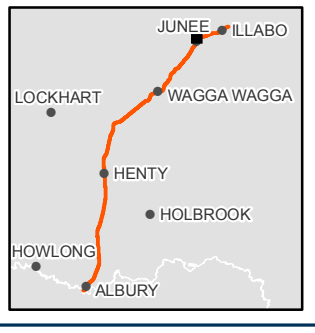
MAP 21 OF 27

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 19/01/2024 Paper: A3
Author: WSP Scale: 1:3,000
Data Sources: ARTC, NSWSS

- Proposal site
- Study area
- Existing railway
- Main road



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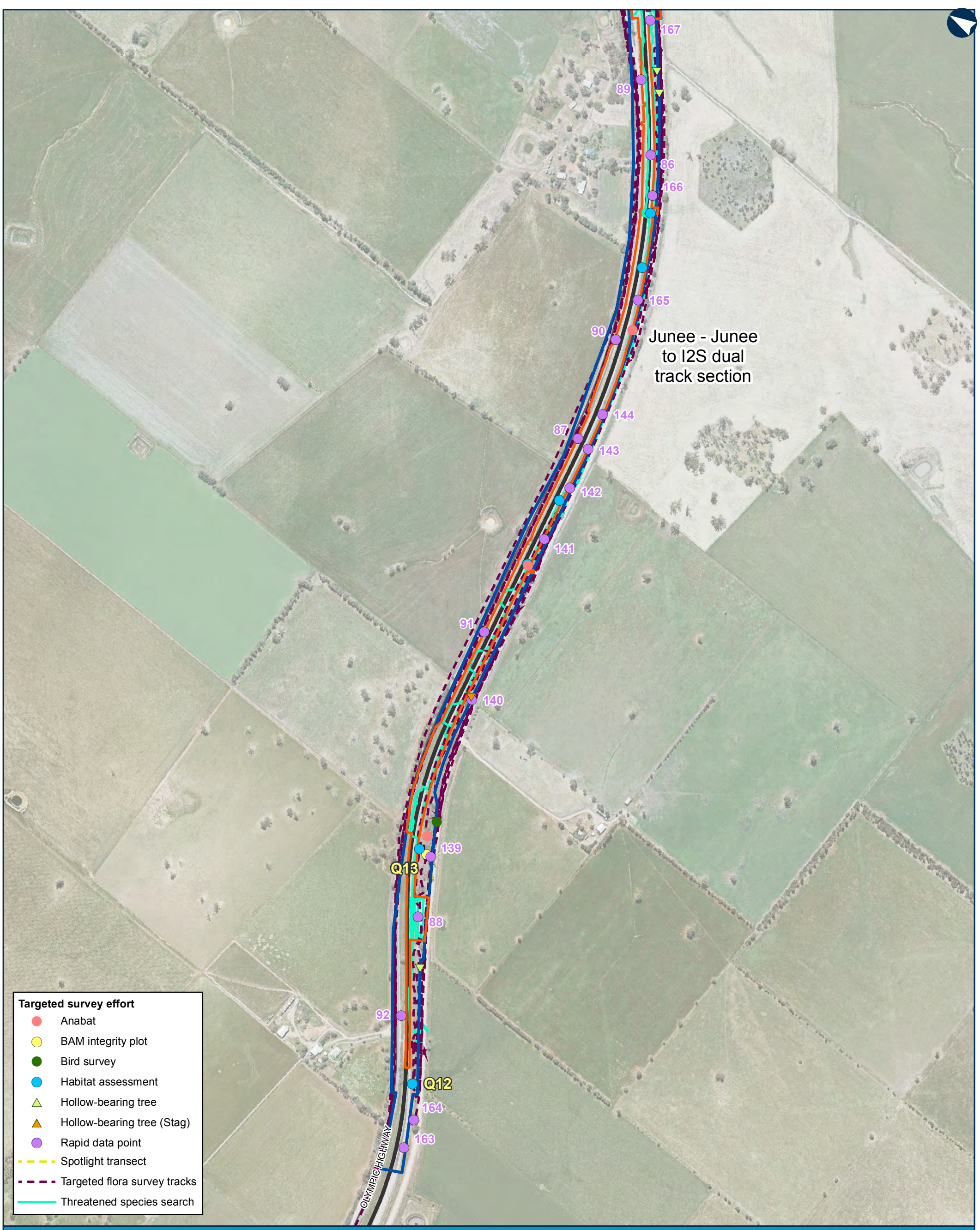

Albury to Illabo Appendix C3 – Targeted survey effort MAP 22 OF 27

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 19/01/2024 Paper: A3
Author: WSP Scale: 1:8,000
Data Sources: ARTC, NSWSS

Proposal site
Study area
Existing railway
Main road

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Junee - Junee to I2S dual track section

OLYMPIC HIGHWAY

MARINNA ROAD

76
Q11
Q10
78
Q17
Q9
172
Q16
77
171
170
169
168
85
167

Targeted survey effort

- Anabat
- BAM integrity plot
- Camera trap
- Habitat assessment
- Hollow-bearing tree
- Microbat exit survey
- Rapid data point
- Targeted flora survey tracks
- Threatened species search

Albury to Illabo | Appendix C3 – Targeted survey effort | MAP 23 OF 27

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 19/01/2024 Paper: A3
Author: WSP Scale: 1:8,000
Data Sources: ARTC, NSWSS

- Proposal site
- Study area
- Existing railway
- Main road

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Junee - Junee to I2S dual track section

63 Q19 71 157 156 154 155 72 153 152 73 81 74 80 Q18 79 75 76 Q11

OLYMPIC HIGHWAY

Targeted survey effort

- Anabat
- BAM integrity plot
- Bird survey
- Call playback
- Camera trap
- Habitat assessment
- Hollow-bearing tree
- Rapid data point
- Targeted flora survey tracks
- Threatened species search

Albury to Illabo

Appendix C3 – Targeted survey effort

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 19/01/2024 Paper: A3
Author: WSP Scale: 1:8,000
Data Sources: ARTC, NSWSS

- Proposal site
- Study area
- Existing railway
- Main road

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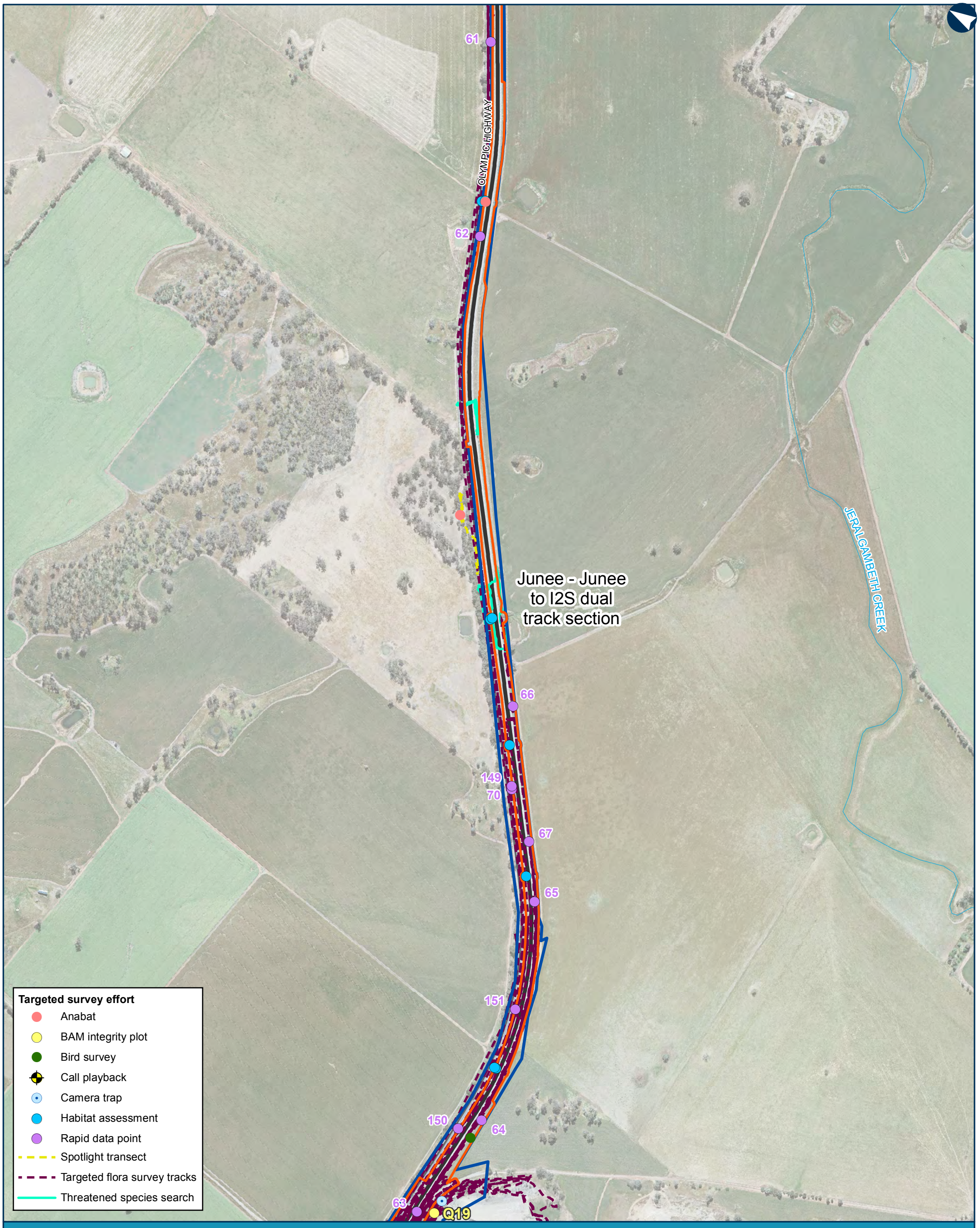

Albury to Illabo Appendix C3 – Targeted survey effort MAP 25 OF 27

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 19/01/2024 Paper: A3
Author: WSP Scale: 1:8,000
Data Sources: ARTC, NSWSS

Proposal site
Study area
Existing railway
Main road
Watercourse

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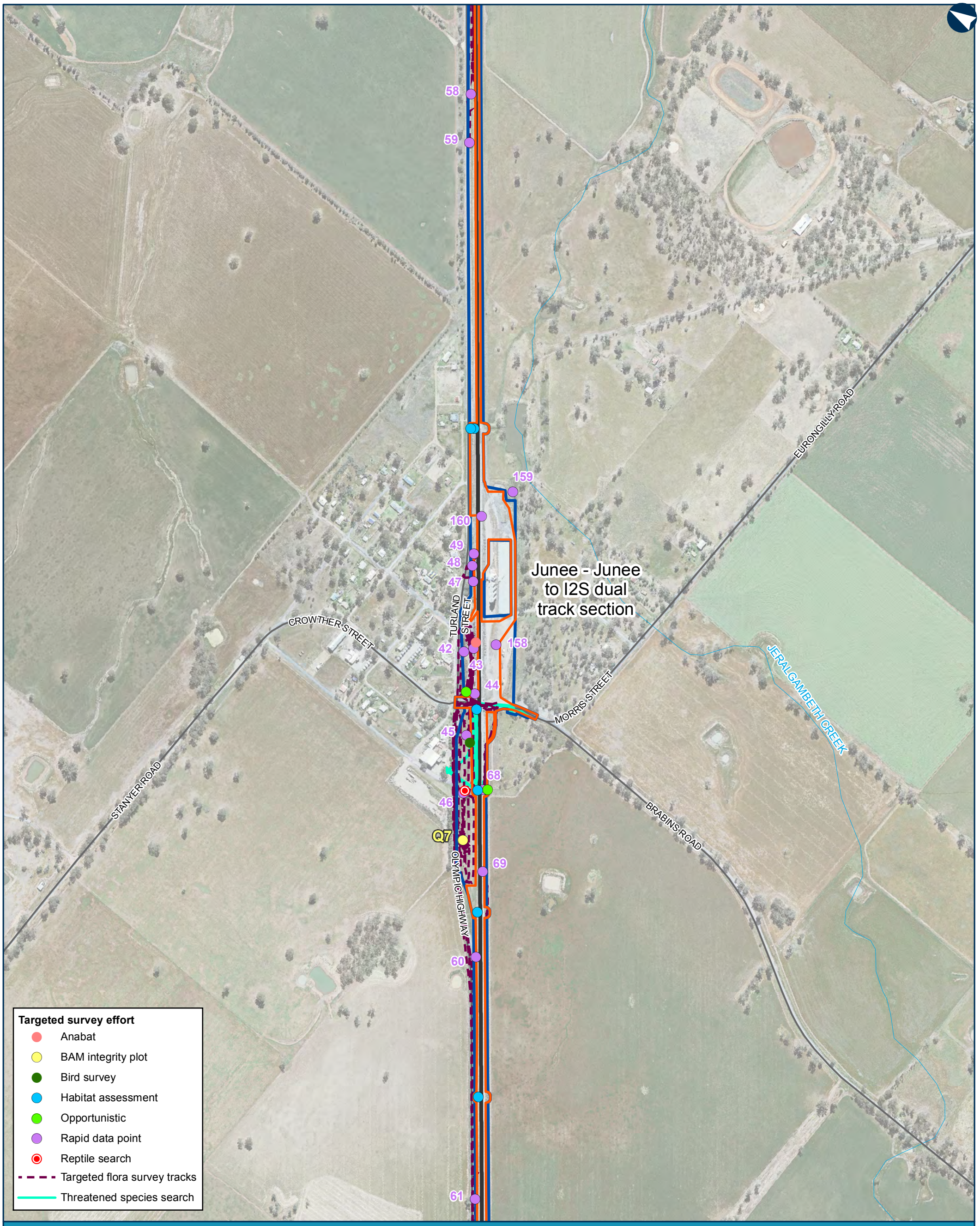

Albury to Illabo | Appendix C3 – Targeted survey effort | MAP 26 OF 27

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 19/01/2024 Paper: A3
Author: WSP Scale: 1:8,000
Data Sources: ARTC, NSWSS

Proposal site
Study area
Existing railway
Main road
Watercourse

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WARRENS LANE

Junee - Junee to I2S dual track section

OLYMPIC HIGHWAY

BILLABONG CREEK

JERALGAMBETH CREEK

50
51
52
53
54
55
56
57
161
162

Targeted survey effort

- Anabat
- Bird survey
- Frog search
- Habitat assessment
- Microbat exit survey
- Rapid data point
- Reptile search
- Spotlight transect
- Targeted flora survey tracks

Albury to Illabo

Appendix C3 – Targeted survey effort

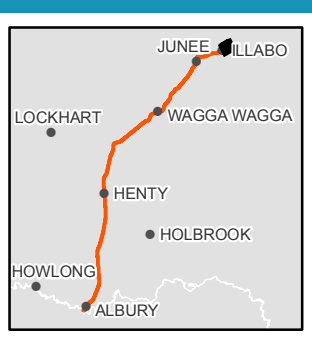
MAP 27 OF 27

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 19/01/2024 Paper: A3
Author: WSP Scale: 1:8,000
Data Sources: ARTC, NSWSS

- Proposal site
- Study area
- Existing railway
- Main road
- Watercourse



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APPENDIX C-4
THREATENED FAUNA SPECIES RECORDED AND CANDIDATE THREATENED FAUNA SPECIES POLYGONS

Table C-4.1 Recorded fauna

SCIENTIFIC NAME	COMMON NAME	NATIVE / INTRODUCED	BC ACT[1]	EPBC ACT[2]
Amphibian (7)				
Limnodynastes dumerilii	Eastern Banjo Frog	Native		
Limnodynastes peronii	Striped Marsh Frog	Native		
Limnodynastes tasmaniensis	Spotted Grass Frog	Native		
Litoria ewingii	Brown Tree Frog	Native		
Litoria peronii	Peron's Tree Frog	Native		
Crinia parinsignifera	Eastern Sign-bearing Froglet	Native		
Crinia signifera	Common Eastern Froglet	Native		
Birds (71)				
Acanthiza chrysorrhoa	Yellow-rumped Thornbill	Native		
Acanthiza lineata	Striated Thornbill	Native		
Acanthiza nana	Yellow Thornbill	Native		
Alisterus scapularis	Australian King-Parrot	Native		
Anas superciliosa	Pacific Black Duck	Native		
Anthochaera carunculata	Red Wattlebird	Native		
Aquila audax	Wedge-tailed Eagle	Native		
Ardea pacifica	White-necked Heron	Native		
Cacatua galerita	Sulphur-crested Cockatoo	Native		
Cacatua sanguinea	Little Corella	Native		
Chenonetta jubata	Australian Wood Duck	Native		
Cincloramphus cruralis	Brown Songlark	Native		
Cincloramphus matthewsi	Rufous Songlark	Native		
Circus assimilis	Spotted Harrier	Native	V	
Cisticola exilis	Golden-headed Cisticola	Native		
Colluricincla harmonica	Grey Shrike-thrush	Native		
Columba livia	Rock Dove	Introduced		
Coracina novaehollandiae	Black-faced Cuckoo-shrike	Native		
Corcorax melanorhamphos	White-winged Chough	Native		
Corvus coronoides	Australian Raven	Native		
Cracticus nigrogularis	Pied Butcherbird	Native		
Cracticus tibicen	Australian Magpie	Native		
Cracticus torquatus	Grey Butcherbird	Native		

SCIENTIFIC NAME	COMMON NAME	NATIVE / INTRODUCED	BC ACT[1]	EPBC ACT[2]
Dacelo novaeguineae	Laughing Kookaburra	Native		
Egretta novaehollandiae	White-faced Heron	Native		
Elanus caeruleus	Black-shouldered Kite	Native		
Entomyzon cyanotis	Blue-faced Honeyeater	Native		
Eolophus roseicapilla	Galah	Native		
Falco berigora	Brown Falcon	Native		
Falco cenchroides	Nankeen Kestrel	Native		
Falco longipennis	Australian Hobby	Native		
Gallinula tenebrosa	Dusky Moorhen	Native		
Grallina cyanoleuca	Magpie-lark	Native		
Haliastur sphenurus	Whistling Kite	Native		
Hieraaetus morphnoides	Little Eagle	Native	V	
Hirundo neoxena	Welcome Swallow	Native		
Lichenostomus chrysops	Yellow-faced Honeyeater	Native		
Lichenostomus penicillatus	White-plumed Honeyeater	Native		
Malurus cyaneus	Superb Fairy-wren	Native		
Manorina melanocephala	Noisy Miner	Native		
Merops ornatus	Rainbow Bee-eater	Native		Ma
Milvus migrans	Black Kite	Native		
Neochmia temporalis	Red-browed Finch	Native		
Nycticorax caledonicus	Nankeen Night-Heron	Native		
Ocyphaps lophotes	Crested Pigeon	Native		
Pardalotus punctatus	Spotted Pardalote	Native		
Pardalotus striatus	Striated Pardalote	Native		
Passer domesticus	House Sparrow	Introduced		
Petrochelidon ariel	Fairy Martin	Native		
Phalacrocorax sulcirostris	Little Black Cormorant	Native		
Phalacrocorax varius	Pied Cormorant	Native		
Platalea flavipes	Yellow-billed Spoonbill	Native		
Platycercus eximius	Eastern Rosella	Native		
Podargus strigoides	Tawny Frogmouth	Native		
Polytelis swainsonii	Superb Parrot	Native	V	V
Porphyrio porphyrio	Purple Swamphen	Native		

SCIENTIFIC NAME	COMMON NAME	NATIVE / INTRODUCED	BC ACT[1]	EPBC ACT[2]
Psephotus haematonotus	Red-rumped Parrot	Native		
Rhipidura albiscapa	Grey Fantail	Native		
Rhipidura leucophrys	Willie Wagtail	Native		
Smicrornis brevirostris	Weebill	Native		
Stagonopleura guttata	Diamond Firetail	Native	V	
Strepera graculina	Pied Currawong	Native		
Streptopelia chinensis	Spotted Dove	Introduced		
Struthidea cinerea	Apostlebird	Native		
Sturnus vulgaris	Common Starling	Introduced		
Threskiornis molucca	Australian White Ibis	Native		
Todiramphus sanctus	Sacred Kingfisher	Native		
Trichoglossus haematodus	Rainbow Lorikeet	Native		
Turdus merula	Common Blackbird	Introduced		
Vanellus miles	Masked Lapwing	Native		
Zosterops lateralis	Silvereye	Native		
Mammals (16)				
Austronomus australis	White-striped Freetail-bat	Native		
Chalinolobus gouldii	Gould's Wattled Bat	Native		
Chalinolobus morio	Chocolate Wattled Bat	Native		
Macropus giganteus	Eastern Grey Kangaroo	Native		
Nyctophilus geoffroyi	Lesser Long-eared Bat	Native		
Ozimops planiceps	South-eastern Free-tailed Bat	Native		
Ozimops ridei	Ride's Free-tailed Bat	Native		
Petaurus breviceps	Sugar Glider	Native		
Petaurus norfolcensis	Squirrel Glider	Native	V	
Pseudocheirus peregrinus	Common Ring-tailed Possum	Native		
Pteropus poliocephalus	Grey-headed Flying-fox	Native	V	V
Scotorepens balstoni	Inland Broad-nosed Bat	Native		
Trichosurus vulpecula	Common Brush-tail Possum	Native		
Vespadelus darlingtoni	Large Forest Bat	Native		
Vespadelus vulturnus	Little Forest Bat	Native		
Wallabia bicolor	Swamp Wallaby	Native		
Reptiles (6)				

SCIENTIFIC NAME	COMMON NAME	NATIVE / INTRODUCED	BC ACT[1]	EPBC ACT[2]
Carlia tetradactyla	Southern Rainbow Skink	Native		
Ctenotus robustus	Eastern Striped Skink	Native		
Morethia boulengeri	Boulengers Morethia	Native		
Pogona barbata	Eastern Bearded Dragon	Native		
Pseudonaja textilis	Eastern Brown Snake	Native		
Varanus varius	Lace Monitor	Native		

(1) V = Vulnerable under BC Act
(2) V = Vulnerable, Ma = Marine under EPBC Act.

Albury - Murray River Bridge

HUME HIGHWAY

MURRAY RIVER

Albury to Illabo

Appendix C4 – Threatened fauna species recorded and candidate threatened species polygons

MAP 1 OF 21

0 50 100 m

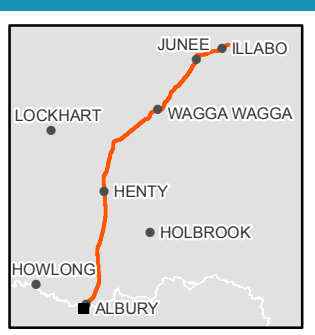
Coordinate System: GDA 1994 MGA Zone 55

Date: 22/01/2024 Paper: A3
Author: WSP Scale: 1:2,500
Data Sources: ARTC, NSWSS

- Proposal site
- Study area
- Existing railway
- Main road
- Watercourse

Threatened fauna results

- Superb Parrot and Squirrel Glider threatened fauna species polygon
- Sloane's Froglet species polygon impact area
- Sloane's Froglet threatened fauna species polygon



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Albury to Illabo | Appendix C4 – Threatened fauna species recorded and candidate threatened species polygons | MAP 2 OF 21

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 22/01/2024 Paper: A3
Author: WSP Scale: 1:8,500
Data Sources: ARTC, NSWSS

- Proposal site
- Study area
- Existing railway
- Main road
- Watercourse

Threatened fauna results

- Sloane's Froglet threatened fauna species polygon

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Albury - Billy Hughes Bridge

EIGHT MILE CREEK

WAGGA ROAD

HUME HIGHWAY

SEVEN MILE CREEK

ETTAMOGAH

Albury to Illabo

Appendix C4 – Threatened fauna species recorded and candidate threatened species polygons

MAP 3 OF 21

0 50 100 m

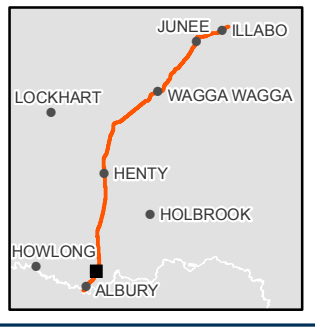
Coordinate System: GDA 1994 MGA Zone 55

Date: 22/01/2024 Paper: A3
Author: WSP Scale: 1:5,500
Data Sources: ARTC, NSWSS

- Proposal site
- Study area
- Existing railway
- Main road
- Watercourse

Threatened fauna results

- Grey-headed Flying-fox (BC Act - Vulnerable, EPBC Act - Vulnerable)
- Little Eagle (BC Act - Vulnerable)
- Squirrel Glider (BC Act - Vulnerable)
- Superb Parrot and Squirrel Glider threatened fauna species polygon
- Sloane's Froglet species polygon impact area
- Sloane's Froglet threatened fauna species polygon
- Regent Honeyeater - Important Area Map



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Albury - Table Top Yard

HUME HIGHWAY

Albury to Illabo

Appendix C4 – Threatened fauna species recorded and candidate threatened species polygons

MAP 4 OF 21

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 22/01/2024 Paper: A3
Author: WSP Scale: 1:3,000
Data Sources: ARTC, NSWSS

- Proposal site
- Study area
- Existing railway
- Main road

Threatened fauna results

- Superb Parrot and Squirrel Glider threatened fauna species polygon
- Sloane's Froglet threatened fauna species polygon

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LGH - Culcairn
Station Yard

MELVILLE STREET

BALFOUR STREET

RAILWAY PARADE

Albury to Illabo

Appendix C4 – Threatened fauna species recorded and candidate threatened species polygons

MAP 5 OF 21

0 50 100 m

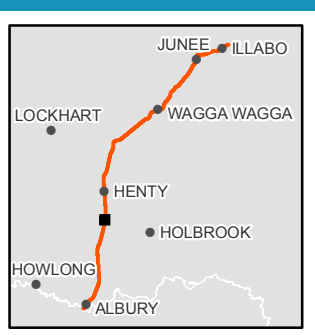
Coordinate System: GDA 1994 MGA Zone 55

Date: 22/01/2024
Author: WSP
Paper: A3
Scale: 1:3,000
Data Sources: ARTC, NSWSS

- Proposal site
- Study area
- Existing railway
- Main road

Threatened fauna results

- Grey-headed Flying-fox (BC Act - Vulnerable, EPBC Act - Vulnerable)
- Superb Parrot and Squirrel Glider threatened fauna species polygon
- Sloane's Froglet species polygon impact area
- Sloane's Froglet threatened fauna species polygon



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HENTY PLEASANT HILLS ROAD
ALLAN STREET
OLYMPIC HIGHWAY
BUCKARGINGAH CREEK
LGH - Henty Yard
SLADEN STREET
HENTY COOKARDINIA ROAD
RAILWAY PARADE
ROSLER PARADE
HENTY WALLA ROAD

Albury to Illabo

Appendix C4 – Threatened fauna species recorded and candidate threatened species polygons

MAP 6 OF 21

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 22/01/2024 Paper: A3
Author: WSP Scale: 1:5,000
Data Sources: ARTC, NSWSS

- Proposal site
- Study area
- Existing railway
- Main road
- Watercourse

Threatened fauna results

- Superb Parrot (BC Act - Vulnerable, EPBC Act - Vulnerable)
- Superb Parrot and Squirrel Glider threatened fauna species polygon
- Sloane's Froglet threatened fauna species polygon

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Albury to Illabo | Appendix C4 – Threatened fauna species recorded and candidate threatened species polygons | MAP 7 OF 21

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 22/01/2024 Paper: A3
Author: WSP Scale: 1:5,000
Data Sources: ARTC, NSWSS

- Proposal site
- Study area
- Existing railway
- Main road
- Watercourse

Threatened fauna results

- Sloane's Froglet threatened fauna species polygon

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LGH - The Rock Yard

BURKES CREEK

FORD STREET

URANA STREET

MANGOPLAH ROAD

RAILWAY STREET

Albury to Illabo

Appendix C4 – Threatened fauna species recorded and candidate threatened species polygons

MAP 8 OF 21

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 22/01/2024 Paper: A3
Author: WSP Scale: 1:4,000
Data Sources: ARTC, NSWSS

- Proposal site
- Study area
- Existing railway
- Main road
- Watercourse

Threatened fauna results

- Superb Parrot and Squirrel Glider threatened fauna species polygon
- Sloane's Froglet threatened fauna species polygon

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URANQUINTY CROSS ROAD
YARRAGUNDRY STREET
Wagga - Uranquinty Yard
RYAN STREET
KEY STREET
OXLEY BRIDGE ROAD
MORGAN STREET
SANDY CREEK
OLYMPIC HIGHWAY

Albury to Illabo

Appendix C4 – Threatened fauna species recorded and candidate threatened species polygons

MAP 9 OF 21

0 50 100 m

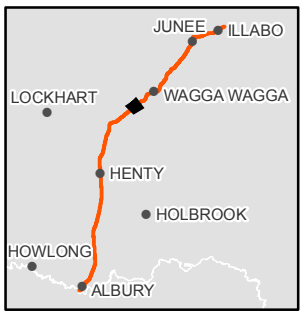
Coordinate System: GDA 1994 MGA Zone 55

Date: 22/01/2024
Author: WSP
Paper: A3
Scale: 1:6,000
Data Sources: ARTC, NSWSS

- Proposal site
- Study area
- Existing railway
- Main road
- Watercourse

Threatened fauna results

- Superb Parrot and Squirrel Glider threatened fauna species polygon
- Sloane's Froglet species polygon impact area
- Sloane's Froglet threatened fauna species polygon



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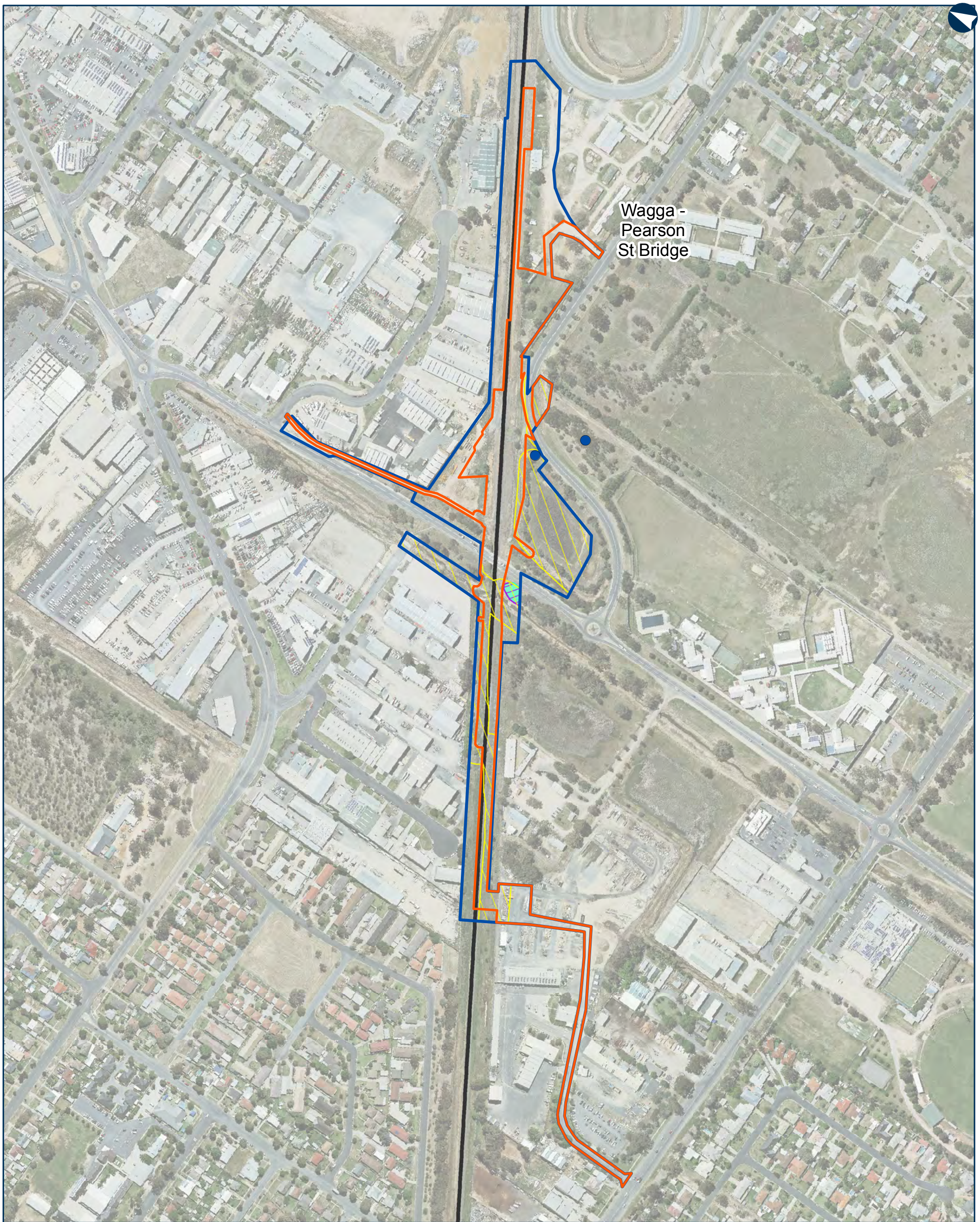

Albury to Illabo

Appendix C4 – Threatened fauna species recorded and candidate threatened species polygons

MAP 10 OF 21

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 22/01/2024 Paper: A3
Author: WSP Scale: 1:4,000
Data Sources: ARTC, NSWSS

Proposal site
Study area
Existing railway

Threatened fauna results

Superb Parrot (BC Act - Vulnerable, EPBC Act - Vulnerable)
Superb Parrot and Squirrel Glider threatened fauna species polygon
Sloane's Froglet species polygon impact area
Sloane's Froglet threatened fauna species polygon

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MURRUMBIDGEE RIVER

HAMMOND AVENUE

BAYLIS STREET

EDWARD STREET

Wagga -
Wagga Wagga
Station Yard

DOCKER STREET

BOURKE STREET

Albury to Illabo

Appendix C4 – Threatened fauna species recorded and candidate threatened species polygons

MAP 11 OF 21

0 50 100
m

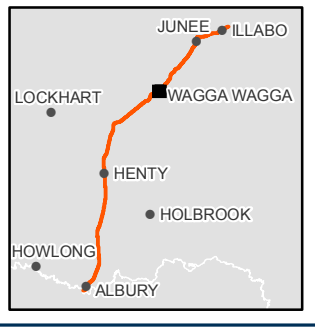
Coordinate System: GDA 1994 MGA Zone 55

Date: 22/01/2024 Paper: A3
Author: WSP Scale: 1:8,000
Data Sources: ARTC, NSWSS

- Proposal site
- Study area
- Existing railway
- Main road
- Watercourse

Threatened fauna results

- Sloane's Froglet threatened fauna species polygon



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Wagga -
Bomen Yard

BYRNES ROAD

Albury to Illabo

Appendix C4 – Threatened fauna species recorded and candidate threatened species polygons

MAP 12 OF 21

0 50 100 m

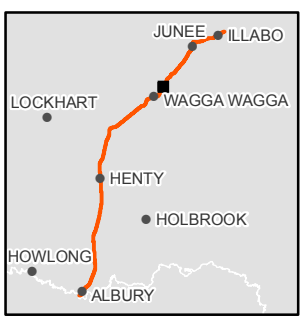
Coordinate System: GDA 1994 MGA Zone 55

Date: 22/01/2024 Paper: A3
Author: WSP Scale: 1:4,000
Data Sources: ARTC, NSWSS

- Proposal site
- Study area
- Existing railway
- Main road

Threatened fauna results

- Superb Parrot and Squirrel Glider threatened fauna species polygon
- Sloane's Froglet species polygon impact area
- Sloane's Froglet threatened fauna species polygon



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HAREFIELD ROAD

BUCKS CREEK

PATTERSONS ROAD

REEDY CREEK

Junee - Harefield Yard

BYRNES ROAD

Albury to Illabo

Appendix C4 – Threatened fauna species recorded and candidate threatened species polygons

MAP 13 OF 21

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 22/01/2024 Paper: A3
Author: WSP Scale: 1:5,000
Data Sources: ARTC, NSWSS

- Proposal site
- Study area
- Existing railway
- Main road
- Watercourse

Threatened fauna results

- Superb Parrot and Squirrel Glider threatened fauna species polygon
- Sloane's Froglet species polygon impact area
- Sloane's Froglet threatened fauna species polygon

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BROADWAY
OLYMPIC HIGHWAY
MAIN STREET
SEIGNIOR STREET
HUMPHRYS STREET
LORNE STREET
BELMORE STREET
KEMP STREET
EDGAR STREET
Junee - Junee Station Yard
Junee - Kemp St Bridge

Albury to Illabo

Appendix C4 – Threatened fauna species recorded and candidate threatened species polygons

MAP 14 OF 21

0 50 100 m

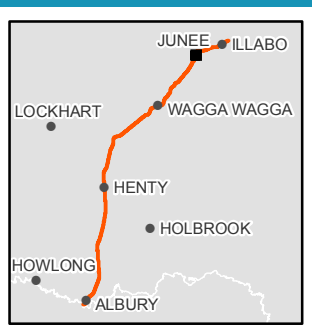
Coordinate System: GDA 1994 MGA Zone 55

Date: 22/01/2024 Paper: A3
Author: WSP Scale: 1:3,000
Data Sources: ARTC, NSWSS

- Proposal site
- Study area
- Existing railway
- Main road
- Watercourse

Threatened fauna results

- Sloane's Froglet threatened fauna species polygon



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OLYMPIC HIGHWAY

MAIN STREET

BROADWAY

Junee - Olympic Hwy underbridge

Albury to Illabo

Appendix C4 – Threatened fauna species recorded and candidate threatened species polygons

MAP 15 OF 21

0 50 100 m

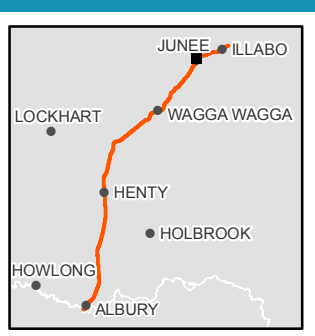
Coordinate System: GDA 1994 MGA Zone 55

Date: 22/01/2024 Paper: A3
Author: WSP Scale: 1:3,000
Data Sources: ARTC, NSWSS

Proposal site
Study area
Existing railway
Main road

Threatened fauna results

Sloane's Froglet species polygon impact area
Sloane's Froglet threatened fauna species polygon



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OLYMPIC HIGHWAY

Junee - Olympic Hwy underbridge

ILLABO ROAD

MAIN STREET

Albury to Illabo

Appendix C4 – Threatened fauna species recorded and candidate threatened species polygons

MAP 16 OF 21

0 50 100 m

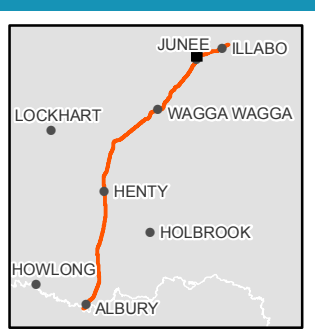
Coordinate System: GDA 1994 MGA Zone 55

Date: 22/01/2024 Paper: A3
Author: WSP Scale: 1:3,000
Data Sources: ARTC, NSWSS

- Proposal site
- Study area
- Existing railway
- Main road

Threatened fauna results

- Superb Parrot and Squirrel Glider threatened fauna species polygon
- Sloane's Froglet species polygon impact area
- Sloane's Froglet threatened fauna species polygon



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Junee - Junee to I2S dual track section

OLYMPIC HIGHWAY

Albury to Illabo

Appendix C4 – Threatened fauna species recorded and candidate threatened species polygons

MAP 17 OF 21

0 50 100
m

Coordinate System: GDA 1994 MGA Zone 55

Date: 22/01/2024 Paper: A3
Author: WSP Scale: 1:10,000
Data Sources: ARTC, NSWSS

- Proposal site
- Study area
- Existing railway
- Main road

Threatened fauna results

- Superb Parrot (BC Act - Vulnerable, EPBC Act - Vulnerable)
- Superb Parrot and Squirrel Glider threatened fauna species polygon
- Sloane's Froglet species polygon impact area
- Sloane's Froglet threatened fauna species polygon

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Junee - Junee to I2S dual track section

OLYMPIC HIGHWAY

MARINNA ROAD

Albury to Illabo

Appendix C4 – Threatened fauna species recorded and candidate threatened species polygons

MAP 18 OF 21

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 22/01/2024
Author: WSP
Paper: A3
Scale: 1:10,000
Data Sources: ARTC, NSWSS

- Proposal site
- Study area
- Existing railway
- Main road

Threatened fauna results

- Spotted Harrier (BC Act - Vulnerable)
- Superb Parrot (BC Act - Vulnerable, EPBC Act - Vulnerable)
- Superb Parrot and Squirrel Glider threatened fauna species polygon
- Sloane's Froglet species polygon impact area
- Sloane's Froglet threatened fauna species polygon

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OLYMPIC HIGHWAY

JERALGAMBETH CREEK

Junee - Junee
to I2S dual
track section

Albury to Illabo

Appendix C4 – Threatened fauna species recorded and candidate threatened species polygons

MAP 19 OF 21

0 50 100
m

Coordinate System: GDA 1994 MGA Zone 55

Date: 22/01/2024 Paper: A3
Author: WSP Scale: 1:10,000
Data Sources: ARTC, NSWSS

- Proposal site
- Study area
- Existing railway
- Main road
- Watercourse

Threatened fauna results

- Little Eagle (BC Act - Vulnerable)
- Superb Parrot (BC Act - Vulnerable, EPBC Act - Vulnerable)
- Superb Parrot and Squirrel Glider threatened fauna species polygon
- Sloane's Froglet species polygon impact area
- Sloane's Froglet threatened fauna species polygon

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EURONGILLY ROAD
TURLAND STREET
CROWTHER STREET
MORRIS STREET
JERALGAMBETH CREEK
STANYER ROAD
OLYMPIC HIGHWAY
BRABINS ROAD

Junee - Junee to I2S dual track section

Albury to Illabo

Appendix C4 – Threatened fauna species recorded and candidate threatened species polygons

MAP 20 OF 21

0 50 100 m

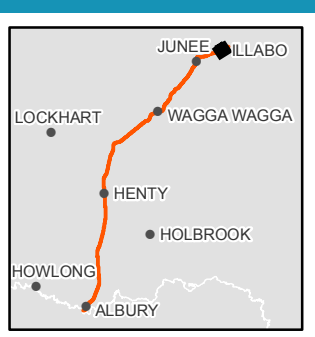
Coordinate System: GDA 1994 MGA Zone 55

Date: 22/01/2024 Paper: A3
Author: WSP Scale: 1:10,000
Data Sources: ARTC, NSWSS

- Proposal site
- Study area
- Existing railway
- Main road
- Watercourse

Threatened fauna results

- Superb Parrot (BC Act - Vulnerable, EPBC Act - Vulnerable)
- Superb Parrot and Squirrel Glider threatened fauna species polygon
- Sloane's Froglet species polygon impact area
- Sloane's Froglet threatened fauna species polygon



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WARRENS LANE

BILLABONG CREEK

Junee - Junee to I2S dual track section

JERALGAMBETH CREEK

OLYMPIC HIGHWAY

Albury to Illabo

Appendix C4 – Threatened fauna species recorded and candidate threatened species polygons

MAP 21 OF 21

0 50 100
m

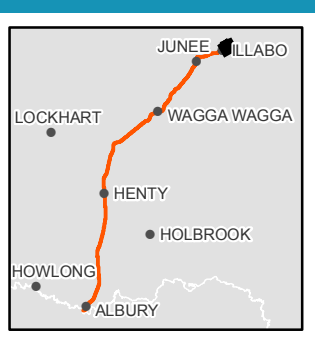
Coordinate System: GDA 1994 MGA Zone 55

Date: 22/01/2024
Author: WSP
Paper: A3
Scale: 1:10,000
Data Sources: ARTC, NSWSS

- Proposal site
- Study area
- Existing railway
- Main road
- Watercourse

Threatened fauna results

- Diamond Firetail (BC Act - Vulnerable)
- Little Eagle (BC Act - Vulnerable)
- Superb Parrot (BC Act - Vulnerable, EPBC Act - Vulnerable)
- Superb Parrot and Squirrel Glider threatened fauna species polygon
- Sloane's Froglet threatened fauna species polygon



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APPENDIX C-5
SLOANE'S FROGLET HABITAT MAPPING

Albury - Murray River Bridge

HUME HIGHWAY

MURRAY RIVER

Albury to Illabo

Appendix C5 – Sloane's Froglet habitat mapping

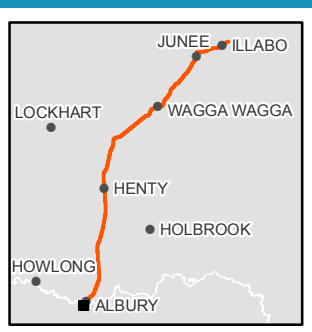
MAP 1 OF 21

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 9/02/2024 Paper: A3
Author: WSP Scale: 1:2,500
Data Sources: ARTC, NSWSS

- Study area
- Proposal site
- Existing railway
- Main road
- Watercourse
- WSP-surveyed native vegetation community
- Potential Sloane's Froglet breeding habitat
- Potential Sloane's Froglet breeding habitat (15m buffer)
- Sloane's Froglet species polygon impact area -native vegetation
- Sloane's Froglet species polygon impact area – prescribed impacts



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Albury to Illabo Appendix C5 – Sloane's Froglet habitat mapping MAP 2 OF 21

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 9/02/2024 Paper: A3
Author: WSP Scale: 1:8,500
Data Sources: ARTC, NSWSS

- Study area
- Proposal site
- Existing railway
- Main road
- Watercourse
- Potential Sloane's Froglet breeding habitat
- Potential Sloane's Froglet breeding habitat (15m buffer)
- Sloane's Froglet species polygon impact area – prescribed impacts

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Albury to Illabo | Appendix C5 – Sloane's Froglet habitat mapping | MAP 3 OF 21

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 9/02/2024 Paper: A3
Author: WSP Scale: 1:4,000
Data Sources: ARTC, NSWSS

- Study area
- Proposal site
- Existing railway
- Main road
- Watercourse
- WSP-surveyed native vegetation community
- Exclusion zone
- Potential Sloane's Froglet breeding habitat
- Potential Sloane's Froglet breeding habitat (15m buffer)
- Sloane's Froglet species polygon impact area -native vegetation
- Sloane's Froglet species polygon impact area – prescribed impacts

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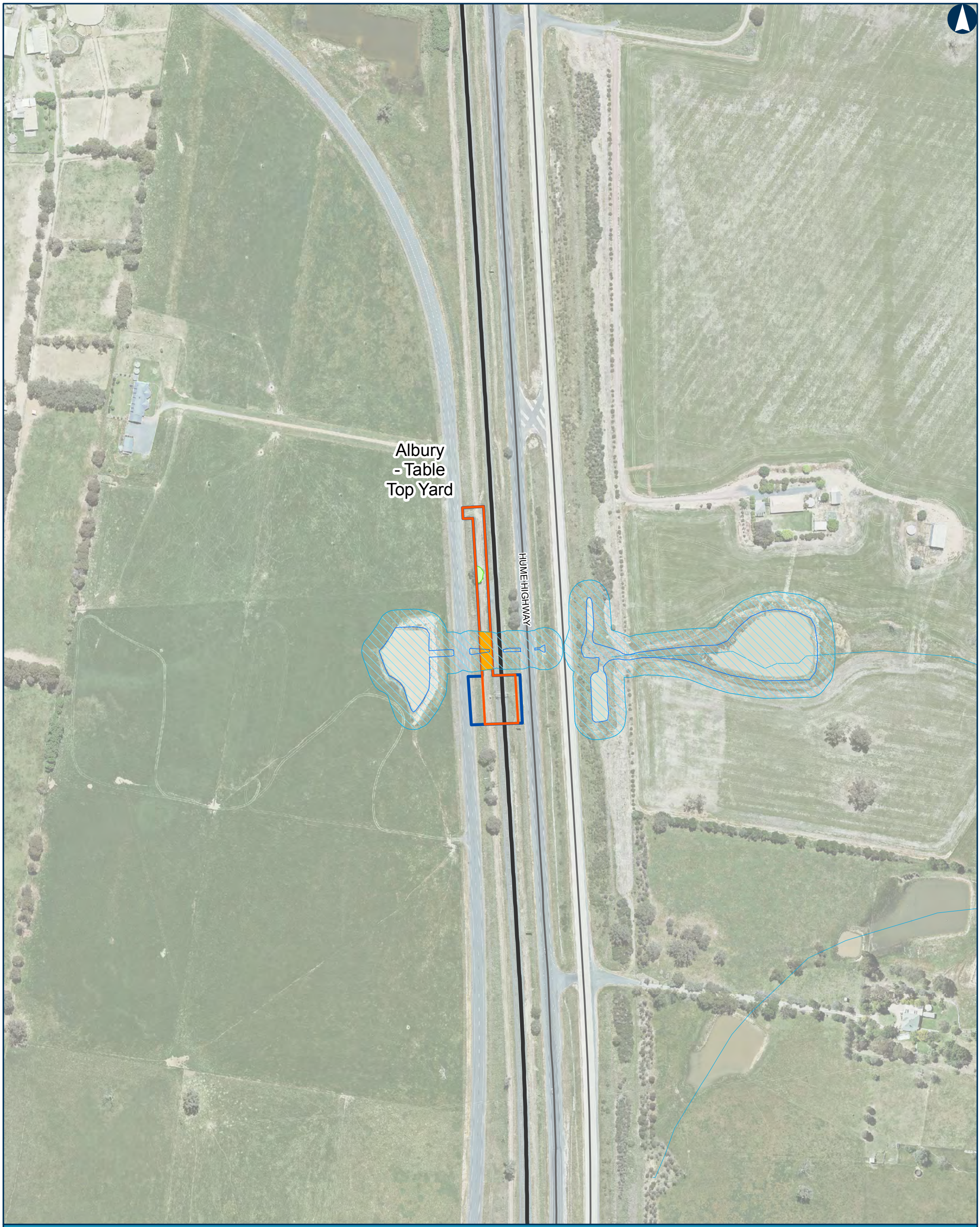


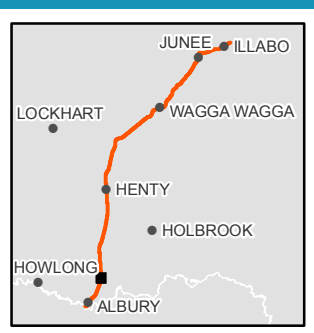
Albury to Illabo Appendix C5 – Sloane's Froglet habitat mapping MAP 4 OF 21

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 9/02/2024 Paper: A3
Author: WSP Scale: 1:3,000
Data Sources: ARTC, NSWSS

- Study area
- Proposal site
- Existing railway
- Main road
- Watercourse
- WSP-surveyed native vegetation community
- Potential Sloane's Froglet breeding habitat
- Potential Sloane's Froglet breeding habitat (15m buffer)
- Sloane's Froglet species polygon impact area – prescribed impacts



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LGH - Culcairn
Station Yard

MELVILLE STREET

BALFOUR STREET

RAILWAY PARADE

Albury to Illabo

Appendix C5 – Sloane's Froglet habitat mapping

MAP 5 OF 21

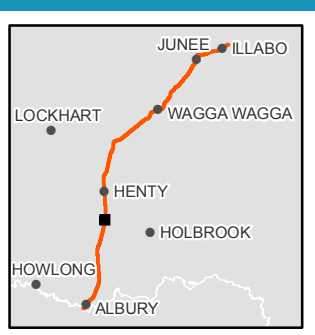
0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 9/02/2024
Author: WSP
Paper: A3
Scale: 1:3,000

Data Sources: ARTC, NSWSS

- Study area
- Proposal site
- Existing railway
- Main road
- WSP-surveyed native vegetation community
- Potential Sloane's Froglet breeding habitat
- Potential Sloane's Froglet breeding habitat (15m buffer)
- Sloane's Froglet species polygon impact area – prescribed impacts



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HENTY PLEASANT HILLS ROAD
ALLAN STREET
OLYMPIC HIGHWAY
BUCKARGINGAH CREEK
LGH - Henty Yard
SLADEN STREET
HENTY COOKARDINIA ROAD
RAILWAY PARADE
ROSLER PARADE
HENTY WALLA ROAD

Albury to Illabo

Appendix C5 – Sloane's Froglet habitat mapping

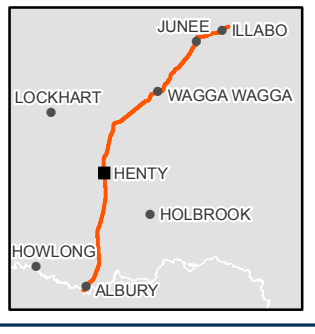
MAP 6 OF 21

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 9/02/2024 Paper: A3
Author: WSP Scale: 1:5,000
Data Sources: ARTC, NSWSS

- Study area
- Proposal site
- Existing railway
- Main road
- Watercourse
- WSP-surveyed native vegetation community
- Potential Sloane's Froglet breeding habitat
- Potential Sloane's Froglet breeding habitat (15m buffer)
- Sloane's Froglet species polygon impact area – prescribed impacts



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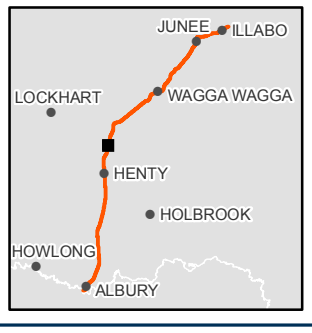
Albury to Illabo | Appendix C5 – Sloane's Froglet habitat mapping | MAP 7 OF 21

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 9/02/2024 Paper: A3
Author: WSP Scale: 1:5,000
Data Sources: ARTC, NSWSS

- Study area
- Proposal site
- Existing railway
- Main road
- Watercourse
- Potential Sloane's Froglet breeding habitat
- Potential Sloane's Froglet breeding habitat (15m buffer)



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LGH - The Rock Yard

BURKES CREEK

FORD STREET

URANA STREET

MANGOPLAH ROAD

RAILWAY STREET

Albury to Illabo

Appendix C5 – Sloane's Froglet habitat mapping

MAP 8 OF 21

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 9/02/2024
Author: WSP
Paper: A3
Scale: 1:4,000
Data Sources: ARTC, NSWSS

- Study area
- Proposal site
- Existing railway
- Main road
- Watercourse
- WSP-surveyed native vegetation community
- Potential Sloane's Froglet breeding habitat
- Potential Sloane's Froglet breeding habitat (15m buffer)

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URANQUINTY CROSS ROAD
YARRAGUNDRY STREET
OXLEY BRIDGE ROAD
KEY STREET
RYAN STREET
MORGAN STREET
Wagga - Uranquinty Yard
SANDY CREEK
OLYMPIC HIGHWAY

Albury to Illabo

Appendix C5 – Sloane's Froglet habitat mapping

MAP 9 OF 21

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 9/02/2024 Paper: A3
Author: WSP Scale: 1:6,000
Data Sources: ARTC, NSWSS

- Study area
- Proposal site
- Existing railway
- Main road
- Watercourse
- WSP-surveyed native vegetation community
- Potential Sloane's Froglet breeding habitat
- Potential Sloane's Froglet breeding habitat (15m buffer)
- Sloane's Froglet species polygon impact area -native vegetation
- Sloane's Froglet species polygon impact area – prescribed impacts

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Wagga -
Pearson
St Bridge

Albury to Illabo

Appendix C5 – Sloane's Froglet habitat mapping

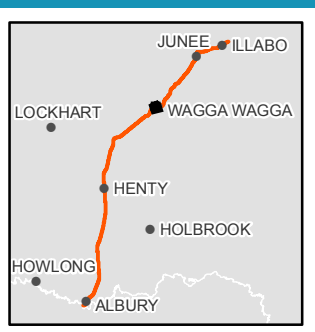
MAP 10 OF 21

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 9/02/2024 Paper: A3
Author: WSP Scale: 1:4,000
Data Sources: ARTC, NSWSS

- Study area
- Proposal site
- Existing railway
- Watercourse
- WSP-surveyed native vegetation community
- Potential Sloane's Froglet breeding habitat
- Potential Sloane's Froglet breeding habitat (15m buffer)
- Sloane's Froglet species polygon impact area – prescribed impacts



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MURRUMBIDGEE RIVER

HAMMOND AVENUE

BAYLIS STREET

EDWARD STREET

Wagga -
Wagga Wagga
Station Yard

DOCKER STREET

BOURKE STREET

Albury to Illabo

Appendix C5 – Sloane's Froglet habitat mapping

MAP 11 OF 21

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 9/02/2024 Paper: A3
Author: WSP Scale: 1:8,000
Data Sources: ARTC, NSWSS

- Study area
- Proposal site
- Existing railway
- Main road
- Watercourse
- Potential Sloane's Froglet breeding habitat
- Potential Sloane's Froglet breeding habitat (15m buffer)
- Sloane's Froglet species polygon impact area – prescribed impacts

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Wagga -
Bomen Yard

BYRNES ROAD

Albury to Illabo

Appendix C5 – Sloane's Froglet habitat mapping

MAP 12 OF 21

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 9/02/2024
Author: WSP
Paper: A3
Scale: 1:4,000
Data Sources: ARTC, NSWSS

- Study area
- Proposal site
- Existing railway
- Main road
- Watercourse
- WSP-surveyed native vegetation community
- Potential Sloane's Froglet breeding habitat
- Potential Sloane's Froglet breeding habitat (15m buffer)
- Sloane's Froglet species polygon impact area -native vegetation
- Sloane's Froglet species polygon impact area – prescribed impacts

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HAREFIELD ROAD
BUCKS CREEK
PATTERSONS ROAD
REEDY CREEK
Junee - Harefield Yard
BYRNES ROAD

Albury to Illabo

Appendix C5 – Sloane's Froglet habitat mapping

MAP 13 OF 21

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 9/02/2024
Author: WSP
Paper: A3
Scale: 1:5,000
Data Sources: ARTC, NSWSS

- Study area
- Proposal site
- Existing railway
- Main road
- Watercourse
- WSP-surveyed native vegetation community
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- Potential Sloane's Froglet breeding habitat (15m buffer)
- Sloane's Froglet species polygon impact area -native vegetation
- Sloane's Froglet species polygon impact area – prescribed impacts

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BROADWAY
OLYMPIC HIGHWAY
MAIN STREET
SEIGNIOR STREET
HUMPHRYS STREET
LORNE STREET
BELMORE STREET
Junee - Junee Station Yard
KEMP STREET
Junee - Kemp St Bridge
EDGAR STREET

Albury to Illabo

Appendix C5 – Sloane's Froglet habitat mapping

MAP 14 OF 21

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 9/02/2024 Paper: A3
Author: WSP Scale: 1:3,000
Data Sources: ARTC, NSWSS

- Study area
- Proposal site
- Existing railway
- Main road
- Watercourse
- Potential Sloane's Froglet breeding habitat
- Potential Sloane's Froglet breeding habitat (15m buffer)
- Sloane's Froglet species polygon impact area – prescribed impacts

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OLYMPIC HIGHWAY

MAIN STREET

BROADWAY

Junee - Olympic Hwy underbridge

Albury to Illabo | Appendix C5 – Sloane's Froglet habitat mapping | MAP 15 OF 21

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 9/02/2024 Paper: A3
Author: WSP Scale: 1:3,000
Data Sources: ARTC, NSWSS

- Study area
- Proposal site
- Existing railway
- Main road
- Watercourse
- WSP-surveyed native vegetation community
- Potential Sloane's Froglet breeding habitat
- Potential Sloane's Froglet breeding habitat (15m buffer)
- Sloane's Froglet species polygon impact area -native vegetation
- Sloane's Froglet species polygon impact area – prescribed impacts

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OLYMPIC HIGHWAY

ILLABO ROAD

Junee - Olympic Hwy underbridge

MAIN STREET

Albury to Illabo

Appendix C5 – Sloane's Froglet habitat mapping

MAP 16 OF 21

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 9/02/2024 Paper: A3
Author: WSP Scale: 1:3,000
Data Sources: ARTC, NSWSS

- Study area
- Proposal site
- Existing railway
- Main road
- Watercourse
- WSP-surveyed native vegetation community
- Potential Sloane's Froglet breeding habitat
- Potential Sloane's Froglet breeding habitat (15m buffer)
- Sloane's Froglet species polygon impact area -native vegetation
- Sloane's Froglet species polygon impact area – prescribed impacts

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Junee - Junee to I2S dual track section

OLYMPIC HIGHWAY

Albury to Illabo

Appendix C5 – Sloane's Froglet habitat mapping

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 9/02/2024 Paper: A3
Author: WSP Scale: 1:10,000
Data Sources: ARTC, NSWSS

- Study area
- Proposal site
- Existing railway
- Main road
- Watercourse
- WSP-surveyed native vegetation community
- Potential Sloane's Froglet breeding habitat
- Potential Sloane's Froglet breeding habitat (15m buffer)
- Sloane's Froglet species polygon impact area -native vegetation
- Sloane's Froglet species polygon impact area – prescribed impacts

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Junee - Junee to I2S dual track section

OLYMPIC HIGHWAY

MARINNA ROAD

Albury to Illabo

Appendix C5 – Sloane's Froglet habitat mapping

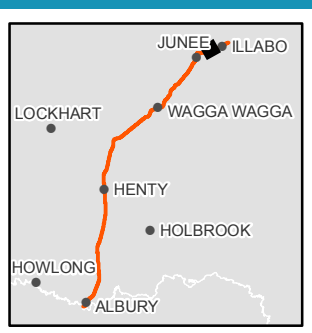
MAP 18 OF 21

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 9/02/2024
Author: WSP
Paper: A3
Scale: 1:10,000
Data Sources: ARTC, NSWSS

- Study area
- Proposal site
- Existing railway
- Main road
- Watercourse
- WSP-surveyed native vegetation community
- Potential Sloane's Froglet breeding habitat
- Potential Sloane's Froglet breeding habitat (15m buffer)
- Sloane's Froglet species polygon impact area -native vegetation
- Sloane's Froglet species polygon impact area – prescribed impacts



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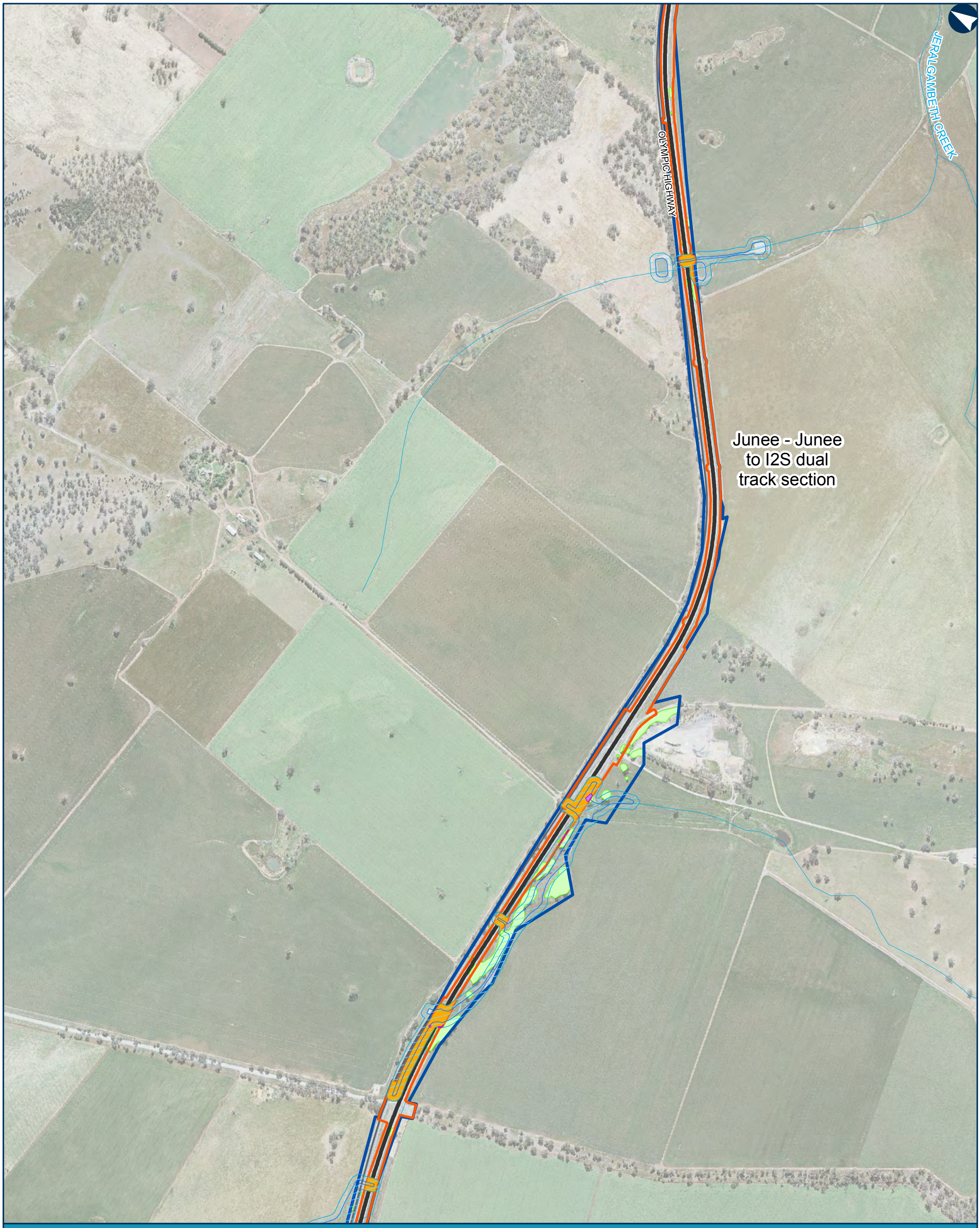

Albury to Illabo Appendix C5 – Sloane's Froglet habitat mapping MAP 19 OF 21

0 50 100
m

Coordinate System: GDA 1994 MGA Zone 55

Date: 9/02/2024 Paper: A3
Author: WSP Scale: 1:10,000
Data Sources: ARTC, NSWSS

- Study area
- Proposal site
- Existing railway
- Main road
- Watercourse
- WSP-surveyed native vegetation community
- Potential Sloane's Froglet breeding habitat
- Potential Sloane's Froglet breeding habitat (15m buffer)
- Sloane's Froglet species polygon impact area -native vegetation
- Sloane's Froglet species polygon impact area – prescribed impacts

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EURONGILLY ROAD
TURLAND STREET
CROWTHER STREET
MORRIS STREET
JERALGAMBETH CREEK
STANYER ROAD
OLYMPIC HIGHWAY
BRABINS ROAD

Junee - Junee to I2S dual track section

Albury to Illabo

Appendix C5 – Sloane's Froglet habitat mapping

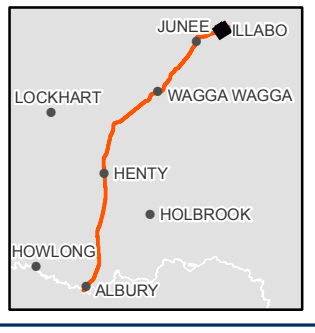
MAP 20 OF 21

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 9/02/2024 Paper: A3
Author: WSP Scale: 1:10,000
Data Sources: ARTC, NSWSS

- Study area
- Proposal site
- Existing railway
- Main road
- Watercourse
- WSP-surveyed native vegetation community
- Potential Sloane's Froglet breeding habitat
- Potential Sloane's Froglet breeding habitat (15m buffer)
- Sloane's Froglet species polygon impact area -native vegetation
- Sloane's Froglet species polygon impact area – prescribed impacts



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OLYMPIC HIGHWAY

WARRENS LANE

BILLABONG CREEK

Junee - Junee to I2S dual track section

JERALGAMBETH CREEK

Albury to Illabo

Appendix C5 – Sloane's Froglet habitat mapping

MAP 21 OF 21

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 9/02/2024 Paper: A3
Author: WSP Scale: 1:10,000
Data Sources: ARTC, NSWSS

- Study area
- Proposal site
- Existing railway
- Main road
- Watercourse
- WSP-surveyed native vegetation community
- Potential Sloane's Froglet breeding habitat
- Potential Sloane's Froglet breeding habitat (15m buffer)
- Sloane's Froglet species polygon impact area – prescribed impacts

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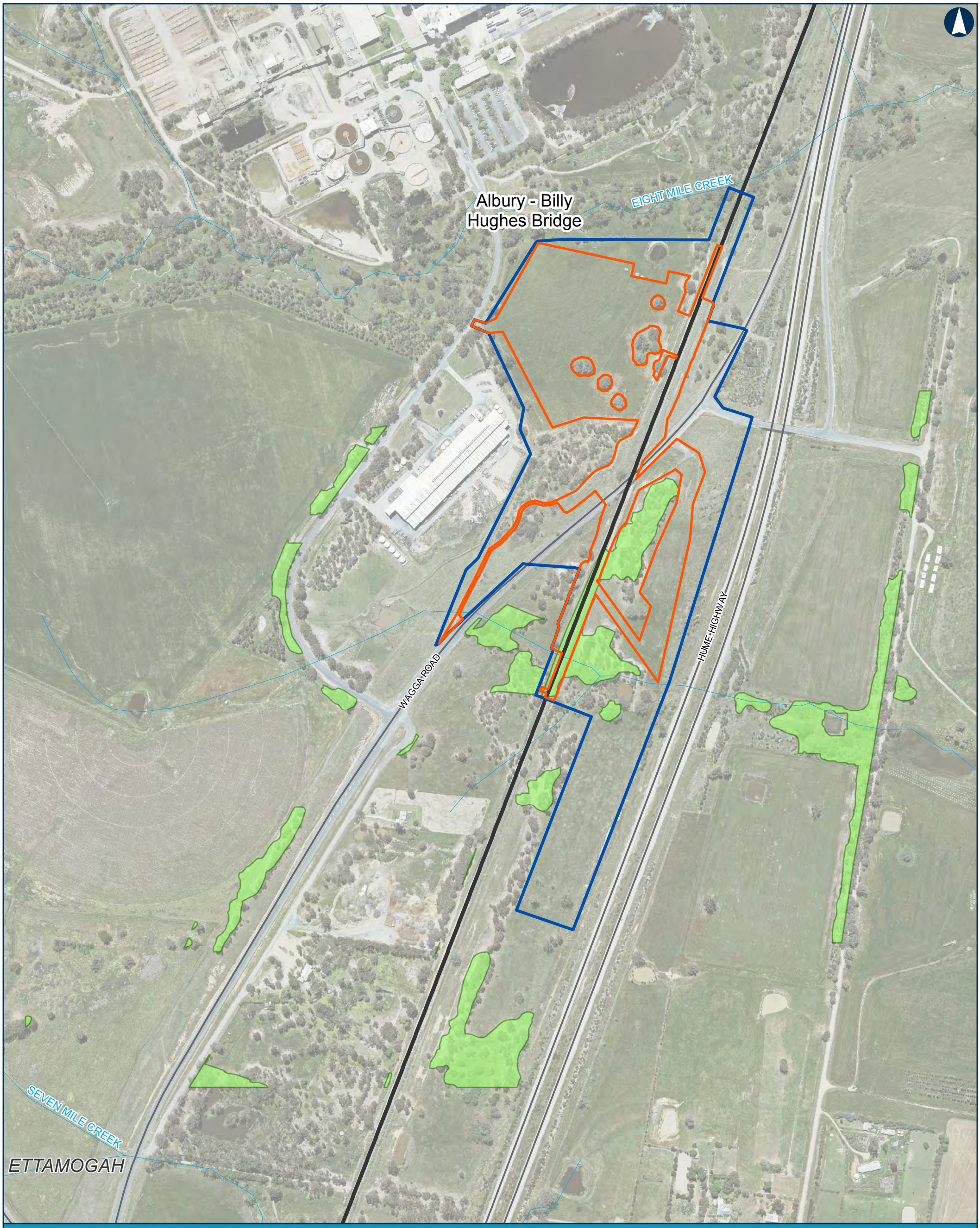
APPENDIX C-6
REGENT HONEYEATER IMPORTANT HABITAT MAP



Albury to Illabo

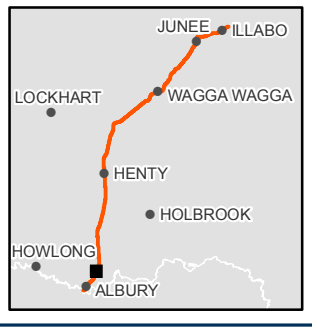
Appendix C6 - Regent Honeyeater

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 22/01/2024 Paper: A3
Author: WSP Scale: 1:5,500
Data Sources: ARTC, NSWSS

- Proposal site
- Study area
- Existing railway
- Main road
- Watercourse
- Regent Honeyeater - Important Area Map



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APPENDIX C-7
TARGETED MICROBAT REPORT / ARTIFICIAL STRUCTURE ASSESSMENT

Table C-7.1 Anabat bat call analysis – November 2020

ENHANCEMENT SITE	DATE	SPECIES										
		CHGO	AUAU	CHMO	OZPL	OZRI	SCBA	VEDA	VEVU	NYCT SP	OZIM SP	VESP SP
Albury												
Murray River bridge	11/11/2020	✓			✓	✓	✓			✓	✓	✓
Murray River bridge	12/11/2020	✓		✓	✓		✓			✓	✓	✓
Murray River bridge	12/11/2020	✓										
Billy Hughes bridge	13/11/2020	✓	✓	✓	✓			✓	✓	✓	✓	✓
Billy Hughes bridge	13/11/2020	✓	✓		✓						✓	
Greater Hume-Lockhart												
Henty Yard clearances	14/11/2020	✓					✓				✓	✓
Wagga Wagga												
Uranquinty Yard clearances	14/11/2020				✓						✓	
Pearson Street bridge	15/11/2020	✓	✓				✓					
Location removed from study area	16/11/2020	✓					✓					
Junee												
Junee to Illabo clearances	17/11/2020	✓		✓	✓		✓				✓	
Junee to Illabo clearances	18/11/2020	✓	✓	✓	✓					✓		✓
Junee to Illabo clearances	17/11/2020	✓	✓		✓							
Junee to Illabo clearances	18/11/2020	✓			✓							

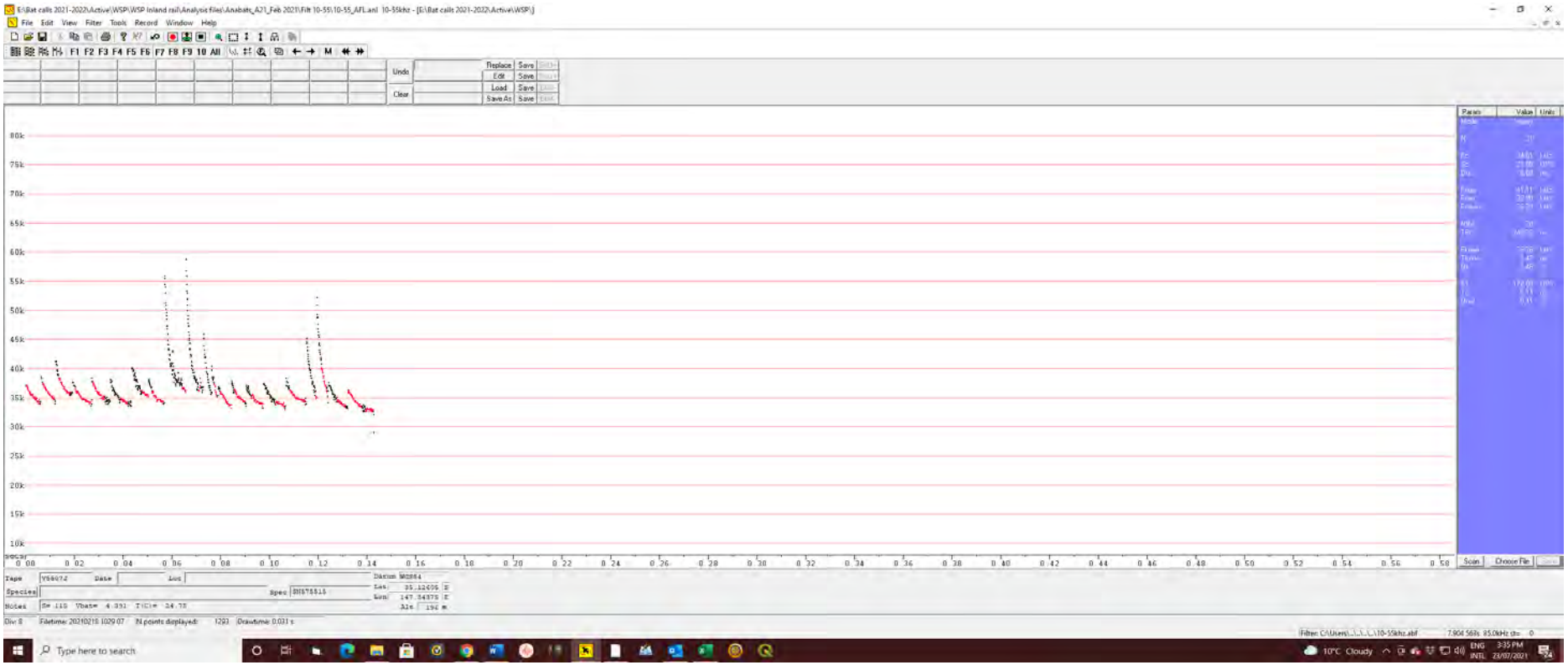
Notes: CHGO = AUAU = *Austronomus australis* (White-striped Freetail-bat); *Chalinolobus gouldii* (Gould's Wattled Bat); CHMO = *Chalinolobus morio* (Chocolate Wattled Bat); OZPL = *Ozimops planiceps* (South-eastern Free-tailed Bat); OZRI = *Ozimops ridei* (Ride's Free-tailed Bat); SCBA = *Scotorepens balstoni* (Inland Broad-nosed Bat); VEDA = *Vespadelus darlingtoni* (Large Forest Bat); VEVU = *Vespadelus vulturnus* (Little Forest Bat); NYCT spp. = *Nyctophilus geoffroyi*/ *Nyctophilus gouldi* (Long-eared Bats); OZIM spp. = *Ozimops planiceps*/ *Ozimops ridei* (Free-tailed Bats); VESP spp. = *Vespadelus darlingtoni* / *Vespadelus regulus* / *Vespadelus vulturnus* (Forest Bats).

Table C-7.2 Anabat bat call analysis – February 2021

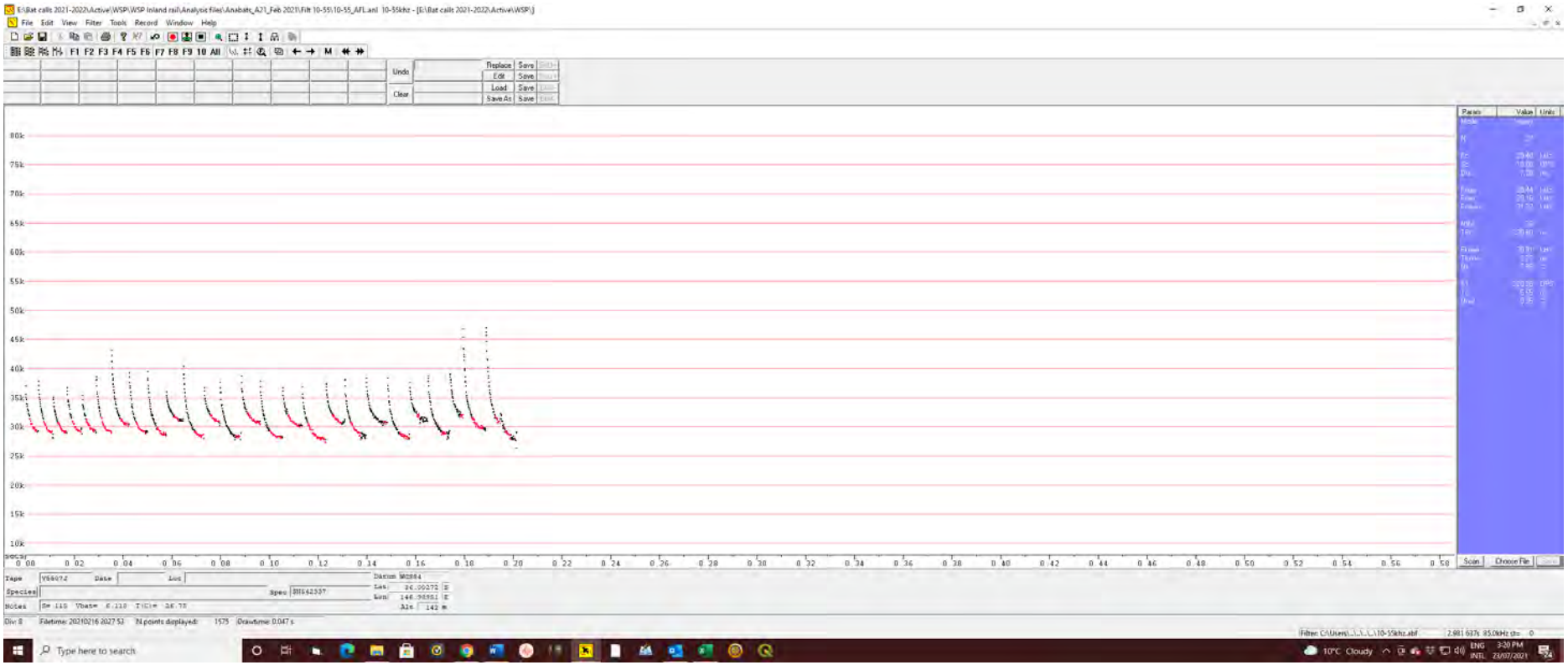
ENHANCEMENT SITE	DATE	SPECIES										
		CHGO	AUAU	CHMO	OZPL	OZRI	SCBA	VEDA	VEVU	NYCT SP	OZIM SP	VESP SP
Albury												
Albury Station pedestrian bridge	16/02/2021	✓		✓		✓			✓	✓	✓	✓
Billy Hughes bridge	16/02/2021				✓		✓	✓			✓	✓
Greater Hume-Lockhart												
Henty Yard clearances	17/02/2021	✓				✓	✓	✓				✓
Henty Yard clearances	17/02/2021	✓										
Henty Yard clearances	17/02/2021	✓			✓							
Yerong Creek Yard clearances	17/02/2021	✓			✓			✓				✓
Wagga Wagga												
Uranquinty Yard clearances	18/02/2021	✓		✓						✓		✓
Pearson Street bridge	17/02/2021	✓					✓				✓	
Pearson Street bridge	18/02/2021	Insect noise only										
Wagga Wagga Station pedestrian bridge	18/02/2021	Insect noise only										
Bomen Yard clearances	18/02/2021	✓	✓		✓							
Junee												
Harefield Yard clearances	19/02/2021	✓					✓					
Kemp Street bridge	20/02/2021	✓		✓	✓		✓				✓	✓
Olympic Highway underbridge	20/02/2021	✓										
Junee to Illabo clearances	20/02/2021	✓							✓			

ENHANCEMENT SITE	DATE	SPECIES										
		CHGO	AUAU	CHMO	OZPL	OZRI	SCBA	VEDA	VEVU	NYCT SP	OZIM SP	VESP SP
Junee to Illabo clearances	21/02/2021	✓			✓				✓			✓
Junee to Illabo clearances	21/02/2021	✓										
Junee to Illabo clearances	22/02/2021	✓			✓				✓			
Junee to Illabo clearances	21/02/2021	✓										
Junee to Illabo clearances	22/02/2021	✓										
Junee to Illabo clearances	21/02/2021	✓		✓	✓						✓	✓
Junee to Illabo clearances	22/02/2021	✓			✓					✓		✓
Junee to Illabo clearances	19/02/2021											
Junee to Illabo clearances	20/02/2021	✓			✓		✓	✓		✓		✓
Junee to Illabo clearances	21/02/2021	✓			✓		✓	✓	✓			✓

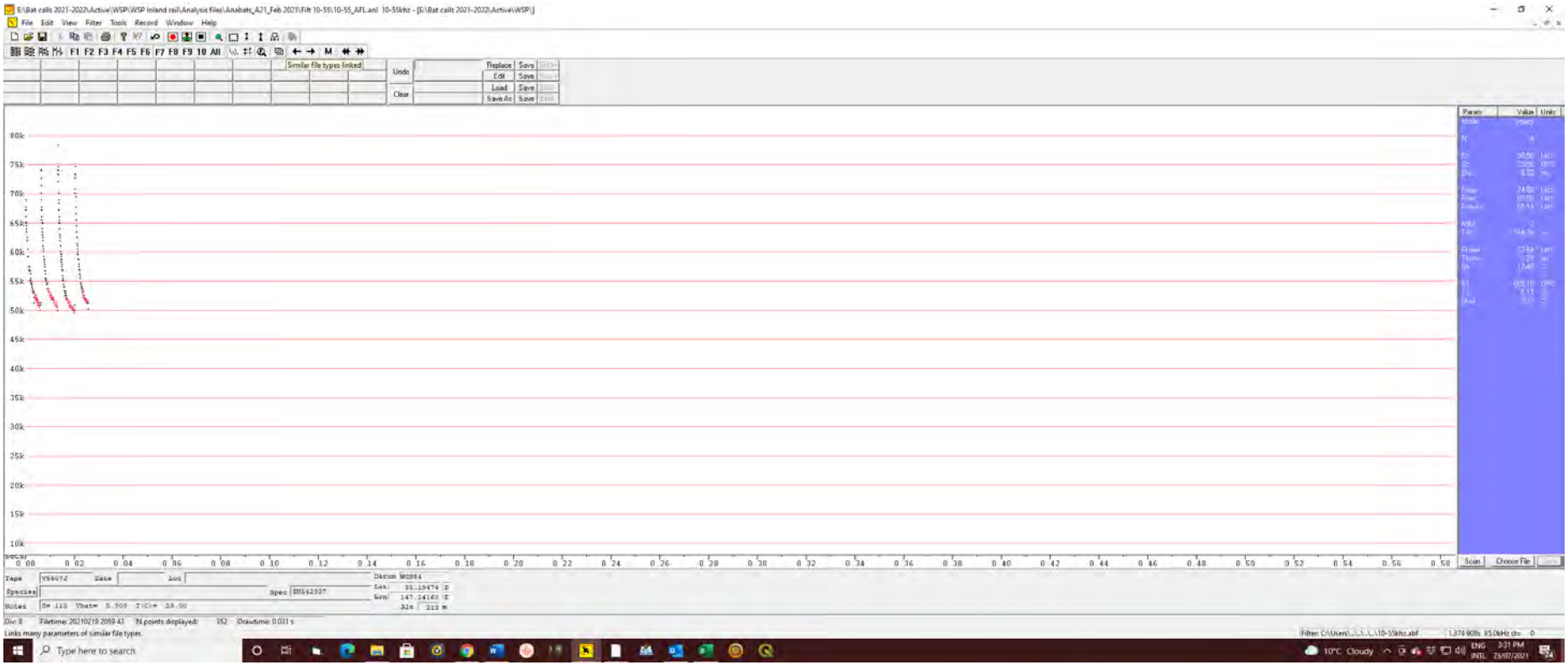
Notes: CHGO = AUAU = *Austronomus australis* (White-striped Freetail-bat); *Chalinolobus gouldii* (Gould's Wattled Bat); CHMO = *Chalinolobus morio* (Chocolate Wattled Bat); OZPL = *Ozimops planiceps* (South-eastern Free-tailed Bat); OZRI = *Ozimops ridei* (Ride's Free-tailed Bat); SCBA = *Scotorepens balstoni* (Inland Broad-nosed Bat); VEDA = *Vespadelus darlingtoni* (Large Forest Bat); VEVU = *Vespadelus vulturnus* (Little Forest Bat); NYCT spp. = *Nyctophilus geoffroyi*/ *Nyctophilus gouldi* (Long-eared Bats); OZIM spp. = *Ozimops planiceps*/ *Ozimops ridei* (Free-tailed Bats); VESP spp. = *Vespadelus darlingtoni* / *Vespadelus regulus* / *Vespadelus vulturnus* (Forest Bats).



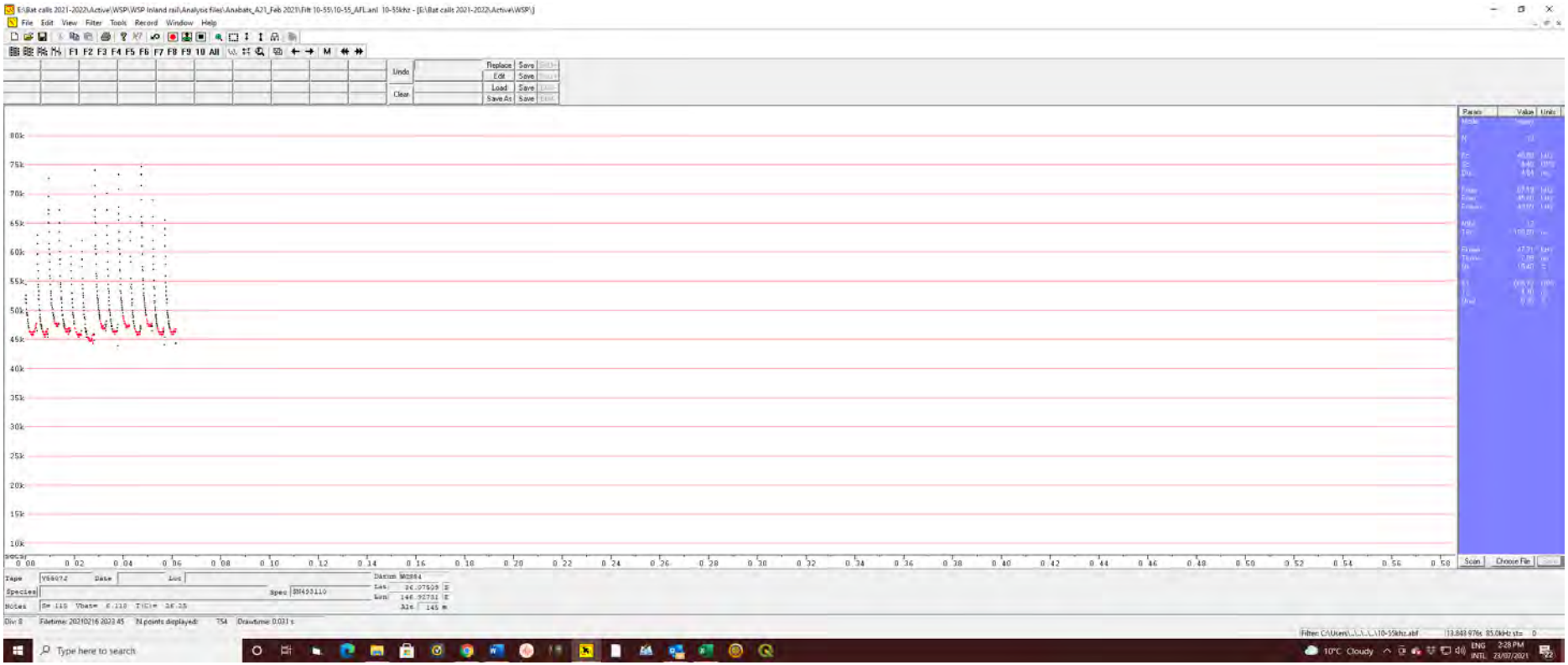
An example of Inland Broad-nosed Bat recorded from the study area



An example of Gould's Wattled Bat recorded from the study area

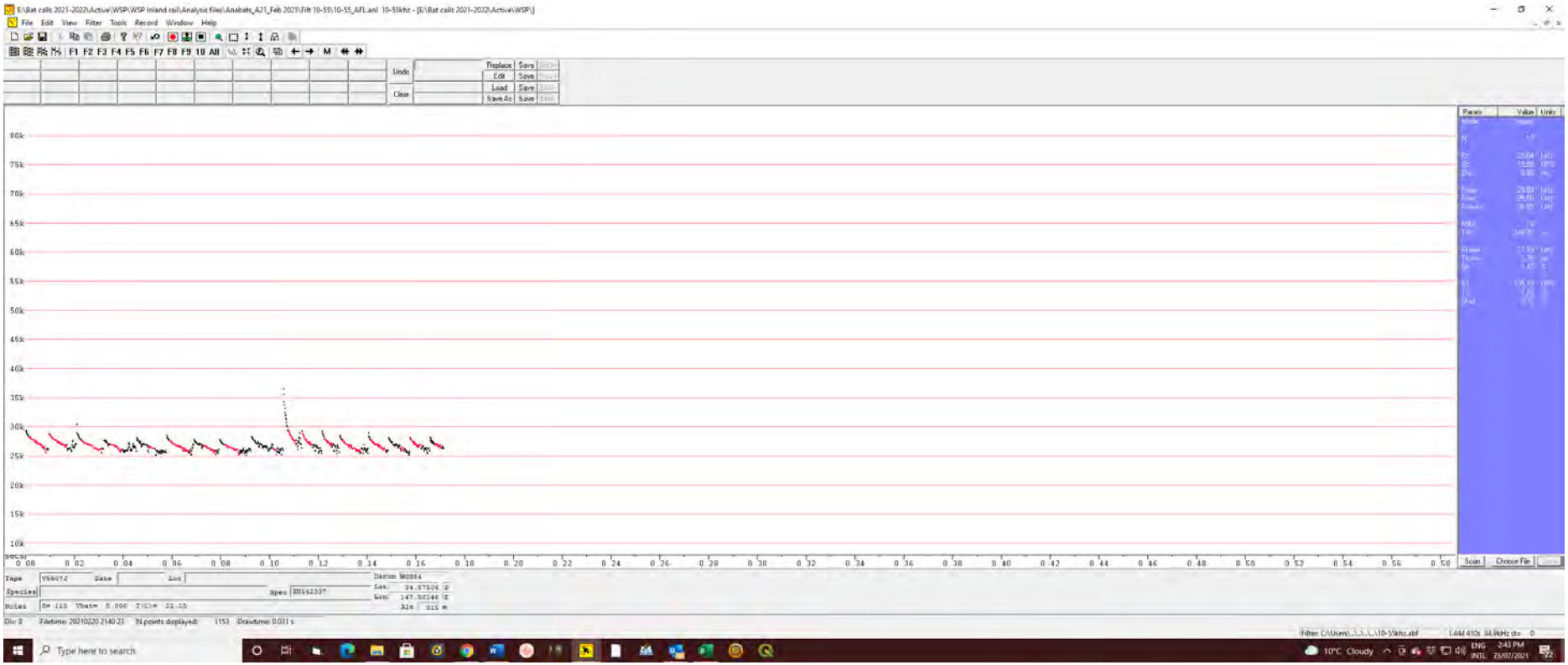


An example of Chocolate Wattled Bat recorded from the study area

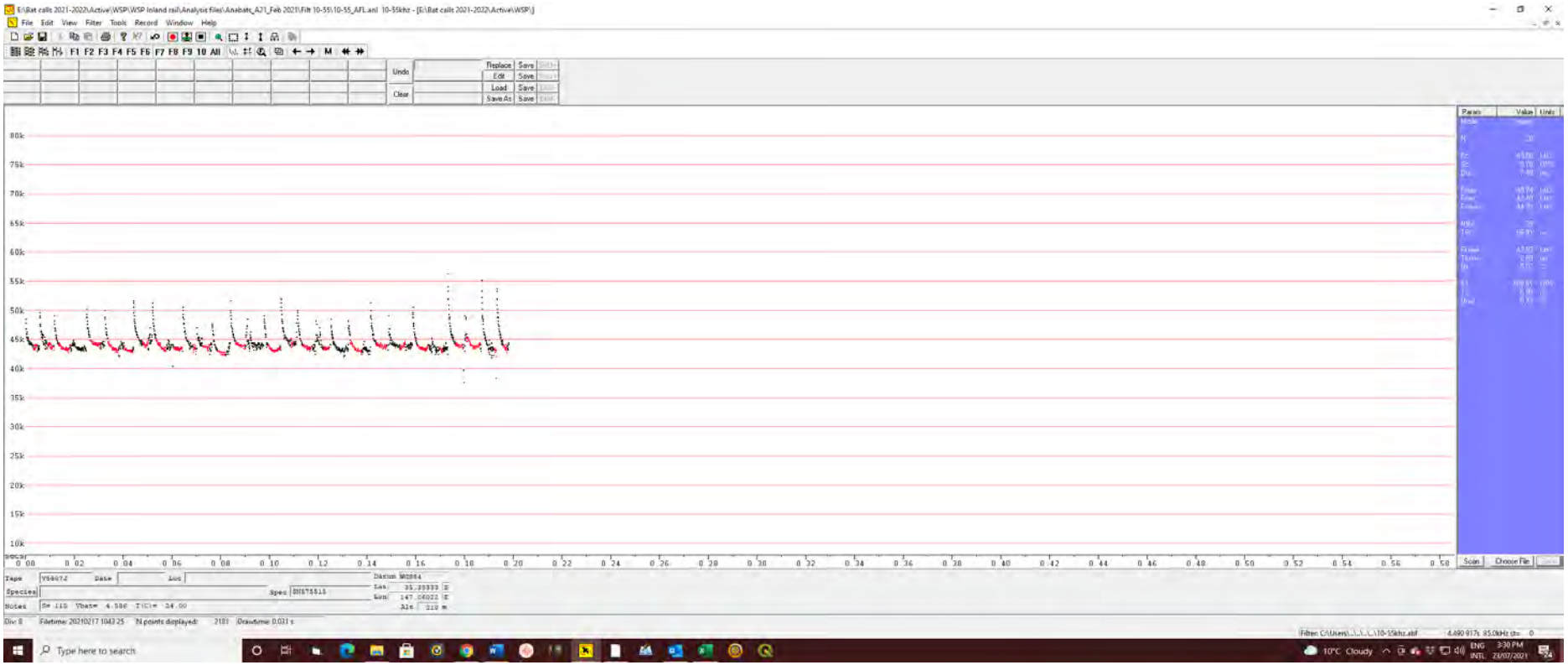


An example of Little Forest Bat recorded from the study area

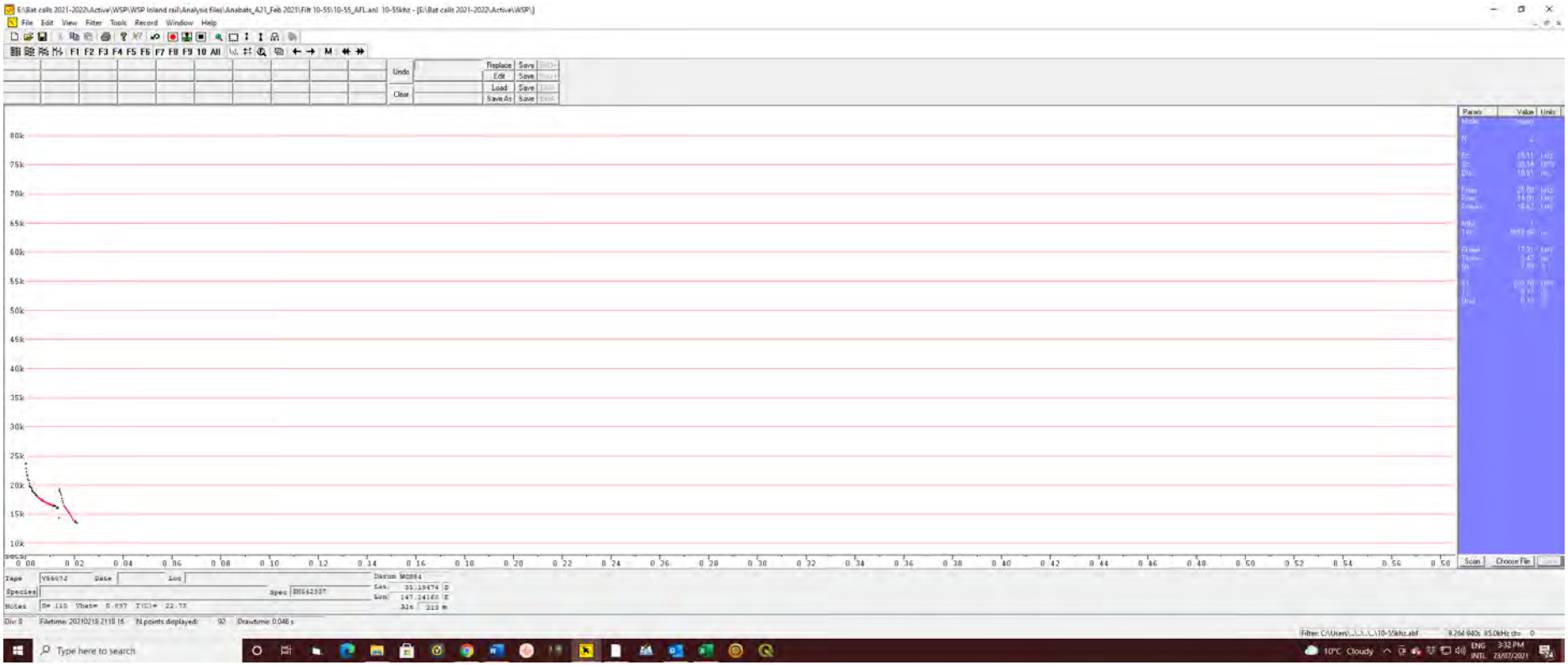
An example of Ride's Free-tailed Bat recorded from the study area



An example of South-Eastern Free-tailed Bat recorded from the study area



An example of Large Forest Bat recorded from the study area



An example of White-striped Freetail-bat recorded from the study area

APPENDIX

G

Revised Technical Paper 8: Biodiversity Development Assessment Report

Appendix D Matters of national environmental significance

ALBURY TO ILLABO PREFERRED INFRASTRUCTURE REPORT—RESPONSE TO SUBMISSIONS

Inland Rail is a subsidiary of
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INLAND RAIL

APPENDIX D-1
MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE – FIGURES

HUME HIGHWAY

MURRAY RIVER

Albury to Illabo

Appendix D1 – Matters of National Environmental Significance

MAP 1 OF 21

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 12/10/2023 Paper: A3
Author: WSP Scale: 1:2,500
Data Sources: ARTC, NSWSS

- Proposal site
- Study area
- Existing railway
- Main road
- Watercourse

Threatened fauna results

- Potential Sloane's Froglet breeding habitat
- Potential Sloane's Froglet breeding habitat (15m buffer)

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Albury to Illabo Appendix D1 – Matters of National Environmental Significance MAP 2 OF 21

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 12/10/2023 Paper: A3
Author: WSP Scale: 1:8,500
Data Sources: ARTC, NSWSS

- Proposal site
- Study area
- Existing railway
- Main road
- Watercourse

Threatened fauna results

- Potential Sloane's Froglet breeding habitat
- Potential Sloane's Froglet breeding habitat (15m buffer)

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EIGHT MILE CREEK

WAGGA ROAD

HUME HIGHWAY

Albury to Illabo

Appendix D1 – Matters of National Environmental Significance

MAP 3 OF 21

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 12/10/2023 Paper: A3
Author: WSP Scale: 1:4,000
Data Sources: ARTC, NSWSS

- Proposal site
- Study area
- Existing railway
- Main road
- Watercourse

Threatened fauna results

- Grey-headed Flying-fox (EPBC Act - Vulnerable)
- Potential Sloane's Froglet breeding habitat
- Potential Sloane's Froglet breeding habitat (15m buffer)

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HUME HIGHWAY

Albury to Illabo | Appendix D1 – Matters of National Environmental Significance | MAP 4 OF 21

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 12/10/2023 Paper: A3
Author: WSP Scale: 1:3,000
Data Sources: ARTC, NSWSS

- Proposal site
- Study area
- Existing railway
- Main road

Threatened fauna results

- Potential Sloane's Froglet breeding habitat
- Potential Sloane's Froglet breeding habitat (15m buffer)

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MELVILLE STREET

BALFOUR STREET

RAILWAY PARADE

Albury to Illabo

Appendix D1 – Matters of National Environmental Significance

MAP 5 OF 21

0 50 100 m

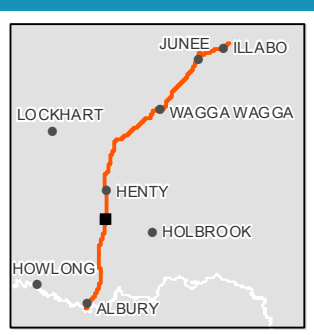
Coordinate System: GDA 1994 MGA Zone 55

Date: 12/10/2023 Paper: A3
Author: WSP Scale: 1:3,000
Data Sources: ARTC, NSWSS

- Proposal site
- Study area
- Existing railway
- Main road

Threatened fauna results

- Grey-headed Flying-fox (EPBC Act - Vulnerable)
- Potential Sloane's Froglet breeding habitat
- Potential Sloane's Froglet breeding habitat (15m buffer)



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HENTY PLEASANT HILLS ROAD
ALLAN STREET
OLYMPIC HIGHWAY
BUCKARGINGAH CREEK
SLADEN STREET
HENTY COOKARDINIA ROAD
RAILWAY PARADE
ROSLER PARADE
HENTY WALLA ROAD

Albury to Illabo Appendix D1 – Matters of National Environmental Significance MAP 6 OF 21

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 12/10/2023 Paper: A3
Author: WSP Scale: 1:5,000
Data Sources: ARTC, NSWSS

- Proposal site
- Study area
- Existing railway
- Main road
- Watercourse

Threatened fauna results

- Superb Parrot (EPBC Act - Vulnerable)
- Potential Sloane's Froglet breeding habitat
- Potential Sloane's Froglet breeding habitat (15m buffer)

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OLYMPIC HIGHWAY

COX STREET

PLUNKETT STREET

COLE STREET

SANDY CREEK

Albury to Illabo Appendix D1 – Matters of National Environmental Significance MAP 7 OF 21

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 12/10/2023 Paper: A3
Author: WSP Scale: 1:5,000
Data Sources: ARTC, NSWSS

Proposal site
Study area
Existing railway
Main road
Watercourse

Threatened fauna results

Potential Sloane's Froglet breeding habitat
Potential Sloane's Froglet breeding habitat (15m buffer)

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BURKES CREEK
FORD STREET
URANA STREET
MANGOPLAH ROAD
RAILWAY STREET

Albury to Illabo Appendix D1 – Matters of National Environmental Significance MAP 8 OF 21

0 50 100 m

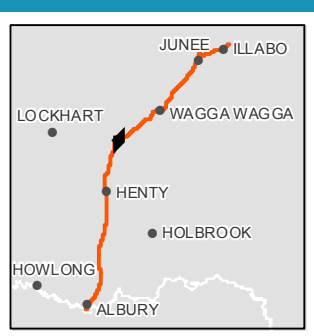
Coordinate System: GDA 1994 MGA Zone 55

Date: 12/10/2023 Paper: A3
Author: WSP Scale: 1:4,000
Data Sources: ARTC, NSWSS

- Proposal site
- Study area
- Existing railway
- Main road
- Watercourse

Threatened fauna results

- Potential Sloane's Froglet breeding habitat
- Potential Sloane's Froglet breeding habitat (15m buffer)



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URANQUINTY CROSS ROAD
YARRAGUNDRY STREET
RYAN STREET
KEY STREET
OXLEY BRIDGE ROAD
MORGAN STREET
SANDY CREEK
OLYMPIC HIGHWAY

Albury to Illabo

Appendix D1 – Matters of National Environmental Significance

MAP 9 OF 21

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 12/10/2023 Paper: A3
Author: WSP Scale: 1:6,000
Data Sources: ARTC, NSWSS

- Proposal site
- Study area
- Existing railway
- Main road
- Watercourse

Threatened fauna results

- Potential Sloane's Froglet breeding habitat
- Potential Sloane's Froglet breeding habitat (15m buffer)

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Albury to Illabo | Appendix D1 – Matters of National Environmental Significance | MAP 10 OF 21

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 12/10/2023 Paper: A3
Author: WSP Scale: 1:4,000
Data Sources: ARTC, NSWSS

Proposal site
Study area
Existing railway

Threatened fauna results

Superb Parrot (EPBC Act - Vulnerable)
Potential Sloane's Froglet breeding habitat
Potential Sloane's Froglet breeding habitat (15m buffer)

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MURRUMBIDGEE RIVER
HAMMOND AVENUE
BAYLIS STREET
EDWARD STREET
DOCKER STREET
BOURKE STREET

Albury to Illabo Appendix D1 – Matters of National Environmental Significance MAP 11 OF 21

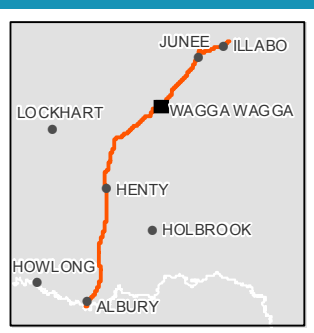
0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 12/10/2023 Paper: A3
Author: WSP Scale: 1:8,000
Data Sources: ARTC, NSWSS

Proposal site
Study area
Existing railway
Main road
Watercourse

Threatened fauna results
Potential Sloane's Froglet breeding habitat
Potential Sloane's Froglet breeding habitat (15m buffer)



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BYRNES ROAD

Albury to Illabo | Appendix D1 – Matters of National Environmental Significance | MAP 12 OF 21

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 12/10/2023 Paper: A3
Author: WSP Scale: 1:4,000
Data Sources: ARTC, NSWSS

- Proposal site
- Study area
- Existing railway
- Main road

Threatened fauna results

- Potential Sloane's Froglet breeding habitat
- Potential Sloane's Froglet breeding habitat (15m buffer)

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HAREFIELD ROAD
BUCKS CREEK
PATTERSONS ROAD
REEDY CREEK
BYRNES ROAD

Albury to Illabo Appendix D1 – Matters of National Environmental Significance MAP 13 OF 21

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 12/10/2023 Paper: A3
Author: WSP Scale: 1:5,000
Data Sources: ARTC, NSWSS

- Proposal site
- Study area
- Existing railway
- Main road
- Watercourse

Threatened fauna results

- Potential Sloane's Froglet breeding habitat
- Potential Sloane's Froglet breeding habitat (15m buffer)

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BROADWAY
OLYMPIC HIGHWAY
MAIN STREET
SEIGNIOR STREET
HUMPHRYS STREET
LORNE STREET
BELMORE STREET
KEMP STREET
EDGAR STREET

Albury to Illabo | Appendix D1 – Matters of National Environmental Significance | MAP 14 OF 21

0 50 100 m

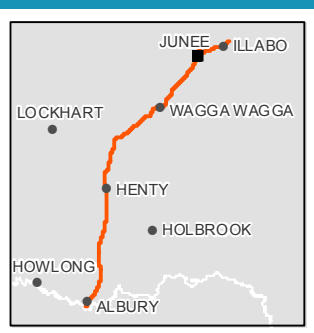
Coordinate System: GDA 1994 MGA Zone 55

Date: 12/10/2023 Paper: A3
Author: WSP Scale: 1:3,000
Data Sources: ARTC, NSWSS

- Proposal site
- Study area
- Existing railway
- Main road
- Watercourse

Threatened fauna results

- Potential Sloane's Froglet breeding habitat
- Potential Sloane's Froglet breeding habitat (15m buffer)



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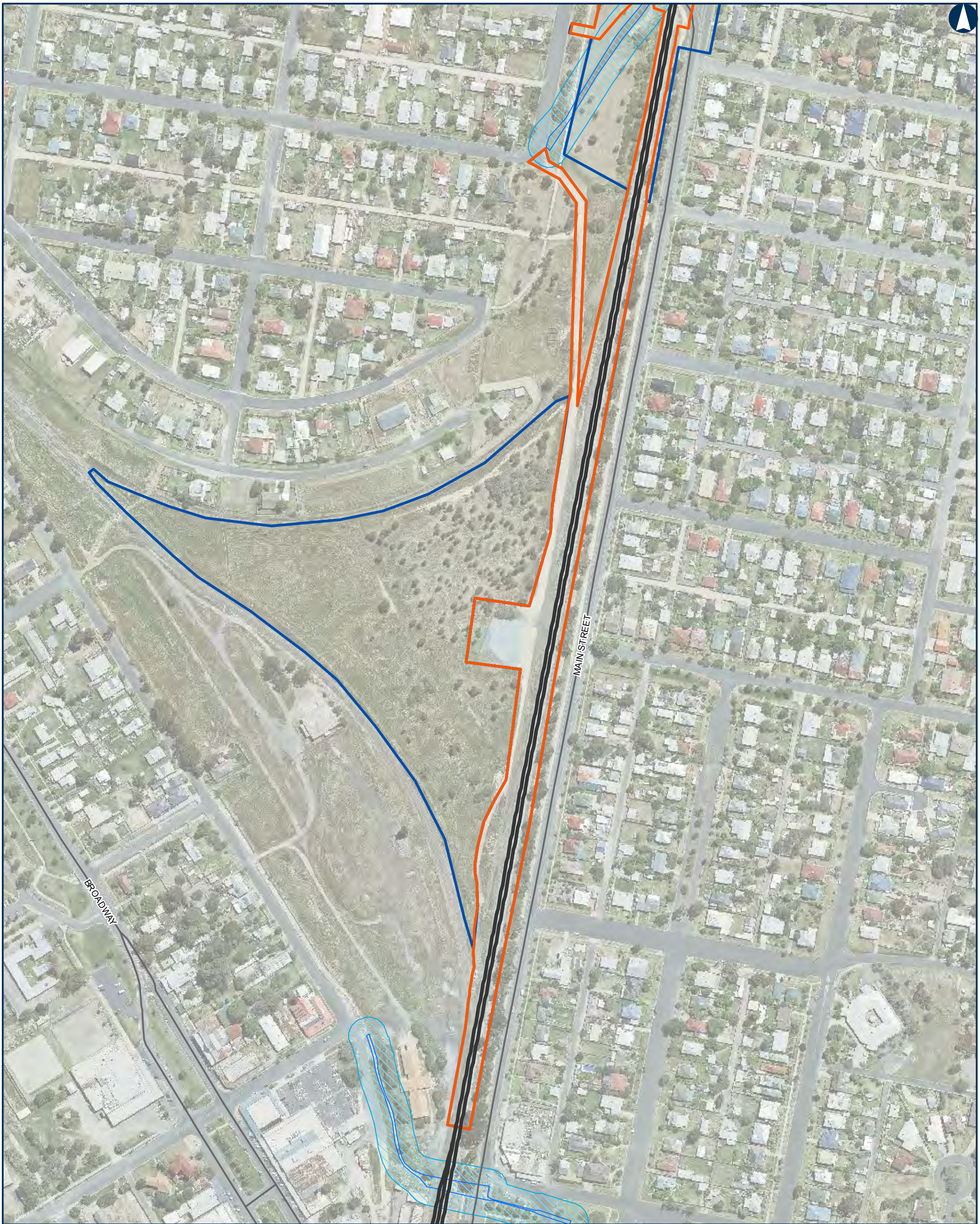

Albury to Illabo Appendix D1 – Matters of National Environmental Significance MAP 15 OF 21

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 12/10/2023 Paper: A3
Author: WSP Scale: 1:3,000
Data Sources: ARTC, NSWSS

Proposal site
Study area
Existing railway
Main road

Threatened fauna results
Potential Sloane's Froglet breeding habitat
Potential Sloane's Froglet breeding habitat (15m buffer)

INLAND RAIL ARTC

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OLYMPIC HIGHWAY

ILLABO ROAD

MAIN STREET

Albury to Illabo Appendix D1 – Matters of National Environmental Significance MAP 16 OF 21

0 50 100 m

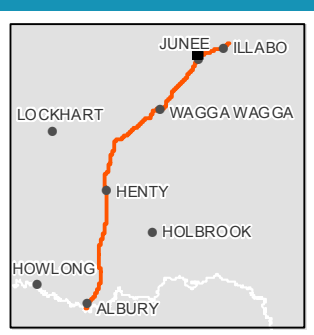
Coordinate System: GDA 1994 MGA Zone 55

Date: 12/10/2023 Paper: A3
Author: WSP Scale: 1:3,000
Data Sources: ARTC, NSWSS

- Proposal site
- Study area
- Existing railway
- Main road

Threatened fauna results

- Potential Sloane's Froglet breeding habitat
- Potential Sloane's Froglet breeding habitat (15m buffer)



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OLYMPIC HIGHWAY

Albury to Illabo | Appendix D1 – Matters of National Environmental Significance | MAP 17 OF 21

0 50 100
m

Coordinate System: GDA 1994 MGA Zone 55

Date: 12/10/2023 Paper: A3
Author: WSP Scale: 1:10,000
Data Sources: ARTC, NSWSS

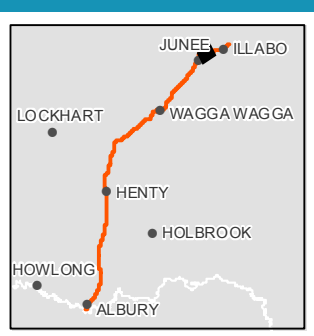
- Proposal site
- Study area
- Existing railway
- Main road

Threatened fauna results

- Superb Parrot (EPBC Act - Vulnerable)

EPBC listed vegetation mapping

- EPBC Act - White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland – Critically Endangered
- Potential Sloane's Froglet breeding habitat
- Potential Sloane's Froglet breeding habitat (15m buffer)



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MARINNA ROAD

OLYMPIC HIGHWAY

Albury to Illabo | Appendix D1 – Matters of National Environmental Significance | MAP 18 OF 21

0 50 100
m

Coordinate System: GDA 1994 MGA Zone 55

Date: 12/10/2023 Paper: A3
Author: WSP Scale: 1:10,000
Data Sources: ARTC, NSWSS

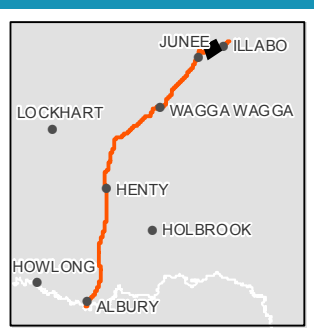
- Proposal site
- Study area
- Existing railway
- Main road

Threatened fauna results

- Superb Parrot (EPBC Act - Vulnerable)

EPBC listed vegetation mapping

- EPBC Act - White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland – Critically Endangered
- Potential Sloane's Froglet breeding habitat
- Potential Sloane's Froglet breeding habitat (15m buffer)



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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JERALGAMBETH CREEK

OLYMPIC HIGHWAY

Albury to Illabo | Appendix D1 – Matters of National Environmental Significance | MAP 19 OF 21

0 50 100 m

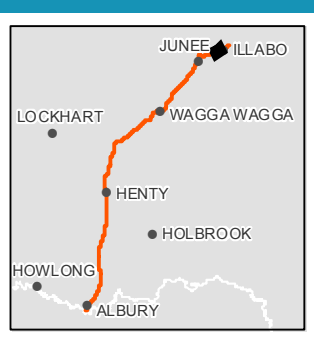
Coordinate System: GDA 1994 MGA Zone 55

Date: 12/10/2023 Paper: A3
Author: WSP Scale: 1:10,000
Data Sources: ARTC, NSWSS

- Proposal site
- Study area
- Existing railway
- Main road
- Watercourse

Threatened fauna results

- Superb Parrot (EPBC Act - Vulnerable)
- Potential Sloane's Froglet breeding habitat
- Potential Sloane's Froglet breeding habitat (15m buffer)



INLAND RAIL

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Albury to Illabo | Appendix D1 – Matters of National Environmental Significance | MAP 20 OF 21

0 50 100
m

Coordinate System: GDA 1994 MGA Zone 55

Date: 12/10/2023 Paper: A3
Author: WSP Scale: 1:10,000
Data Sources: ARTC, NSWSS

- Proposal site
- Study area
- Existing railway
- Main road
- Watercourse

Threatened fauna results

- Superb Parrot (EPBC Act - Vulnerable)

EPBC listed vegetation mapping

- EPBC Act - White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland – Critically Endangered
- Potential Sloane's Froglet breeding habitat
- Potential Sloane's Froglet breeding habitat (15m buffer)

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OLYMPIC HIGHWAY

WARRENS LANE

BILLABONG CREEK

JERALGAMBETH CREEK

Albury to Illabo Appendix D1 – Matters of National Environmental Significance MAP 21 OF 21

0 50 100
m

Coordinate System: GDA 1994 MGA Zone 55

Date: 12/10/2023 Paper: A3
Author: WSP Scale: 1:10,000
Data Sources: ARTC, NSWSS

- Proposal site
- Study area
- Existing railway
- Main road
- Watercourse

Threatened fauna results

- Superb Parrot (EPBC Act - Vulnerable)
- Potential Sloane's Froglet breeding habitat
- Potential Sloane's Froglet breeding habitat (15m buffer)

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APPENDIX D-2
ASSESSMENTS OF SIGNIFICANCE

D2.1 WHITE BOX – YELLOW BOX – BLAKELY'S RED GUM GRASSY WOODLAND AND DERIVED NATIVE GRASSLAND

The White Box – yellow Box – Blakely's red Gum Grassy Woodland and Derived Native grassland is listed as a Critically Endangered Ecological Community under the EPBC Act (Department of Environment Climate Change and Water, 2011).

White Box Yellow Box Blakely's Red Gum Woodland (commonly referred to as Box-Gum Woodland) is characterised by a species-rich understorey of native tussock grasses, herbs and scattered shrubs, and the dominance, or prior dominance, of White Box *Eucalyptus albens*, Yellow Box *E. melliodora* and Blakely's Red Gum *E. blakelyi*. tree-cover is generally discontinuous and consists of widely-spaced trees of medium height (Department of Environment and Heritage, 2006).

In its pre-1750 state, this ecological community was characterised by:

- a ground layer dominated by tussock grasses
- an overstorey dominated or co-dominated by White Box, Yellow Box or Blakely's Red Gum, or Grey Box in the Nandewar bioregion
- a sparse or patchy shrub layer.

The Australian Government listing of White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland is slightly different to the NSW listing. Areas that are part of the Australian Government listed ecological community must have either:

- an intact tree layer and predominately native ground layer
- an intact native ground layer with a high diversity of native plant species but no remaining tree layer.

Due to the ecological community's occurrence on fertile soils it has been extensively cleared for agriculture and intact remnants, including both trees and unmodified understorey, are now extremely rare. Clearing and fragmentation for urban, rural residential, agricultural and infrastructure development remain on-going threats to this ecological community, while degradation resulting from inappropriate management and weed invasion by introduced perennial grasses continues to erode the conservation value of remnant areas.

Box-Gum Woodland occurs along the western slopes and tablelands of the Great Dividing Range from southern Queensland through New South Wales and the Australian Capital Territory to Victoria.

Box-Gum Woodlands within the proposal site generally occur a combination of small isolated stands and roadside remnants. The proposed action would result in a reduction of the extent of the Box-Gum Woodlands within the proposal site by 0.50 hectares. This is comprised of PCT 277 which was recorded in moderate condition.

The following assessment has been undertaken following the Matters of National Environmental Significance, Significant Impact Guidelines 1.1 (Department of Environment, 2013).

An action is likely to have a significant impact on a critically endangered or endangered ecological community if there is a real chance or possibility that it will:

- **Reduce the extent of an ecological community**

Box-Gum Woodlands at a national level are thought to have lost more than 90% of its pre-European distribution. In addition, this has led to a critical loss of integrity, and only half of the remaining 10 per cent distribution is considered likely to meet the minimum condition criteria of the listed ecological community. Estimates reported in the 2011 National Recovery Plan (Department of Environment Climate Change and Water, 2011) indicated that only 405,000 hectares of the ecological community remains in various conditions. The proposed action would result in a reduction of the extent of the *Box-Gum Woodlands* within the proposal site by 0.50 hectares.

- **Fragment or increase fragmentation of an ecological community, for example by clearing vegetation for roads or transmission lines.**

Box-Gum Woodlands within the proposal site generally occur as small isolated stands. The proposed action will involve the removal of vegetation along an existing linear rail corridor and is unlikely to further fragment or increase fragmentation between other patches of Box-Gum Woodland in the locality.

- **Adversely affect habitat critical to the survival of an ecological community**

No critical habitat has been listed for the Box-Gum Woodlands ecological community under the EPBC Act (Department of Environment and Energy, 2017).

The National Recovery Plan for Box-Gum Woodlands (Department of Environment, Climate Change and Water, 2010) states:

"…habitat critical to the survival of Box-Gum Woodland is on the moderate to highly fertile soils of the western slopes of NSW and Queensland, the northern slopes of Victoria, and the tablelands of the Great Dividing Range from southern Queensland through NSW and the ACT. Given the currently highly fragmented and degraded state of this ecological community, all areas of Box-Gum Grassy Woodland which meet the minimum condition criteria outlined in section 3 should be considered critical to the survival of this ecological community" (Page 12).

Section 3 refers to the condition criteria for EPBC listed Box-Gum Woodlands. PCT 277 in moderate condition were considered commensurate (refer to section 7 of main report).

As such all occurrences of EPBC-listed Box-Gum Grassy Woodland with the proposal site are considered habitat critical to the survival of this community.

- **Modify or destroy abiotic (non-living) factors (such as water, nutrients, or soil) necessary for an ecological community's survival, including reduction of groundwater levels, or substantial alteration of surface water drainage patterns.**

The proposal is limited to the clearing of 0.50 hectares of Box-Gum Woodlands. Any large-scale excavation that occurs in close proximity to the community or to marginal patches will involve mitigation measures to minimise sedimentation and hydrological impacts. Therefore, the proposal is considered unlikely to substantially modify or destroy these abiotic factors.

- **Cause a substantial change in the species composition of an occurrence of an ecological community, including causing a decline or loss of functionally important species, for example through regular burning or flora or fauna harvesting.**

The proposal will involve the clearing of 0.50 hectares of Box-Gum Woodlands. Mitigation measures will be enforced to ensure the proposal does not substantially change the species composition of an occurrence of this community outside of the impact area.

- **Will the action cause a substantial reduction in the quality or integrity of an occurrence of an ecological community, including but not limited to:**
  - **Assisting invasive species, that are harmful to the listed ecological community, to become established**
  - **Causing regular mobilization of fertilizers, herbicides or other chemicals or pollutants into the ecological community which kill or inhibit the growth of species in the ecological community**

Box-Gum Woodlands within the proposal site currently subject to weed and pest invasion. The majority of the proposal site occurs along roadsides, pre-existing rail infrastructure and agricultural properties which have all been subjected to historical disturbances. Therefore, it is considered unlikely that the proposal would substantially reduce the quality or integrity of the community's occurrence or increase spread of invasive weeds.

Additionally, mitigation measures will be implemented during construction to minimise the likelihood of spread of weeds or pathogens. These mitigation measures will aid in reducing potential impacts associated with the proposal that may otherwise result in the further reduction of the community's quality.

- **Interfere with the recovery of an ecological community**

The National Recovery Plan for Box-Gum Woodlands *(Department of Environment Climate Change and Water, 2011)* outlines the following recovery actions in Table 3:

- **1.1** Establish agreed protocols across jurisdictions for the assessment of Box-Gum Woodland condition in Year 1 of the recovery plan implementation and apply these on an ongoing basis.
- **1.2** Share data and reporting between jurisdictions, government and nongovernment agencies.
- **1.3** Investigate the occurrence of Box-Gum Grassy Woodland in South Australia.
- **1.4** Collate existing survey and mapping data relating to Box-Gum Grassy woodland into a central, updatable repository for use by stakeholder government agencies in mapping extent, protected areas and priority areas. Update repository on an annual basis.
- **1.5** Identify gaps in survey and mapping data across the predicted distribution of Box-Gum Grassy Woodland and engage communities and conduct future surveys to fill these gaps.
- **1.6** Investigate the further use of remote sensing and other assessment techniques to assist with the preceding actions and with Actions 2.2, 2.3 and 2.4.
- **1.7** Establish and apply protocols for non-technical monitoring of remnant areas. These should include as many of the elements as possible of the condition assessment protocols developed in Action 1.1. These protocols are to reflect the condition assessment protocols developed under Action 1.1.
- **1.8** Identify gaps in current monitoring to ensure the geographic range and ecological variation within the ecological community is represented, and to coordinate implementation and analysis of all monitoring.
- **1.9** Improve baseline knowledge of condition and generate benchmark data against which sites can be assessed for management actions and cost effectiveness of revegetation ranked.

The proposal is unlikely to interfere with any of the recovery actions outlined.

Conclusion

The vegetation recorded within the proposal site consistent with Box-Gum Woodlands occurred in moderate condition. The proposal occurs in an agricultural landscape which is largely cleared and fragmented, and the Box-Gum Woodlands was recorded as roadside remnants and isolated smaller patches. In total the proposal will impact approximately 0.50 hectares of the community in moderate condition. Accordingly, the is considered unlikely to have a significant impact on White Box Yellow Box Blakely's Red Gum Woodland.

D2.2 WHITE-THROATED NEEDLETAIL

The White-throated Needletail (*Hirundapus caudacutus)* is listed as Vulnerable and Migratory under the EPBC Act.

This species previously recorded in aerial habitats in the proposal locality. The study area only provides aerial foraging habitat for this species. The proposal will result in the removal of about 1.97 hectares of potential habitat for the species that is likely utilised for foraging as part of a far larger home range.

The following assessment has been undertaken following the Matters of National Environmental Significance, Significant Impact Guidelines 1.1. Under the Act, important populations are:

- likely to be key source populations either for breeding or dispersal
- likely to be necessary for maintaining genetic diversity, and/or
- at or near the limit of the species range.

Is this part of an important population:

The White-throated Needletail is a migratory species and occurs in Australia only between late spring and early autumn, but mostly in summer. This species is a non-breeding migrant with breeding taking place in Northern Asia (Birdlife Australia, 2020). The White-throated Needletail feeds on flying insects, such as termites, ants, beetles and flies. They catch the insects in flight in their wide gaping beaks. They have been recorded roosting in trees in forests and woodlands, both among dense foliage in the canopy or in hollows. Probably recorded most often above wooded areas, including open forest and rainforest (Birdlife Australia, 2020). This species is not or near the limit of its range as it occurs over eastern and northern Australia and in Northern Asia (Birdlife Australia, 2020).

White-throated Needletail is almost exclusively aerial and although they occur over most types of habitat, they are probably recorded most often above wooded areas, including open forest and rainforest, and may also fly between trees or in clearings and below the canopy. They also commonly occur over heathland, but less often over treeless areas, such as grassland or swamps.

The study area does not contain key resources for breeding or dispersal, does not occur at the limit of the species distribution range and is unlikely to be necessary for maintaining genetic diversity populations which may occur. However, the species is a migratory species and the individuals which migrate to Australia would be considered as one population and therefore any individuals within the study area is considered to form part of an 'important population'.

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will result in one or more of the following:

- **Lead to a long-term decrease in the size of an important population of a species**

This species occurs widely within NSW and QLD whilst in Australia and suitable foraging resources could be accessed widely throughout the locality and beyond. Forage over most types of habitat, they are recorded most often above wooded areas, including habitat identified in the study area, which are likely the source for larval stages of their aerial insect prey. The species may use the study area for aerial foraging on an intermittent basis but is not known to breed in Australia. It is unlikely that the impact of a small area 1.97 hectares of potential aerial foraging habitat is likely to have a significant impact upon for this species to lead to a long-term decrease in the size of its population.

- **Reduce the area of occupancy of an important population**

The proposal will impact a small area 1.97 hectares of potential aerial foraging habitat for this species. This species forages on the wing and the vegetation within the study area is likely to provide aerial foraging habitat for this species. This species occurs widely within NSW and QLD whilst in Australia and suitable foraging resources could be accessed widely throughout the locality and beyond. It is unlikely that the impact of 1.97 hectares of potential foraging habitat would significantly impact upon available resources for this species to the point that it would significantly reduce of the area of occupancy for the species.

- **Fragment an existing important population into two or more populations**

Habitat connectivity is not likely to be affected by the proposal. The majority of the study area occurs within or adjacent too previously disturbed land (rail corridor and agriculture). About 1.97 hectares of aerial foraging habitat is likely to be affected by the proposal with vegetation removal largely limited to a linear disturbance corridor. As the study area is linear in nature and largely avoids significant vegetation, the proposal would not further fragment or isolate any previously undisturbed patches of habitat than what already exists in the study area and locality. Furthermore, the White-throated Needletail is a highly mobile and aerial species able to transverse fragmented landscapes to isolated patches of vegetation. As potential habitat within the study area already occurs within a highly fragmented landscape, it is considered unlikely that the disturbance of habitat in the study area would fragment the existing population into two or more populations.

- **Adversely affect habitat critical to the survival of a species**

No critical habitat is listed for this species under the EPBC Act. Habitat critical to the survival of a species may also include areas that are not listed on the Register of Critical Habitat if they are necessary:

- for activities such as foraging, breeding, roosting, or dispersal
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
- to maintain genetic diversity and long-term evolutionary development, or
- for the reintroduction of populations or recovery of the species or ecological community.

The proposal will impact a small area 1.97 hectares of potential aerial foraging habitat for this species. The White-throated Needletail is a migratory species and breeds in northern Asia. This species forages on the wing and the vegetation within the study area is likely to provide aerial foraging habitat for this species. This species occurs widely within NSW and QLD whilst in Australia and suitable foraging resources could be accessed widely throughout the locality and beyond. Therefore, this would not meet the above criteria and the study area is not critical to the survival of the White-throated Needletail.

- **Disrupt the breeding cycle of an important population**

White-throated Needletail does not breed within Australia. The removal of about 1.97 hectares of potential foraging habitat is unlikely to disrupt their movements to Northern Asia breeding grounds. As such the proposal is unlikely to affect the breeding cycle of a population of White-throated Needletail.

- **Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline**

The proposal will impact about 1.97 hectares of potential foraging habitat for the White-throated Needletail.

- **Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat**

It is not likely that invasive species (such as introduced predators) that are harmful to the White-throated Needletail would become further established as a result of the proposal.

- **Introduce disease that may cause the species to decline**

No. There are no known diseases that are likely to increase in the area as a result of the proposal.

- **Interfere substantially with the recovery of the species**

As this species does not breed in Australia and forages on the wing and has the potential to occur intermittently within the locality, the proposal is not likely to interfere with the recovery of this species.

Conclusion

The study area only provides aerial foraging habitat with no breeding occurring within Australia. The White-throated Needletail is may to use the study area for aerial foraging on an intermittent basis and the proposal is not likely to have a significant impact upon available resources for this species in the vicinity of the study area or its wider locality. Therefore, the habitat to be impacted is not considered important to the long-term survival of the White-throated Needletail.

D2.3 SWIFT PARROT

The Swift Parrot (*Lathamus discolor*) is listed as Critically Endangered under the EPBC Act.

Whilst the Swift Parrot was not recorded in the proposal, records for the species occur in the greater locality of the study area in association with patches of high-quality native vegetation. The species is known to be associated with vegetation types of PCT 5 and 277. A very small area of potential habitat (PCT 5 and 277 moderate and poor condition classes) was recorded in the study area and the survey was completed outside of the season when Swift Parrots are on the mainland in November – February. As Swift Parrots were not detectable during the survey, a precautionary approach has been taken and the species is considered moderately likely to occur based on the presence of potential habitat.

An action is likely to have a significant impact on a Critically Endangered or Endangered species if there is a real chance or possibility that it will:

- **Lead to a long-term decrease in the size of a population**

On the mainland during the winter months Swift Parrots are widely nomadic in response to the varying distribution of blossom. Swift Parrot movements locally vary from year to year in response to resources in their range. The proposal would impact about 1.97 hectares of potential foraging habitat in the form of PCT 5 poor condition and 277 moderate and poor condition classes. Previous records for the Swift Parrot occur in the greater locality of the study area, in association with patches of high-quality native vegetation.

Due to the nomadic nature of Swift Parrots in relation to annual resource distribution on the mainland and the general narrow and linear impact associated with the proposal, any identified population of Swift Parrot would not be restricted to habitat in the study area. Swift Parrots are likely to be present in other parts of the locality as there is a large amount of potentially suitable habitat in the form of PCT 5 and PCT 277 mapped as occurring in the locality. Although the proposal will add incrementally to the loss of a small amount (1.97 hectares) of potential foraging habitat in the locality, the proportional impact is very small. Therefore, the proposal is not likely to lead to a long-term decrease in the size of the Swift Parrot population.

- **Reduce the area of occupancy of the species**

The Swift Parrot breeds in Tasmania during the austral summer and the entire population migrates north to mainland Australia for the austral winter. Whilst on the mainland the Swift Parrot disperses widely, foraging on flowers and lerp in *Eucalyptus* spp. mainly in Victoria and New South Wales (National Recovery Plan for the Swift Parrot *Lathamus discolor*, 2011). The Swift Parrot uses different areas in different years depending on the availability of food sources. In New South Wales, Swift Parrots forage in forests and woodlands throughout the coastal and western slopes regions, whereby coastal regions support larger numbers of birds when inland habitats are subject to drought. The current distribution of Swift Parrot is illustrated in Figure D-2.1.

If the Swift Parrot was to use habitat resources available in the study area, the proposal would impact about 1.97 hectares of potential foraging habitat in the form of PCT 5 poor condition and 277 moderate and poor condition classes. While the proposal would lead to a small incremental loss of potentially suitable habitat, the proportional impact to similar habitats in the locality is very low, and the impact is not considered important in regard to its context and intensity.

Figure D-2.1 Distribution map for Swift Parrot (Department of the Environment, 2021)

- **Fragment an existing population into two or more populations**

Habitat connectivity is not likely to be affected by the proposal. The majority of the study area occurs within or adjacent too previously disturbed land (rail corridor and agriculture). About 1.97 hectares of potential foraging habitat is likely to be affected by the proposal with vegetation removal largely limited to a linear disturbance corridor. As the study area is linear in nature and largely avoids significant vegetation, the proposal would not further fragment or isolate any previously undisturbed patches of habitat than what already exists in the study area and locality. Furthermore, given that the Swift Parrot is highly mobile and nomadic, the proposal would not present a significant barrier. It is not considered likely that habitat would become further isolated or fragmented significantly beyond that currently existing in the study area.

- **Adversely affect habitat critical to the survival of a species**

No critical habitat has been listed for the Swift Parrot to date. As outlined in the National Recovery Plan, of particular importance for conservation management are habitats that are used:

- for nesting
- by large proportions of the Swift Parrot population
- repeatedly between seasons (site fidelity)
- for prolonged periods of time (site persistence).

Although there are no previous records for the Swift Parrot known from the study area, the species has been recorded in the greater locality in association with larger patches of high-quality native vegetation within important area maps identified. The study area is not located within a mapped important area for this species. While the species exhibits variability in the pattern of movements between years in response to the varying distribution of blossom and lerp throughout its range, potential habitat in the study area is not considered critical to the survival of the of the species. The proposal would impact about 1.97 hectares of narrow and linear habitat in an existing highly disturbed rail corridor. Although the loss of native vegetation would be an incremental loss of local habitat, the quality and importance are not considered to be significant to the long-term survival of any local population of Swift Parrot.

- **Disrupt the breeding cycle of a population**

The Swift Parrots breeds in Tasmania during spring and summer, migrating to south-eastern Australia during autumn and winter. While Swift Parrots are dependent on flowering and lerp resources across a wide range of habitats (woodlands and forests) within their NSW wintering grounds, the removal of about 1.97 hectares of potential foraging habitat is unlikely to disrupt their movements to Tasmanian breeding grounds. As such the proposal is unlikely to affect the breeding cycle of a population of Swift Parrot.

- **Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline**

During the winter months when the Swift Parrot resides on mainland Australian, they are widely nomadic in response to the varying distribution of blossom and lerp. Due to the general narrow and linear impact associated with the proposal, any identified population of Swift Parrot would not be restricted to habitat in the study area. Swift Parrots are likely to be present in other parts of the locality as there is a large amount of potentially suitable habitat in the form of PCT 5 and PCT 277 mapped as occurring in the locality. Although the proposal will add incrementally to the loss of a small amount (1.97 hectares) of potential foraging habitat in the locality, the proportional impact is very small. Therefore, while the potential marginal foraging habitat would be impacted, it is unlikely to be of an extent that would cause this species to decline.

- **Result in invasive species that are harmful to an Endangered species becoming established in the Endangered species´ habitat**

It is not likely that invasive species (such as introduced predators) that are potentially harmful to the Swift Parrot would become further established as a result of the proposal.

- **Introduce disease that may cause the species to decline**

No. It is unlikely that disease would be increased by the proposal.

- **Interfere with the recovery of the species**

Recovery strategies outlined in Swift Parrot Recovery Plan include:

- identify the extent and quality of habitat
- manage and protect swift parrot habitat at the landscape scale
- monitor and manage the impact of collisions, competition and disease
- monitor population and habitat.

The proposal would be conflict with the second recovery action, to manage and protect Swift Parrot habitat at the landscape scale. However, it is unlikely that the impact of a small area of marginal habitat would significantly exacerbate the recovery of the species and significantly impact this species.

Conclusion

In summary, the proposal is considered unlikely to result in a significant impact to the Swift Parrot. About 1.97 hectares of potential habitat would be affected by the proposal. Although the Swift Parrot is not known from the study area, the irregular distribution of blossom and lerp resources, which is a key driver of nomadism of this species, may cause this species to occasionally forage within the study area intermittently during periods of seasonal variation.

Swift Parrots using the study area are likely to use habitat that extends through the locality, including important areas that are mapped within the region, and not be reliant on the habitat within the existing highly disturbed rail corridor, it is considered unlikely that local population of Swift Parrot would be restricted to the study area. Therefore, the predicted impacts to the potential habitat for this species is likely to be minor given the mapped extent of similar vegetation in the locality. The impacts to this species are not considered to be important in regard to the context and intensity.

D2.4 REGENT HONEYEATER

Regent Honeyeater (*Anthochaera phrygia)* is listed as Critically Endangered under the EPBC Act.

The current distribution of the Regent Honeyeater is extremely patchy with a small number of known breeding sites. The Regent Honeyeater may use different areas in different years depending on the availability of food sources; potentially moving large distances to access select species which provide reliable nectar flow. The study area occurred towards the species historical western extremity, and whilst the species is not currently known from the study area, historical records for the species occur to the in the greater locality. A precautionary approach has been taken and the Regent Honeyeater is considered moderately likely to occur based on the presence of a very small area (1.97 hectares) of potential habitat (PCT 5 poor condition and 277 moderate and poor condition classes).

An action is likely to have a significant impact on a Critically Endangered or Endangered species if there is a real chance or possibility that it will:

- **Lead to a long-term decrease in the size of a population**

The Regent Honeyeater was not recorded in the study area during onsite surveys and there are no previous records for the species known for the study area. Nevertheless, historical records for the species occur in the greater locality of the study area in association with patches of high-quality native vegetation. Therefore, this assessment is based on the presence of potentially suitable habitat.

Whilst there appears to be regular movements by the species, a high level of variability exists in the timing and pattern of movements between years in response to the varying distribution of blossom throughout its range. The proposal would impact about 1.97 hectares of potential foraging habitat in the form of PCT 5 poor condition and 277 moderate and poor condition class. Key tree species include, *E. albens* (White Box), *E. sideroxylon* (Mugga Ironbark), *E. melliodora* (Yellow Box), *E. leucoxylon* (Yellow Gum), *Corymbia maculata* (Spotted Gum) and *E. robusta* (Swamp Mahogany).

In examining the life cycle of the Regent Honeyeater, it is considered unlikely that the species would breed in the study area or locality. Within its current distribution there are four known key breeding areas where the species is regularly recorded, including the Bundarra-Barraba, Capertee Valley and Hunter Valley districts in NSW and the Chiltern area in Victoria.

Due to the nomadic nature of Regent Honeyeaters in relation to annual resource distribution and the general narrow and linear impact associated with the proposal, any identified population of Regent Honeyeater would not be restricted to habitat in the study area. Although the proposal will add incrementally to the loss of a small amount (1.97 hectares) of potential foraging habitat in the locality it is considered unlikely to lead to a long-term decrease in the size of the Regent Honeyeater population.

- **Reduce the area of occupancy of the species**

The current distribution of the Regent Honeyeater is extremely patchy with a small number of known breeding sites. The Regent Honeyeater may use different areas in different years depending on the availability of food sources; potentially moving large distances to access select species which provide reliable nectar flow. Formerly distributed in south-eastern Australia from the Adelaide region in South Australia to 100 kilometres north of Brisbane in Queensland, there has been a distinct contraction in the Regent Honeyeaters range. The western edge of its New South Wales range occurs as far inland as Narrabri, Warrumbungle National Park, Dubbo, Parkes and Finley. The current distribution of Regent Honeyeater is illustrated in Figure D-2.2.

The study area occurred towards the species western extremity, and whilst the species is not currently known from the study area, historical records for the species occur in the greater locality of the study area in association with patches of high-quality native vegetation. If the Regent Honeyeater was to use habitat resources available in the study area, the proposal would impact about 1.97 hectares of potential foraging habitat in the form of PCT 5 poor condition and 277 moderate and poor condition class. While the proposal would lead to a small incremental loss of potentially suitable habitat, the proportional impact to similar habitats in the locality is very low, and the impact is not considered important in regard to its context and intensity.

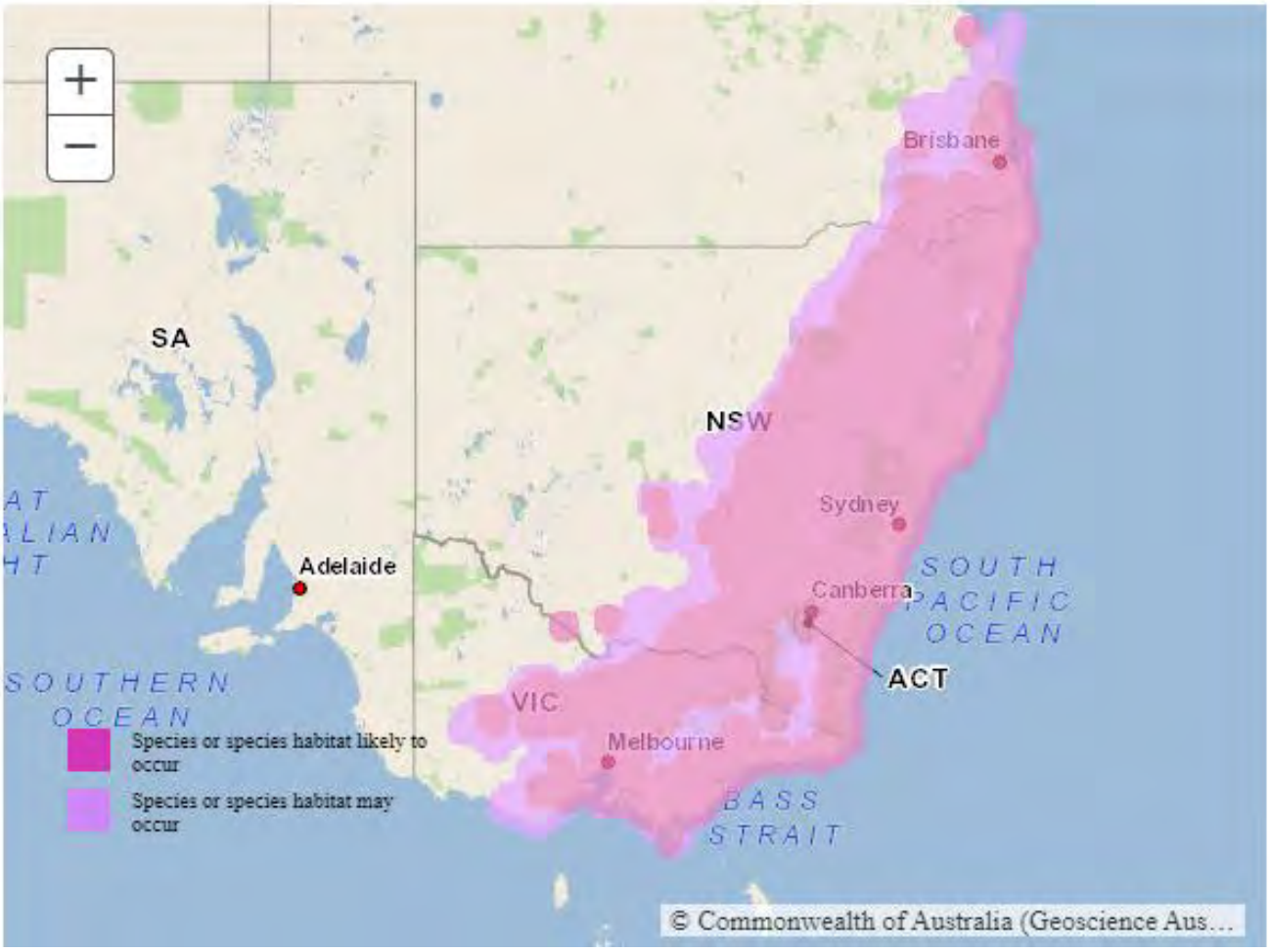

Figure D-2.2 Distribution map for Regent Honeyeater (Department of the Environment, 2021)

— **Fragment an existing population into two or more populations**

Habitat connectivity is not likely to be affected by the proposal. The majority of the study area occurs within or adjacent too previously disturbed land (rail corridor and agriculture). About 1.97 hectares of potential foraging habitat is likely to be affected by the proposal with vegetation removal largely limited to a linear disturbance corridor. As the study area is linear in nature and largely avoids significant vegetation, the proposal would not further fragment or isolate any previously undisturbed patches of habitat than what already exists due to rail corridor. Furthermore, given that these species are highly mobile and nomadic, the proposal would not present a significant barrier to these species. It is not considered likely that habitat would become further isolated or fragmented significantly beyond that currently existing in the study area.

— **Adversely affect habitat critical to the survival of a species**

No critical habitat has been listed for the Regent Honeyeater to date. As outlined in the National Recovery Plan, habitat critical to the survival of the Regent Honeyeater includes:

— any breeding or foraging areas where the species is likely to occur
— any newly discovered breeding or foraging locations.

The Regent Honeyeater was not recorded in the study area during onsite surveys and there are no previous records for the species known for the study area. While the species exhibits a high level of variability in the timing and pattern of movements between years in response to the varying distribution of blossom throughout its range, the proposal would impact about 1.97 hectares of potential foraging habitat. The four known breeding areas where the species is regularly recorded occur distantly to the south (Chiltern area, Victoria), east (Capertee Valley, NSW) and north-east (Bundarra-Barraba and Hunter Valley districts in NSW) of the proposal.

Whilst no habitat critical to breeding is associated with the study area, mapped important habitat (foraging) for the Regent Honeyeater has been identified in the Thurgoona area at the Billy Hughes Bridge enhancement site. The proposal will impact on about 0.44 hectares of important mapped habitat, of which 0.26 hectares constitutes mapping of the existing rail line, with the remaining 0.18 hectares being Miscellaneous ecosystem – Highly disturbed areas with no or limited native vegetation with a vegetation integrity score of 0.2. A tiny sliver of PCT 277 poor of 0.002 hectares was identified in the spatial data however this rounds to 0 in BAM-C and does not constitute an impact. No trees or available habitat will be impacted within mapped important habitat for the Regent Honeyeater.

The total impact to native vegetation at the Billy Hughes Bridge enhancement site is 0.15 hectares comprising of 0.1 hectares of PCT 277_poor in the Lower Slopes IBRA subregion and 0.14 hectares of PCT 277_poor in the Inland Slopes IBRA subregion. In the area mapped as containing important habitat for the Regent Honeyeater all impacts to native vegetation have been avoided with impacts restricted to non-native/exotic grassland. Accordingly, it is unlikely that this proposal will adversely affect habitat critical to the survival of this species.

- **Disrupt the breeding cycle of a population**

Within the Regent Honeyeaters current distribution there are four known key breeding areas where the species is regularly recorded. These are the Bundarra-Barraba, Capertee Valley and Hunter Valley districts in New South Wales, and the Chiltern area in north-east Victoria. The study area does not occur within these known breeding areas. Furthermore, this species is highly mobile and is known to disperse widely. The 1.97 hectares potential marginal foraging habitat likely to be affected is representative of larger patches of locally occurring resources that would be accessible to this species. Therefore, the removal of about 1.97 hectares of potential marginal foraging habitat is unlikely to disrupt the breeding cycle of a population of Regent Honeyeater.

- **Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline**

Due to the nomadic nature of Regent Honeyeaters in relation to annual resource distribution and the general narrow and linear impact associated with the proposal, any identified population of Regent Honeyeater would not be restricted to habitat in the study area. Although the proposal will add incrementally to the loss of a small amount (1.97 hectares) of potential foraging habitat in the locality, the proportional impact is very small. Therefore, while the potential marginal foraging habitat would be impacted, it is unlikely to be of an extent that would cause this species to decline.

- **Result in invasive species that are harmful to an Endangered species becoming established in the Endangered species´ habitat**

It is not likely that invasive species (such as introduced predators) that are potentially harmful to the Regent Honeyeater would become further established as a result of the proposal.

- **Introduce disease that may cause the species to decline**

No. It is unlikely that disease would be increased by the proposal.

- **Interfere with the recovery of the species**

Recovery strategies outlined in Regent Honeyeater Recovery Plan include:

- improve the extent and quality of regent honeyeater habitat
- bolster the wild population with captive-bred birds until the wild population becomes self-sustaining
- increase understanding of the size, structure, trajectory and viability of the wild population
- maintain and increase community awareness, understanding and involvement in the recovery program.

The proposal would be conflict with the first objective to a small extent by not improving the extent of habitat for the Regent Honeyeater. It is unlikely that the impact of a small area of marginal habitat would significantly exacerbate the recovery of the species and significantly impact this species.

Conclusion

In summary, the proposal is considered unlikely to result in a significant impact to the Regent Honeyeater. About 1.97 hectares of potential habitat would be affected by the proposal. Although the Regent Honeyeater was not recorded from the study area, the irregular distribution of blossom resources, which is a key driver of nomadism of this species, may cause this species to occasionally forage within the study area intermittently during periods of seasonal blossom variation.

Regent Honeyeaters using the study area are likely to use habitat that extends through the locality and due to the narrow and linear impact expected within an existing highly disturbed rail corridor, it is considered unlikely that local population of Regent Honeyeater would be restricted to the study area. Therefore, the predicted impacts to the potential habitat for this species is likely to be minor given the mapped extent of similar vegetation in the locality. The impacts to this species are not considered to be important in regard to the context and intensity.

D2.5 SUPERB PARROT

The Superb Parrot (*Polytelis swainsonii*) is listed as Vulnerable under the EPBC Act. The following assessment has been undertaken following the Matters of National Environmental Significance, Significant Impact Guidelines 1.1.

Under the Act, important populations are:

- likely to be key source populations either for breeding or dispersal
- likely to be necessary for maintaining genetic diversity, and/or
- at or near the limit of the species range.

Is this part of an important population?

The species was recorded in the study area during onsite field surveys. In addition, Superb Parrots have previously been recorded in the study area and there are previous records for the species in the proposal locality. Small areas of potential habitat were recorded in the study area in the form of PCT 5 poor condition and 277 moderate and poor condition classes. Habitat areas occurred as disjunct patches of modified woodland, within a fragmented landscape, having previously been disturbed by the existing rail corridor, agricultural cropping and grazing.

It was estimated that the proposal will involve the removal of about 1.97 hectares of habitat for this species. This species is considered as one single population across its range with majority of breeding occurring in the Riverina and South-west Slopes of NSW. Local occurrences of this species are likely part of key source populations for breeding and dispersal. Therefore, individuals that occur within the area are considered as part of 'an important population'.

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- **Lead to a long-term decrease in the size of an important population of a species**

Although not recorded during onsite surveys, Superb Parrots have previously been recorded flying over the study area. The proposal would impact on about 1.97 hectares of habitat in the form of PCT 5 poor condition and 277 moderate and poor condition classes, which included tree hollows of a size potentially suitable for Superb Parrot breeding. Superb Parrots using the study area are likely to be part of a viable population that extends through the locality and are likely to be present in other parts of the locality as there is a large amount of potentially suitable habitat in the form of PCT 5 and 277 mapped as occurring in the locality. Although the proposal will add incrementally to the loss of a small amount (1.97 hectares) of potential habitat in the locality, the proportional impact is very small in context of the availability of higher quality habitats in the locality. Due to the narrow and linear impact expected within an existing highly disturbed rail corridor, the proposal is not likely to lead to a long-term decrease in the size of the Superb Parrot population.

- **Reduce the area of occupancy of an important population**

The Superb Parrot occurs only in south-eastern Australia. The Superb Parrot is found in NSW and northern Victoria, where it occurs on the inland slopes of the Great Divide and on adjacent plains, especially along the major river-systems.

In NSW, it mostly occurs west of the Great Divide, where it mainly inhabits the Riverina, the South-west Slope and Southern Tableland Regions. Its range extends north to around Narrabri and Wee Waa in the North-west Plain Region, from a line joining Coonabarabran and Narrabri, and extending at least as far west as Tottenham and Quambone. The breeding range of the Superb Parrot is divided into three main areas:

- along the Murray and Edward Rivers
- along the Murrumbidgee River
- in a triangle bounded by Molong, Yass and Young.

If the Superb Parrot was to use habitat resources available in the study area, the proposal would impact about 1.97 hectares of potential foraging habitat in the form of PCT 5 and 277. While the proposal would lead to a small incremental loss of potentially suitable habitat, the proportional impact to similar habitats in the locality is very low and the impact is not considered important in regard to its context and intensity.

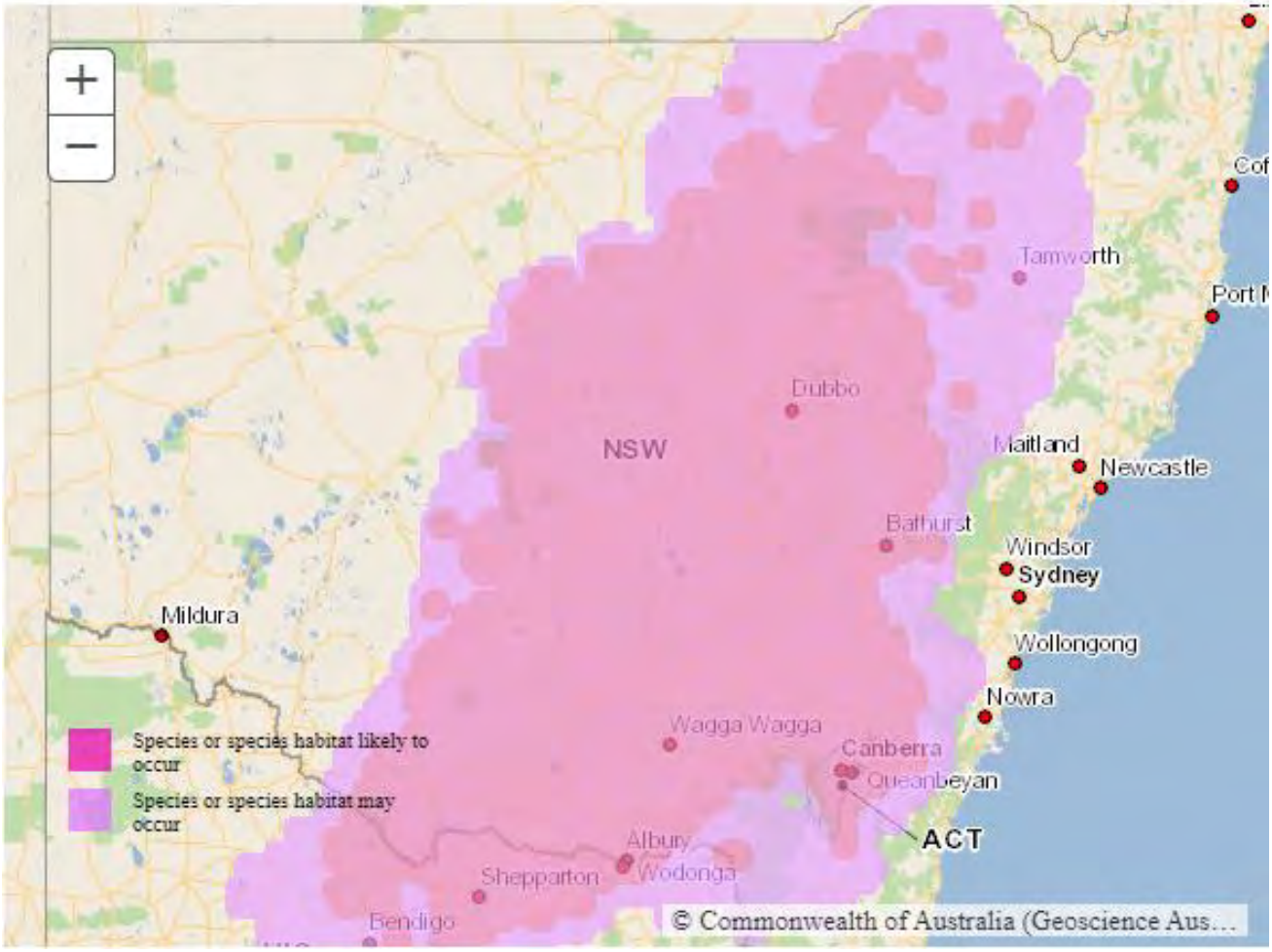

Figure D-2.3 Distribution map for Superb Parrot (Department of the Environment, 2021)

— **Fragment an existing important population into two or more populations**

Habitat connectivity is not likely to be affected by the proposal. The majority of the study area occurs within or adjacent too previously disturbed land (rail corridor and agriculture). About 1.97 hectares of foraging habitat is likely to be affected by the proposal with vegetation removal largely limited to a linear disturbance corridor. As the study area is linear in nature and largely avoids significant vegetation, the proposal would not further fragment or isolate any previously undisturbed patches of habitat than what already exists in the study area and locality. Furthermore, the Superb Parrot is a highly mobile species able to transverse fragmented landscapes to isolated patches of vegetation. It is known that part of the population undertakes regular seasonal movements from breeding areas to foraging habitats across central and north-central NSW, often coinciding with flowering eucalypts. In addition, it is also known that when Superb Parrots undertake local movements they prefer to move along wooded corridors and limit traversing extensive open areas. As potential habitat within the study area already occurs within a highly fragmented landscape, it is considered unlikely that the disturbance of habitat in the study area would fragment the existing population into two or more populations.

- **Adversely affect habitat critical to the survival of a species**

Critical habitats are areas of land that are crucial to the survival of particular threatened species, populations and ecological communities. No 'critical habitat' has been listed for the Superb Parrot under the EPBC Act. Habitat critical to the survival of species also refers to areas that are necessary:

- for activities such as foraging, breeding, roosting, or dispersal
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
- to maintain genetic diversity and long-term evolutionary development
- for the reintroduction of populations or recovery of the species or ecological community.

Potential habitat in the study area is not considered critical to the survival of the species. The proposal would impact about 1.97 hectares of narrow and linear habitat in an existing highly disturbed rail corridor. Although the loss of native vegetation would be an incremental loss of local habitat, the quality and importance are not considered to be significant to the long-term survival of a local population of Superb Parrot.

- **Disrupt the breeding cycle of an important population**

About 1.97 hectares potential habitat would be disturbed as part of the proposal. Superb Parrots nest in large hollow-bearing trees usually River Red Gums, Blakely's Red Gum and Box eucalypts. Preferred nest trees are located along watercourses and within 10km of foraging habitat. Whilst the study area has the presence of hollow-bearing trees, the location of these do not occur within preferred breeding habitat (i.e. watercourse) or would be avoided in preferred habitat. Despite this, there is still potential for individuals to utilise hollow trees within the study area. However, it is unlikely that the removal of 1.97 hectares of potential habitat would disrupt the breeding cycle of this population, as this would be a small proportion of available resources within the greater locality.

- **Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline**

Due to the general narrow and linear impact associated with the proposal, a population of Superb Parrot would not be restricted to habitat in the study area. Superb Parrots are likely to be present in other parts of the locality as there is a large amount of potentially suitable habitat in the form of PCT 5 and 277 mapped as occurring in the locality. Although the proposal will add incrementally to the loss of a small amount (1.97 hectares) of potential habitat in the locality, the proportional impact is very small. Therefore, while the potential foraging habitat would be impacted, it is unlikely to be of an extent that would cause this species to decline.

- **Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species´ habitat**

Habitat for this species within the study area is in highly disturbed condition and is subject to weed and pest invasion. In addition, the majority of the study area occurred in an existing highly disturbed rail corridor, border by agricultural properties that have been long subjected to high disturbances relating to agricultural practices such as cropping, grazing, burning and the application of fertilisers. Therefore, it is considered unlikely that the proposal would substantially reduce the quality or integrity of the Superb Parrots habitat or increase spread of invasive species. Additionally, mitigation measures will be developed to minimise the likelihood of an increase or establishment of invasive species into the habitat of this species.

- **Introduce disease that may cause the species to decline**

No. It is unlikely that disease would be increased by the proposal.

- **Will the action interfere with the recovery of the species**

A national recovery plan for Superb Parrot has been developed by the then Department of Sustainability and Environment. The recovery plan outlined four recovery objectives for this species, including:

- determine population trends
- increase knowledge of ecological requirements
- develop and implement threat abatement strategies
- increase community involvement and awareness of recovery program.

The proposal will not impact upon any of the objectives of the national recovery plan for this species.

Conclusion

In summary, the proposal is considered unlikely to result in a significant impact to the Superb Parrot. About 1.97 hectares of potential habitat would be affected by the proposal. Superb Parrots potentially using the study area are likely to use habitat that extends through the locality and due to the narrow and linear impact expected within an existing highly disturbed rail corridor, it is considered unlikely that a local population of Superb Parrot would be restricted to the study area. Therefore, the predicted impacts to the potential habitat for this species is likely to be minor given the mapped extent of similar vegetation in the locality. The impacts to this species are not considered to be important in regard to the context and intensity and the proposal is not likely to result in a significant impact to Superb Parrot.

D2.6 GREY-HEADED FLYING-FOX

The Grey-headed Flying-fox (*Pteropus poliocephalus)* is listed as Vulnerable under the EPBC Act. The following assessment has been undertaken following the MNES Significant Impact Guidelines 1.1. Under the Act, important populations are:

- likely to be key source populations either for breeding or dispersal
- likely to be necessary for maintaining genetic diversity, and/or
- at or near the limit of the species range.

Is this part of an important population:

Grey-headed Flying-foxes occur across a range of wooded habitats where their favoured food, eucalypt blossom occurs. They set up roosting camps in association with blossom availability, which are usually situated in dense vegetation and associated with water. Grey-headed Flying-foxes can migrate up to 75 kilometres north during the winter and during this time young flying-foxes establish camps.

With reference to DoEE's National Flying-fox monitoring viewer, there are no recorded Flying-fox camps within the study area (DoEE 2021). The closest recorded camps to the study area include:

- Albury (Wodonga camp #650) – about 1–2 kilometres to the south-east of the study area, according to the National Flying Fox monitoring viewer this camp includes between 500–2500 individuals from surveys between 2013–2018
- Albury (Botanical Garden camp #751) – about 2–3 kilometres to the north-west of the study area, according to the National Flying Fox monitoring viewer this camp includes between 500–2500 individuals from surveys between 2013–2014
- Albury (Leaney's Bend camp #797) – about 1–2 kilometres to the west of the study area, according to the National Flying Fox monitoring viewer this camp includes between 500–2500 individuals from surveys between 2014–2019
- Wagga Wagga (camp #641) – about 1–2 kilometres to the north-east of the study area, according to the National Flying Fox monitoring viewer this camp includes between 500–2500 individuals from surveys between 2013–2015.

Maternity camps were not present in the study area, and as such the habitat within the study area can only be considered to represent a part of the foraging range of widely occurring individuals. However, the Grey-headed Flying-fox has no separate or distinct populations (DoE 2014a). The species constantly exchanges genetic information between camps throughout its geographic range. Therefore, the species occurs as one population and therefore any individuals that occur in the study area would be considered to form part of 'an important population'.

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will result in one or more of the following:

- **Lead to a long-term decrease in the size of an important population of a species**

The proposal would impact about 1.97 hectares of potential foraging habitat in the form of PCT 5 and 277 moderate and poor condition classes. Due to the nomadic nature of Grey-headed Flying-fox and their ability to forage up to 50 kilometres from roost sites, the Grey-headed Flying-fox would not be restricted to habitat in the study area. Grey-headed Flying-fox are likely to be present in other parts of the locality as there is a large amount of potentially suitable habitat in the form of PCT 5 and PCT 277 mapped as occurring in the locality. Although the proposal will add incrementally to the loss of a small amount (1.97 hectares) of potential foraging habitat in the locality, no camps were recorded in the study area and the proportional impact is very small. Therefore, the proposal is not likely to lead to a long-term decrease in the size of the Grey-headed Flying-fox population.

– **Reduce the area of occupancy of an important population**

The proposal would result in the removal of up to 1.97 hectares of potential foraging habitat in the form of PCT 5 and 277 moderate and poor condition classes. The removal of 1.97 hectares of vegetation, that contains varying sources of blossom and fruit trees that form part of the Grey-headed Flying-fox diet, does not comprises a significant proportion of foraging habitat available to the species in the surrounding locality. The removal of this 1.97 hectares of potential foraging habitat would have a minimal impact on the area of occupancy of the species.

Figure D-2.4 Distribution map for Grey-headed Flying-fox (Department of the Environment, 2021)

– **Fragment an existing important population into two or more populations**

Habitat connectivity is not likely to be affected by the proposal. The majority of the study area occurs within or adjacent too previously disturbed land (rail corridor and agriculture). About 1.97 hectares of potential foraging habitat is likely to be affected by the proposal with vegetation removal largely limited to a linear disturbance corridor. As the study area is linear in nature and largely avoids significant vegetation, the proposal would not further fragment or isolate any previously undisturbed patches of habitat than what already exists in the study area and locality. Furthermore, given that the Grey-headed Flying-fox is highly mobile and nomadic, the proposal would not present a significant barrier. It is not considered likely that habitat would become further isolated or fragmented significantly beyond that currently existing in the study area.

- **Adversely affect habitat critical to the survival of a species**

The foraging habitat within the subject site meets the DECCW (2009) criteria for habitat critical for the survival of Grey-headed Flying-fox due to its proximity to existing camps (within 50 kilometres) but removal of 1.97 hectares of foraging habitat is unlikely to significantly impact on this species, given the abundance of higher quality myrtaceous foraging habitat within the greater locality.

- **Disrupt the breeding cycle of an important population**

No roost sites/camps occur within the study area nor would the proposed action affect any roosts/camps in the locality. Therefore, it is unlikely that the proposed action would disrupt the breeding cycle of the population of Grey-headed Flying-fox.

- **Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline**

No. The action proposed would only affect about 1.97 hectares of suitable foraging habitat for this species. As this species is known to forage up to 50 kilometres from roost sites, the action proposed is unlikely to significantly affect the availability of quality habitat for this species.

- **Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat**

It is not likely that invasive species (such as introduced predators) that are harmful to the Grey-headed Flying-fox would become further established as a result of the proposed action.

- **Introduce disease that may cause the species to decline**

No. There are no known diseases that are likely to increase in the area as a result of the proposed action.

Australian flying-foxes, including the Grey-headed Flying-fox, are natural reservoirs for at least three diseases- Australian Bat Lyssavirus (ABL), Hendra virus and Menangle virus. While injured and orphaned Grey-headed Flying-foxes have a higher chance of testing positive for ABL, it is unlikely the proposed action will introduce this disease.

White-nosed syndrome, a fungal disease causing widespread concern due to its impact upon bat populations in North America, has only been identified in microbats. The disease has not been identified in Australia.

- **Interfere substantially with the recovery of the species**

Due to the relatively small foraging habitat likely to be affect by the proposed action (about 1.97 hectares) and as no roost camps are located in the study area, the proposed action is not likely to interfere with the recovery of this species.

Conclusion

The Grey-headed Flying-fox frequents habitats that contain eucalypt blossom and native fruits such as figs, which are their favoured foods. The study area contains eucalypt dominated communities, these include those that are favoured by this species. A relatively small amount of foraging habitat 1.97 hectares will be affected by the proposed action, although this is unlikely to be significant to local populations, due to the abundance of similar and greater quality foraging habitat elsewhere within the study area and in the wider locality. There are no Grey-headed Flying-fox camps within the proposal site.

The proposed action is not considered to fragment any locally occurring populations, disrupt their breeding cycles, introduce disease that may cause the species to decline or interfere with the recovery of the species. The proposed action therefore considered unlikely to have a significant impact on the Grey-headed Flying-fox.

D2.7 KOALA

Koala is listed as Endangered under the EPBC Act as *Phascolarctos cinereus* (combined populations of Qld, NSW and the ACT).

Description

The range of the Koala differs slightly between the biological species range and listed species range. The biological species range extends from north-eastern Queensland to the south-east corner of SA. Several sub-populations of the biological species occur outside this range in south-eastern SA (i.e., Kangaroo Island) and some parts of Victoria, due to translocations. The listed species range extends from north-eastern Queensland to the Victorian border.

Distribution of the Koala is influenced by altitude (generally limited to <800m above sea level) tied to temperature. Distribution is also influenced by leaf moisture at the western and northern ends of the range. Koala population density is typically greater towards the coast than inland in these areas (Department of Agriculture Water and the Environment, 2021).

In NSW, Koala populations are found on the central and north coasts, southern highlands, southern and northern tablelands, Blue Mountains, southern coastal forests and some smaller populations on the plains west of the Great Dividing Range (Department of Planning Industry and Environment, 2021).

Koalas naturally inhabit a range of temperate, sub-tropical and tropical forest, woodland and semi-arid communities dominated by Eucalyptus species. They are a leaf-eating specialist that feed primarily during dawn, dusk or night. Koalas feed primarily on the foliage of *Eucalyptus* species; though may sometimes consume *Corymbia* species., *Angophora* species. and *Lophostemon* species. and occasionally *Leptospermum* species. and *Melaleuca* species. Individual Koalas typically get their nutrition from just one or a few species present at a site (Department of Agriculture Water and the Environment, 2021).

Koalas typically give birth between October and May and can potentially produce one offspring each year. Young remain in the pouch for 6–8 months and remain with their mothers until they become independent at approximately 12 months of age (Department of Agriculture Water and the Environment, 2021).

Relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plan

A summary of the relevant Commonwealth guidelines and policy statements available for this species is as follows:

- The *Conservation Advice for* Phascolarctos cinereus *(combined populations in Queensland, New South Wales and the Australian Capital Territory* (Department of Agriculture Water and the Environment, 2022)
- There is no relevant Listing advice for this species. Listing assessment information may be available in the approved Conservation Advice
- *National Recovery Plan for the Koala* Phascolarctos cinereus *(combined populations of Queensland, New South Wales and the Australian Capital Territory)*. (Department of Agriculture, 2022)
- No threat abatement plan has been identified as being relevant for this species.

Policy statements and guidelines relevant to this species include:

- identifying habitat for the endangered Koala
- referral guidance for the endangered Koala.

Specific impacts

About 1.97 hectares of potential Koala habitat would be affected by the proposal. The Koala was not recorded in the study area during the field surveys. Koalas potentially using the study area are likely to use habitat that extends through the locality and due to the narrow and linear impact expected within an existing highly disturbed rail corridor, it is considered unlikely that a local population of Koala would be restricted to the study area. Therefore, the predicted impacts to the potential habitat for this species is likely to be minor given the mapped extent of similar vegetation in the locality.

Significant impact criteria

The Koala (*Phascolarctos cinereus)* is listed as Endangered under the EPBC Act. The following assessment has been undertaken following the MNES Significant Impact Guidelines 1.1.

An action is likely to have a significant impact on an Endangered species if there is a real chance or possibility that it will:

- **Lead to a long-term decrease in the size of an important population of a species**

The proposal is unlikely to have the potential to cause injury or mortality to individuals during clearing works and it is considered unlikely that the project would lead to a long-term decrease in the size of a population. The proposal would not impact the carrying capacity of the habitats to the point that the surrounding habitat was no longer viable for Koala. The study area is not in a recognised Area of Regional Koala Significance (ARKS) as outlined by the work done under the Saving our Species Iconic Koala Project. The study area does not contain a resident source population of Koala and would provide habitat for a low-density population. Consequently, despite the potential removal of approximately 608.8ha of potential Koala habitat from the proposal, there is no real chance or possibility that the proposal will result in a long-term decrease in the size of a population.

- **Reduce the area of occupancy of an important population**

The area of occupancy for Koala is estimated at 19,400km2. These figures are based on the mapping of point records from 2000 from state governments, museums and CSIRO. There is no real chance or possibility that the proposal will reduce the area of occupancy for Koala. The area of occupancy for this species is extensive.

- **Fragment an existing important population into two or more populations**

Habitat connectivity is not likely to be affected by the proposal. The majority of the study area occurs within or adjacent too previously disturbed land (rail corridor and agriculture). About 1.97 hectares of potential Koala habitat is likely to be affected by the proposal with vegetation removal largely limited to a linear disturbance corridor. As the study area is linear in nature and largely avoids significant vegetation, the proposal would not further fragment or isolate any previously undisturbed patches of habitat than what already exists due to rail corridor. It is not considered likely that habitat would become further isolated or fragmented significantly beyond that currently existing in the study area.

- **Adversely affect habitat critical to the survival of a species**

The *Conservation Advice for* Phascolarctos cinereus *(Koala) combined populations of Queensland, New South Wales and the Australian Capital Territory* (Department of Agriculture Water and the Environment, 2022) outlines a number of important criteria to consider in terms of 'habitat critical for survival' of Koala including:

- whether the habitat is used during periods of stress (examples: flood, drought or fire)
- whether the habitat is used to meet essential life cycle requirements (examples: foraging, breeding, nesting, roosting, social behaviour patterns or seed dispersal processes)
- the extent to which the habitat is used by important populations
- whether the habitat is necessary to maintain genetic diversity and long-term evolutionary development
- whether the habitat is necessary for use as corridors to allow the species to move freely between sites used to meet essential life cycle requirements

- whether the habitat is necessary to ensure the long-term future of the species or ecological community through reintroduction or re-colonisation
- any other way in which habitat may be critical to the survival of a listed threatened species or a listed threatened ecological community.

The advice also outlines crucial habitat elements include patches and corridors for gene flow. Over longer-time frames habitat critical includes climate refugia such as drainage lines, riparian zones and patches that are resilient to drying conditions due to favourable hydrological systems. Additionally, it includes areas that may be temporarily unoccupied, because of seral (maturity or time) changes to habitat quality that arise through processes such as fire, drought, timber harvesting or disease (shifting habitat mosaic) or degradation and are available for future recolonisation.

The species has not been recorded in the study area and is very sporadically throughout habitat in the broader region. About 1.97 hectares of potential Koala habitat is likely to be affected by the proposal with vegetation removal largely limited to a linear disturbance corridor. As such, the habitat within the study area is unlikely to be significant in terms of species dispersal, genetic diversity, reintroduction, recovery or long-term maintenance. Locally important tree species occur widely within the region. The study area may be used on an intermittent basis during local movements but is unlikely to be significant in terms of species dispersal, genetic diversity, reintroduction, recovery or long-term maintenance.

The study area is not in a recognised ARKS as outlined by the work done under the Saving our Species Iconic Koala Project. The Koala Prioritisation Project NSW was designed to provide support and strategic direction to future priorities in conservation actions for the Koala and was one of several projects designed to support data driven (evidence based) decision making for Koala conservation in NSW. The ARKS identified in the Koala Prioritisation Project NSW would be the areas considered as habitat critical to the survival of Koala in NSW. As such, there is no real chance or possibility that the proposal will adversely affect habitat critical to the survival of the species.

— **Disrupt the breeding cycle of an important population**

The presence of habitat for Koala is largely assessed here based on habitat surrogates given the presence of Koala use trees in the study area. The subject land is not in a recognised ARKS as outlined by the work done under the Saving our Species Iconic Koala Project. The study area does not contain a resident source population of Koala and would provide habitat for a low-density population. There is no known breeding population of Koala in the study area. As such, there is no real chance or possibility that the project will disrupt the breeding cycle of a population.

- **Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline**

The Koala was not recorded in the study area during field surveys and no records for this species occurred within the study area were returned from the database searches. Nevertheless, whilst the rail corridor was highly disturbed, small areas of remnant woodland dominated predominately by *Eucalyptus blakelyi, E. melliodora* and some *E. camaldulensis* occurred therein. *E. blakelyi, E. melliodora* and *E. camaldulensis* are listed as Koala food tree species for the Central and Southern Tablelands Koala Management Area (KMA). The proposal would impact on about 1.97 hectares of habitat in the form of PCT 5 and 277 (moderate and poor condition classes). Any population of Koala potentially using the study area are likely to be part of a viable population extending throughout the locality and are likely to be present in other parts of the locality. A large amount of potentially suitable habitat in the form of PCT 5 and 277 was mapped as occurring in the locality. The proportional impact to this potential habitat is very small. Due to the narrow and linear impact expected within an existing highly disturbed rail corridor, it is considered unlikely that a local population of Koala would be restricted to the study area. While a small amount potential marginal foraging habitat would be impacted, it is unlikely to be of an extent that would cause this species to decline.

- **Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat**

It is not likely that invasive species (such as introduced predators) that are harmful to the Koala would become further established as a result of the proposal.

- **Introduce disease that may cause the species to decline**

It is unlikely that the proposal would significantly fragment a koala population to the point where dispersal is limited and therefore disease transmission between individuals is increased. As *Chlamydia* bacteria in Koalas and Koala Retrovirus is primarily transmitted between Koala individuals (DECC, 2008), it is unlikely that the proposal would introduce disease that may cause the species to decline.

- **Interfere substantially with the recovery of the species**

The *National Recovery Plan for the Koala* Phascolarctos cinereus *(combined populations of Queensland, New South Wales and the Australian Capital Territory)* (Department of Agriculture, 2022) outlines a number of key objectives for the recovery effort of the species including:

— the area of occupancy and estimated size of populations that are declining, suspected to be declining, or predicted to decline are instead stabilised then increased
— the area of occupancy and estimated size of populations that are suspected and predicted to be stable are maintained or increased
— metapopulation processes are maintained or improved
— partners, communities and individuals have a greater role and capability in listed Koala monitoring, conservation and management.

The objectives of this recovery plan are underpinned by four supporting strategies and two on-ground (direct) strategies, or action areas, as a way of organising and implementing coordinated action:

— build and share knowledge (Strategy 1)
— engage and partner with the community in listed Koala conservation (Strategy 2)
— increase the area of protected habitat for the listed Koala (Strategy 3)
— integrate listed Koala conservation into policy, statutory and land use plans (Strategy 4)
— strategically restore listed Koala habitat (Strategy 5)
— actively manage listed Koala metapopulations (Strategy 6).

The Proposal will not interfere with these objectives or supporting strategies.

Conclusion

In summary, the proposal is considered unlikely to result in a significant impact to the Koala. Whilst, about 1.97 hectares of potential habitat would be affected by the proposal, the Koala was not recorded in the study area during the field surveys. Koalas potentially using the study area are likely to use habitat that extends through the locality and due to the narrow and linear impact expected within an existing highly disturbed rail corridor, it is considered unlikely that a local population of Koala would be restricted to the study area. The study area does not contain a resident source population of Koala and would provide habitat for a low-density population. Consequently, despite the potential removal of approximately 1.97ha of potential Koala habitat from the proposal, there is no real chance or possibility that the project will result in a significant impact on Koala.

D2.8 SLOANE'S FROGLET

Sloane's Froglet (*Crinia sloanei)* is listed as Endangered under the EPBC Act. The following assessment has been undertaken following the MNES Significant Impact Guidelines 1.1.

An action is likely to have a significant impact on a Critically Endangered or Endangered species if there is a real chance or possibility that it will:

- **Lead to a long-term decrease in the size of a population**

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. It is typically associated with periodically inundated areas in grassland, woodland and disturbed habitats.

Only a small amount (0.26 hectares) of potential habitat for this species is present within the study area, and similar, higher quality habitat is also available more broadly within the locality. It is unlikely that any identified population of Sloane's Froglet would be restricted to the habitat in the study area and the proportional impact to potential habitat within the locality is very small. Therefore, the proposal is not likely to lead to a long-term decrease in the size of the Sloane's Froglet population.

- **Reduce the area of occupancy of the species**

The total area of occupancy for Sloane's Froglet is estimated to be less than 90 square kilometres (Threatened Species Scientific Committee, 2019).

If Sloane's Froglet was to use habitat resources available in the study area, the proposal would impact about 0.26 hectares of potential habitat. While the proposal would lead to a small incremental loss of potentially suitable habitat, the proportional impact to similar habitats in the locality is very low, and the impact is not considered important in regard to its context and intensity.

- **Fragment an existing population into two or more populations**

Habitat connectivity is not likely to be affected by the proposal. The majority of the study area occurs within or adjacent too previously disturbed land (rail corridor and agriculture). Like most amphibians, Sloane's Froglet requires connections between breeding and refuge sites (typically roadside drains, table drains, irrigation channels and inundated grasslands which support movement Threatened Species Scientific Committee, 2019, however the study area does not intersect any known or potential high-quality sites for breeding or refuge. As the study area is linear in nature and largely avoids significant vegetation, the proposal would not further fragment or isolate any previously undisturbed patches of habitat than what already exists in the study area and locality. It is not considered likely that habitat would become further isolated or fragmented significantly beyond that currently existing in the study area.

- **Adversely affect habitat critical to the survival of a species**

No critical habitat is currently listed for Sloane's Froglet (Department of Agriculture Water and the Environment, 2021). Habitat critical to the survival of species also refers to areas that are necessary:

- for activities such as foraging, breeding, roosting, or dispersal
- for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
- to maintain genetic diversity and long term evolutionary development, or
- for the reintroduction of populations or recovery of the species or ecological community (Department of the Environment Water Heritage and the Arts, 2013)

According to the approved conservation advice for the species, important habitat for Sloane's Froglets includes waterbodies medium height grasses and reeds with small stems, such as couch (*Elymus repens*), watercouch (*Paspalum pasplodes*) or the Common Spikerush (*Eleocharis acuta*), for Sloane's Froglet to attach its eggs to. The species is generally restricted to temporary ponds in the river valley and up to eight kilometres on either side of large rivers.

Potential habitat in the study area is not considered critical to the survival of the species. The proposal would impact about 0.26 hectares of narrow and linear habitat in an existing highly disturbed rail corridor. Although this impact would be an incremental loss of local habitat, the quality and importance are not considered to be significant to the long-term survival of a local population of Sloane's Froglet.

- **Disrupt the breeding cycle of a population**

Sloane's Froglet lives and breeds in temporary and permanent waterbodies including oxbows off creeks and rivers, farm dams, large and small natural wetlands, constructed frog ponds and temporary puddles, preferring wetlands that contain riparian and aquatic vegetation. The removal from the proposal of about of 0.26 hectares of potential aquatic habitat is unlikely to significantly impact a local population or affect the breeding cycle of Sloane's Froglet.

- **Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline**

Due to the general narrow and linear impact associated with the proposal, any identified population of Sloane's Froglet is unlikely to be reliant on habitat occurring in the study area and potential habitat (including higher quality habitat) for the species occurs more widely in the locality. Although the proposal will add incrementally to the loss of a small amount of potential Sloane's Froglet habitat in the locality, the proportional impact is very small. Therefore, it is unlikely to be of an extent that would cause this species to decline.

- **Result in invasive species that are harmful to an Endangered species becoming established in the Endangered species´ habitat**

It is not likely that invasive species (such as introduced predators) that are potentially harmful to the Sloane's Froglet would become further established as a result of the proposal.

- **Introduce disease that may cause the species to decline**

No. It is unlikely that disease would be increased by the proposal.

- **Interfere with the recovery of the species**

There is no adopted or made recovery plans for this species (Department of Agriculture Water and the Environment, 2021). According to the approved conservation advice for the species, the primary recovery objective for Sloane's Froglet is to identify important extant populations and ensure suitable habitat for this species is being maintained and restored (Threatened Species Scientific Committee, 2019). A number of conservation and management priorities are outlined under this objective. Though potential habitat for this species occurs within the proposal site, this habitat is considered to be a small proportion of locally available habitat for the species and is considered unlikely to be a permanent breeding or refuge area for local populations. It is therefore unlikely that the removal of this small area of marginal habitat for the species would significantly impact on the recovery objectives for the species.

Conclusion

In summary, the proposal is considered unlikely to result in a significant impact to the Sloane's Froglet. About 0.26 hectares of potential habitat would be affected by the proposal. Sloane's Froglet has records occurring in proximity to the study area; near Billy Hughes bridge and to the west of Culcairn Yard clearances.

The habitat for Sloane's Froglet within the study area is a small proportion of locally occurring habitat which is considered to be low quality in comparison to that occurring more widely within the area. Locally occurring populations would not be considered to be reliant on the habitat within the existing highly disturbed rail corridor and it is considered unlikely that local population of the species would be restricted to the study area. Therefore, the predicted impacts to the potential habitat for this species is likely to be minor given the mapped extent of similar habitat in the locality. The impacts to this species are not considered to be important in regard to the context and intensity.

APPENDIX

G

Revised Technical Paper 8: Biodiversity Development Assessment Report

Appendix E Assessment of impacts

ALBURY TO ILLABO PREFERRED INFRASTRUCTURE REPORT—RESPONSE TO SUBMISSIONS

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APPENDIX E-1
PROPOSAL SITE IMPACT (CONSTRUCTION AND OPERATION AREA)

HUME HIGHWAY

MURRAY RIVER

Albury to Illabo

Appendix E1 – Proposal site impact (construction and operation area)

MAP 1 OF 20

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 12/10/2023 Paper: A3
Author: WSP Scale: 1:2,500
Data Sources: ARTC, NSWSS

- Proposal site
- Temporary construction compound
- Existing railway
- Main road
- Watercourse

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BUNGAMBRAWATHA CREEK
HUME HIGHWAY
ALBURY
RIVERINA HIGHWAY (BORELLA ROAD)
DEAN STREET
HUME STREET
ATKINS STREET
EAST STREET

Albury to Illabo

Appendix E1 – Proposal site impact (construction and operation area)

MAP 2 OF 20

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 12/10/2023 Paper: A3
Author: WSP Scale: 1:7,500
Data Sources: ARTC, NSWSS

- Proposal site
- Temporary construction compound
- Existing railway
- Main road
- Watercourse

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EIGHT MILE CREEK

WAGGA ROAD

HUME HIGHWAY

Albury to Illabo

Appendix E1 – Proposal site impact (construction and operation area)

MAP 3 OF 20

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 12/10/2023 Paper: A3
Author: WSP Scale: 1:3,500
Data Sources: ARTC, NSWSS

- Proposal site
- Temporary construction compound
- Existing railway
- Main road
- Watercourse

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HUME HIGHWAY

Albury to Illabo

Appendix E1 – Proposal site impact (construction and operation area)

MAP 4 OF 20

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 12/10/2023 Paper: A3
Author: WSP Scale: 1:3,000
Data Sources: ARTC, NSWSS

Proposal site
Existing railway
Main road

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MELVILLE STREET

BALFOUR STREET

RAILWAY PARADE

OLYMPIC HIGHWAY

BILLABONG CREEK

Albury to Illabo

Appendix E1 – Proposal site impact (construction and operation area)

MAP 5 OF 20

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 12/10/2023 Paper: A3
Author: WSP Scale: 1:4,000
Data Sources: ARTC, NSWSS

- Proposal site
- Temporary construction compound
- Existing railway
- Main road
- Watercourse

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HENTY PLEASANT HILLS ROAD
ALLAN STREET
BUCKARGINGAH CREEK
OLYMPIC HIGHWAY
SLADEN STREET
HENTY COOKARDINIA ROAD
RAILWAY PARADE
ROSLER PARADE
HENTY WALLA ROAD

Albury to Illabo

Appendix E1 – Proposal site impact (construction and operation area)

MAP 6 OF 20

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 12/10/2023 Paper: A3
Author: WSP Scale: 1:5,000
Data Sources: ARTC, NSWSS

- Proposal site
- Temporary construction compound
- Existing railway
- Main road
- Watercourse

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YERONG CREEK
OLYMPIC HIGHWAY
COX STREET
PLUNKETT STREET
COLE STREET
YERONG CREEK-MANGOPLAH ROAD
SANDY CREEK

Albury to Illabo

Appendix E1 – Proposal site impact (construction and operation area)

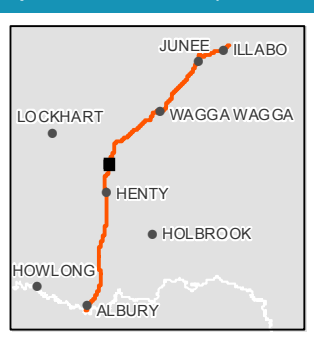
MAP 7 OF 20

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 12/10/2023 Paper: A3
Author: WSP Scale: 1:5,000
Data Sources: ARTC, NSWSS

- Proposal site
- Temporary construction compound
- Existing railway
- Main road
- Watercourse



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Albury to Illabo Appendix E1 – Proposal site impact (construction and operation area) MAP 8 OF 20

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 12/10/2023 Paper: A3
Author: WSP Scale: 1:2,500
Data Sources: ARTC, NSWSS

Proposal site
Existing railway
Main road
Watercourse

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URANQUINTY CROSS ROAD
YARRAGUNDRY STREET
OLYMPIC HIGHWAY
MORGAN STREET
RYAN STREET
KEY STREET
OXLEY BRIDGE ROAD
SANDY CREEK

Albury to Illabo

Appendix E1 – Proposal site impact (construction and operation area)

MAP 9 OF 20

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 12/10/2023 Paper: A3
Author: WSP Scale: 1:7,500
Data Sources: ARTC, NSWSS

- Proposal site
- Temporary construction compound
- Temporary creek crossing
- Existing railway
- Main road
- Watercourse

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Albury to Illabo | Appendix E1 – Proposal site impact (construction and operation area) | MAP 10 OF 20

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 12/10/2023 Paper: A3
Author: WSP Scale: 1:7,500
Data Sources: ARTC, NSWSS

- Proposal site
- Temporary construction compound
- Existing railway
- Main road

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Albury to Illabo | Appendix E1 – Proposal site impact (construction and operation area) | MAP 11 OF 20

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 12/10/2023 Paper: A3
Author: WSP Scale: 1:7,500
Data Sources: ARTC, NSWSS

- Proposal site
- Temporary construction compound
- Existing railway
- Main road
- Watercourse

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BYRNES ROAD

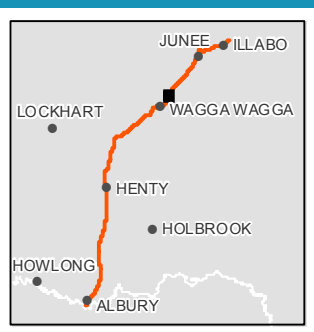
Albury to Illabo | Appendix E1 – Proposal site impact (construction and operation area) | MAP 12 OF 20

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 12/10/2023 Paper: A3
Author: WSP Scale: 1:6,000
Data Sources: ARTC, NSWSS

- Proposal site
- Temporary construction compound
- Existing railway
- Main road



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HAREFIELD ROAD

REEDY CREEK

BUCKS CREEK

PATTERSONS ROAD

BYRNES ROAD

Albury to Illabo

Appendix E1 – Proposal site impact (construction and operation area)

MAP 13 OF 20

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 12/10/2023 Paper: A3
Author: WSP Scale: 1:6,000
Data Sources: ARTC, NSWSS

- Proposal site
- Temporary construction compound
- Existing railway
- Main road
- Watercourse

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OLD JUNEE ROAD
LORD STREET
BROADWAY
OLYMPIC HIGHWAY
DAN SWANS ROAD
ILLABO ROAD
MAIN STREET
SEIGNIOR STREET
LORNE STREET
BELMORE STREET
KEMP STREET
EDGAR STREET
BYRNES ROAD
ROCK CREEK
GUNDAGAI ROAD

Albury to Illabo

Appendix E1 – Proposal site impact (construction and operation area)

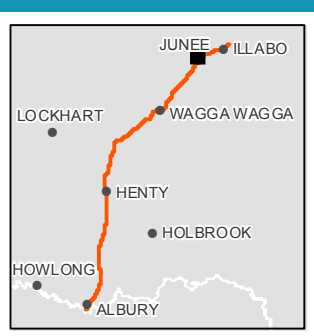
MAP 14 OF 20

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 12/10/2023 Paper: A3
Author: WSP Scale: 1:10,000
Data Sources: ARTC, NSWSS

- Proposal site
- Temporary construction compound
- Existing railway
- Main road
- Watercourse



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OLYMPIC HIGHWAY

Albury to Illabo

Appendix E1 – Proposal site impact (construction and operation area)

MAP 15 OF 20

0 50 100
m

Coordinate System: GDA 1994 MGA Zone 55

Date: 12/10/2023 Paper: A3
Author: WSP Scale: 1:8,000
Data Sources: ARTC, NSWSS

Proposal site
Existing railway
Main road

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Albury to Illabo Appendix E1 – Proposal site impact (construction and operation area) MAP 16 OF 20

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 12/10/2023 Paper: A3
Author: WSP Scale: 1:8,000
Data Sources: ARTC, NSWSS

Proposal site
Temporary construction compound
Existing railway
Main road

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OLYMPIC HIGHWAY

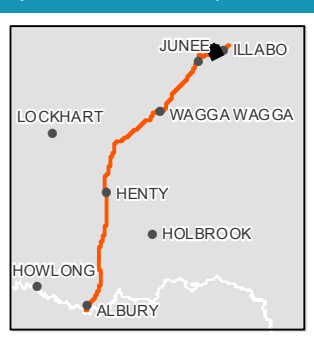
Albury to Illabo | Appendix E1 – Proposal site impact (construction and operation area) | MAP 17 OF 20

0 50 100
m

Coordinate System: GDA 1994 MGA Zone 55

Date: 12/10/2023 Paper: A3
Author: WSP Scale: 1:8,000
Data Sources: ARTC, NSWSS

- Proposal site
- Temporary construction compound
- Existing railway
- Main road



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JERALGAMBETH CREEK

OLYMPIC HIGHWAY

Albury to Illabo Appendix E1 – Proposal site impact (construction and operation area) MAP 18 OF 20

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 12/10/2023 Paper: A3
Author: WSP Scale: 1:8,000
Data Sources: ARTC, NSWSS

Proposal site
Existing railway
Main road
Watercourse

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 | Appendix E1 – Proposal site impact (construction and operation area) | MAP 19 OF 20

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 12/10/2023 Paper: A3
Author: WSP Scale: 1:8,000
Data Sources: ARTC, NSWSS

- Proposal site
- Temporary construction compound
- Existing railway
- Main road
- Watercourse

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WARRENS LANE

BILLABONG CREEK

JERALGAMBETH CREEK

OLYMPIC HIGHWAY

Albury to Illabo

Appendix E1 – Proposal site impact (construction and operation area)

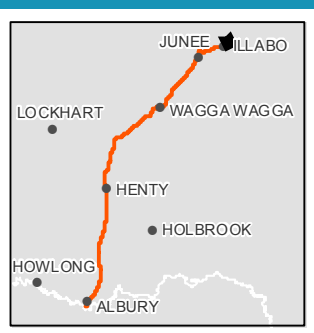
MAP 20 OF 20

0 50 100
m

Coordinate System: GDA 1994 MGA Zone 55

Date: 12/10/2023
Author: WSP
Paper: A3
Scale: 1:8,000
Data Sources: ARTC, NSWSS

- Proposal site
- Temporary construction compound
- Existing railway
- Main road
- Watercourse



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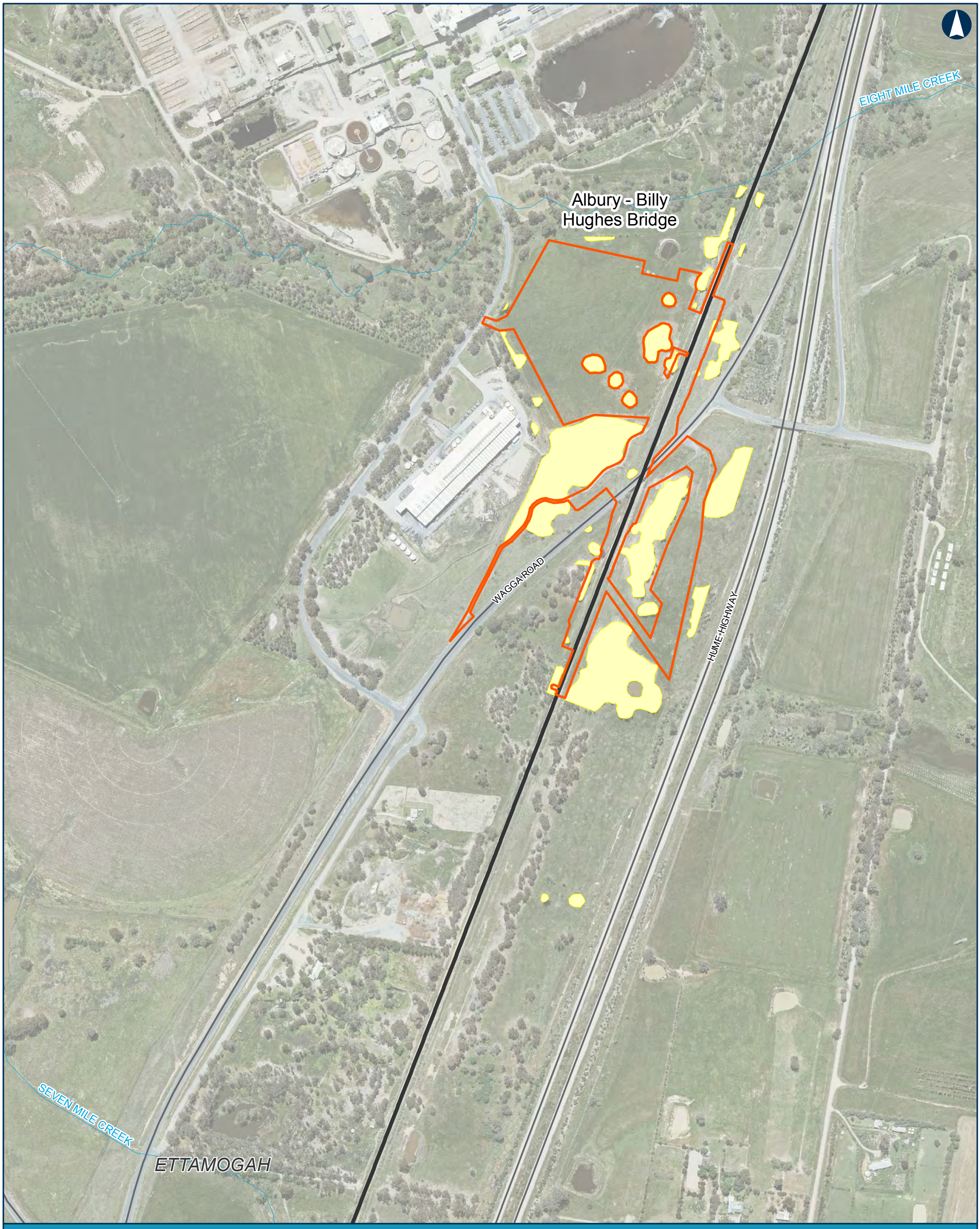
APPENDIX E-2
SERIOUS AND IRREVERSIBLE IMPACTS (SAII)



Albury to Illabo Appendix E2 – Serious and Irreversible Impacts (SAII) MAP 1 OF 20

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 19/01/2024 Paper: A3
Author: WSP Scale: 1:5,500
Data Sources: ARTC, NSWSS

Proposal site
Existing railway
Main road
Watercourse

SAII - BC Act - White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions – Critically Endangered

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Albury to Illabo

Appendix E2 – Serious and Irreversible Impacts (SAII)

MAP 2 OF 20

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 19/01/2024 Paper: A3
Author: WSP Scale: 1:3,000
Data Sources: ARTC, NSWSS

Proposal site
Existing railway
Main road

SAII - BC Act - White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions – Critically Endangered

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LGH - Culcairn
Station Yard

MELVILLE STREET

BALFOUR STREET

RAILWAY PARADE

Albury to Illabo

Appendix E2 – Serious and Irreversible Impacts (SAII)

MAP 3 OF 20

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 19/01/2024 Paper: A3
Author: WSP Scale: 1:3,000
Data Sources: ARTC, NSWSS

Proposal site
Existing railway
Main road

SAII - BC Act - White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions – Critically Endangered

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Albury to Illabo Appendix E2 – Serious and Irreversible Impacts (SAII) MAP 4 OF 20

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 19/01/2024 Paper: A3
Author: WSP Scale: 1:3,000
Data Sources: ARTC, NSWSS

Proposal site
Existing railway
Main road

SAII - BC Act - White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions – Critically Endangered

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HENTY PLEASANT HILLS ROAD

ALLAN STREET

OLYMPIC HIGHWAY

BUCKARGINGAH CREEK

LGH - Henty Yard

SLADEN STREET

RAILWAY PARADE

Albury to Illabo

Appendix E2 – Serious and Irreversible Impacts (SAII)

MAP 5 OF 20

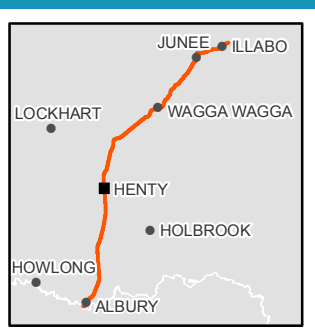
0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 19/01/2024 Paper: A3
Author: WSP Scale: 1:3,000
Data Sources: ARTC, NSWSS

Proposal site
Existing railway
Main road
Watercourse

SAII - BC Act - White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions – Critically Endangered



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RAILWAY STREET

OLYMPIC HIGHWAY

Albury to Illabo

Appendix E2 – Serious and Irreversible Impacts (SAII)

MAP 6 OF 20

0 50 100 m

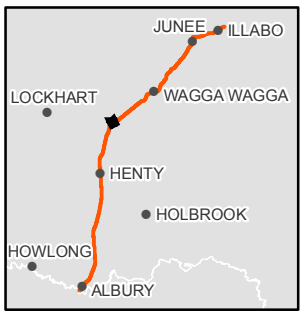
Coordinate System: GDA 1994 MGA Zone 55

Date: 19/01/2024 Paper: A3
Author: WSP Scale: 1:2,500
Data Sources: ARTC, NSWSS

Existing railway

Main road

SAII - BC Act - White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions – Critically Endangered



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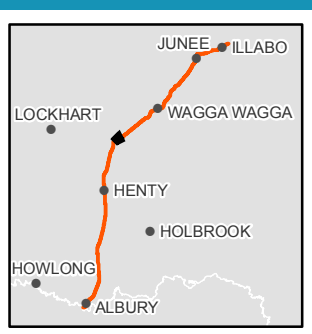
Albury to Illabo Appendix E2 – Serious and Irreversible Impacts (SAII) MAP 7 OF 20

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 19/01/2024 Paper: A3
Author: WSP Scale: 1:2,500
Data Sources: ARTC, NSWSS

Proposal site
Existing railway
Main road
Watercourse



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Albury to Illabo Appendix E2 – Serious and Irreversible Impacts (SAII) MAP 8 OF 20

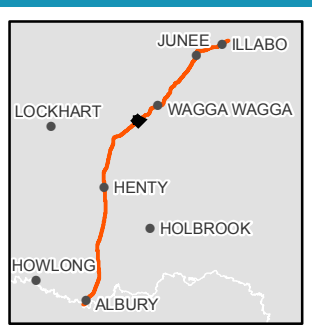
0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 19/01/2024 Paper: A3
Author: WSP Scale: 1:3,000
Data Sources: ARTC, NSWSS

Proposal site
Existing railway
Main road
Watercourse

SAII - BC Act - White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions – Critically Endangered



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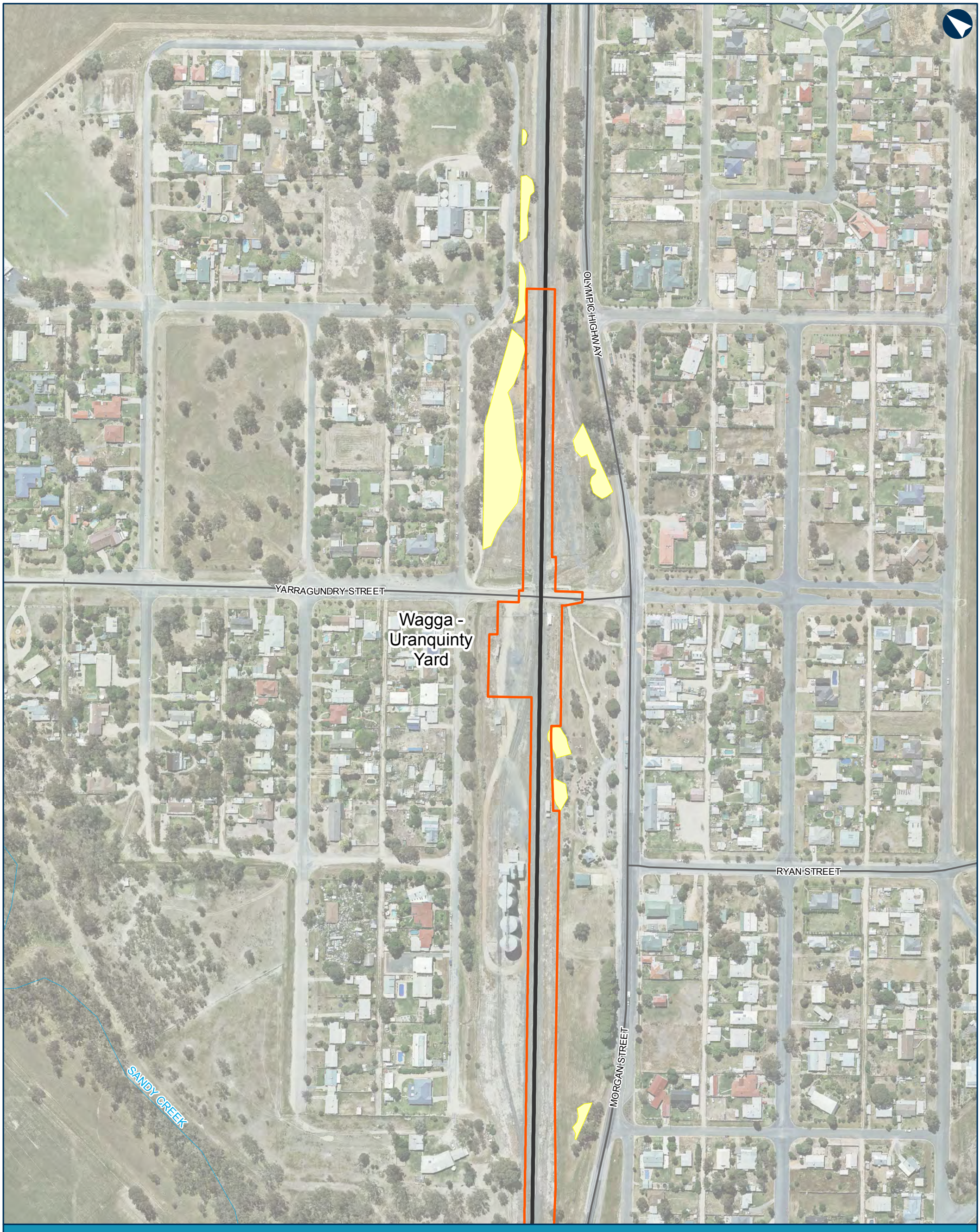


Albury to Illabo | Appendix E2 – Serious and Irreversible Impacts (SAII) | MAP 9 OF 20

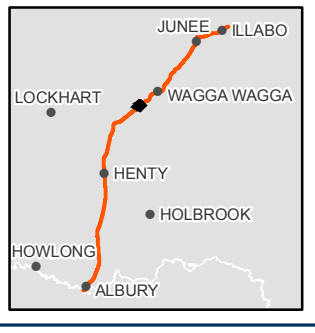
0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 19/01/2024 Paper: A3
Author: WSP Scale: 1:3,000
Data Sources: ARTC, NSWSS

- Proposal site
- Existing railway
- Main road
- Watercourse

SAII - BC Act - White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions – Critically Endangered



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Wagga - Pearson St Bridge

Albury to Illabo

Appendix E2 – Serious and Irreversible Impacts (SAII)

MAP 10 OF 20

0 50 100 m

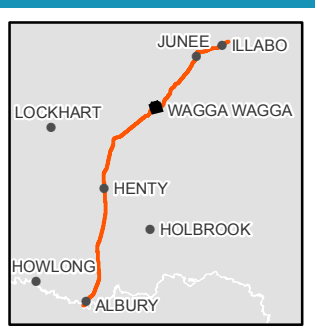
Coordinate System: GDA 1994 MGA Zone 55

Date: 19/01/2024 Paper: A3
Author: WSP Scale: 1:4,000
Data Sources: ARTC, NSWSS

Proposal site

Existing railway

SAII - BC Act - White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions – Critically Endangered



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Albury to Illabo Appendix E2 – Serious and Irreversible Impacts (SAII) MAP 11 OF 20

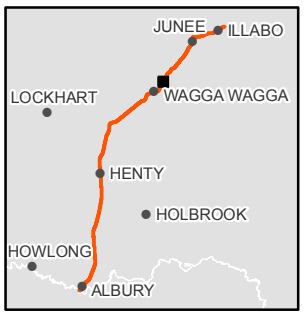
0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 19/01/2024 Paper: A3
Author: WSP Scale: 1:4,000
Data Sources: ARTC, NSWSS

Proposal site
Existing railway
Main road

SAII - BC Act - White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions – Critically Endangered



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HAREFIELD ROAD

PATTERSONS ROAD

BUCKS CREEK

REEDY CREEK

Junee - Harefield Yard

BYRNES ROAD

Albury to Illabo

Appendix E2 – Serious and Irreversible Impacts (SAII)

MAP 12 OF 20

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 19/01/2024 Paper: A3
Author: WSP Scale: 1:5,000
Data Sources: ARTC, NSWSS

- Proposal site
- Existing railway
- Main road
- Watercourse

SAII - BC Act - White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions – Critically Endangered

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Junee - Olympic Hwy underbridge

OLYMPIC HIGHWAY

MAIN STREET

BROADWAY

Albury to Illabo

Appendix E2 – Serious and Irreversible Impacts (SAII)

MAP 13 OF 20

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 19/01/2024 Paper: A3
Author: WSP Scale: 1:3,000
Data Sources: ARTC, NSWSS

Proposal site
Existing railway
Main road

INLAND RAIL

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OLYMPIC HIGHWAY

Junee - Olympic Hwy underbridge

ILLABO ROAD

MAIN STREET

Albury to Illabo

Appendix E2 – Serious and Irreversible Impacts (SAII)

MAP 14 OF 20

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 19/01/2024 Paper: A3
Author: WSP Scale: 1:3,000
Data Sources: ARTC, NSWSS

Proposal site
Existing railway
Main road

SAII - BC Act - White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions – Critically Endangered

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Albury to Illabo Appendix E2 – Serious and Irreversible Impacts (SAII) MAP 15 OF 20

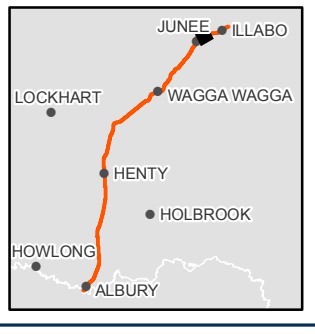
0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 19/01/2024 Paper: A3
Author: WSP Scale: 1:8,000
Data Sources: ARTC, NSWSS

Proposal site
Existing railway
Main road

SAII - BC Act - White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions – Critically Endangered



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OLYMPIC HIGHWAY

Junee - Junee to I2S dual track section

MARINNA ROAD

Albury to Illabo

Appendix E2 – Serious and Irreversible Impacts (SAII)

MAP 16 OF 20

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 19/01/2024 Paper: A3
Author: WSP Scale: 1:8,000
Data Sources: ARTC, NSWSS

Proposal site
Existing railway
Main road

SAII - BC Act - White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions – Critically Endangered

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Junee - Junee to I2S dual track section

OLYMPIC HIGHWAY

Albury to Illabo

Appendix E2 – Serious and Irreversible Impacts (SAII)

MAP 17 OF 20

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 19/01/2024 Paper: A3
Author: WSP Scale: 1:8,000
Data Sources: ARTC, NSWSS

Proposal site
Existing railway
Main road

SAII - BC Act - White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions – Critically Endangered

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Junee - Junee to I2S dual track section

JERALGAMBETH CREEK

OLYMPIC HIGHWAY

Albury to Illabo | Appendix E2 – Serious and Irreversible Impacts (SAII) | MAP 18 OF 20

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 19/01/2024 Paper: A3
Author: WSP Scale: 1:8,000
Data Sources: ARTC, NSWSS

- Proposal site
- Existing railway
- Main road
- Watercourse

SAII - BC Act - White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions – Critically Endangered

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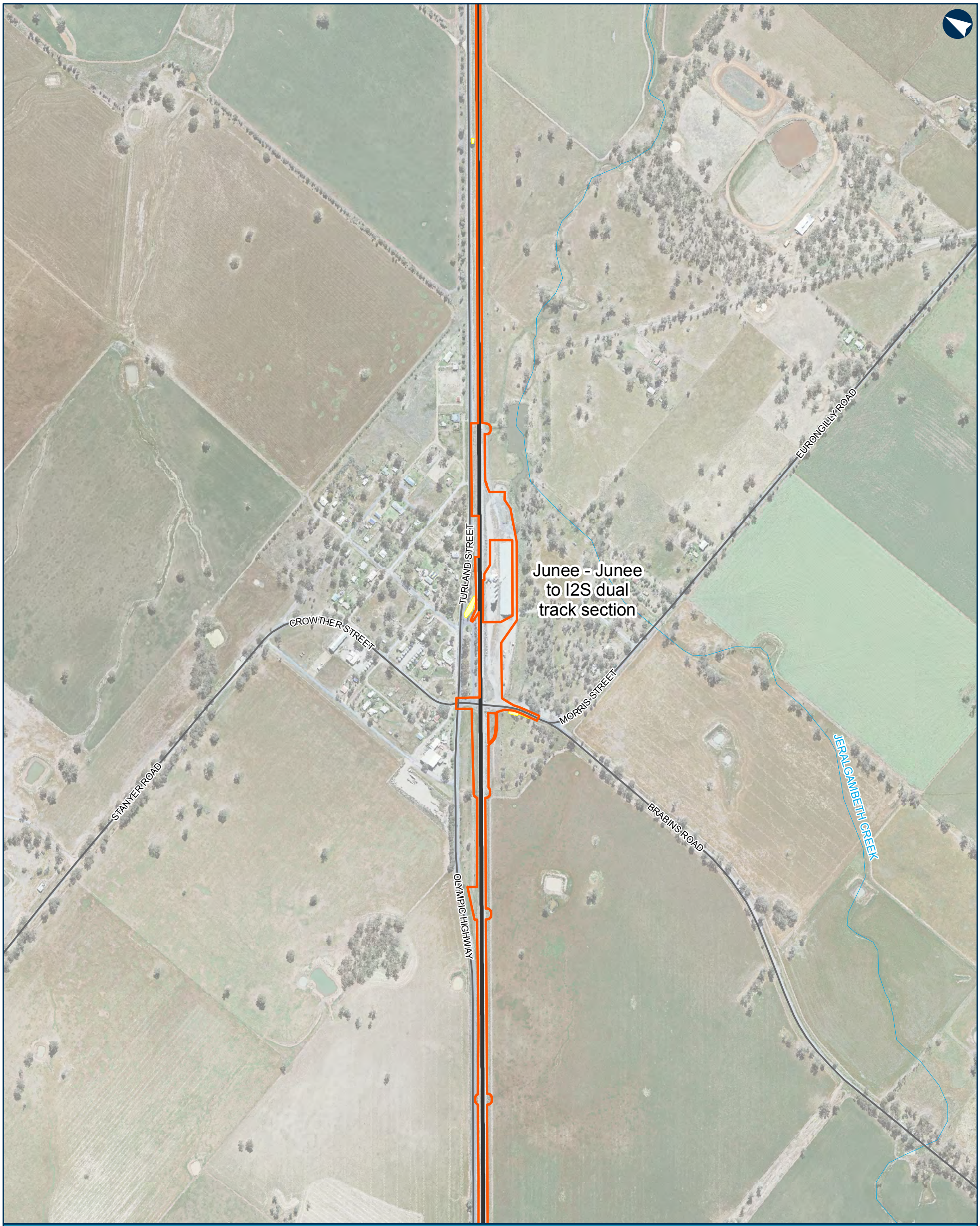


Albury to Illabo Appendix E2 – Serious and Irreversible Impacts (SAII) MAP 19 OF 20

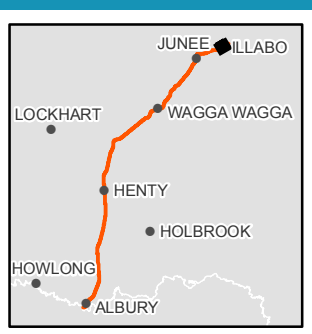
0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 19/01/2024 Paper: A3
Author: WSP Scale: 1:8,000
Data Sources: ARTC, NSWSS

Proposal site
Existing railway
Main road
Watercourse

SAII - BC Act - White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions – Critically Endangered



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WARRENS LANE

BILLABONG CREEK

Junee - Junee to I2S dual track section

OLYMPIC HIGHWAY

JERALGAMBETH CREEK

Albury to Illabo

Appendix E2 – Serious and Irreversible Impacts (SAII)

MAP 20 OF 20

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 19/01/2024 Paper: A3
Author: WSP Scale: 1:8,000
Data Sources: ARTC, NSWSS

Proposal site
Existing railway
Main road
Watercourse

SAII - BC Act - White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions – Critically Endangered

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APPENDIX E-3
IMPACTS REQUIRING A BIODIVERSITY OFFSET (BC ACT)

OLYMPIC HIGHWAY

Albury to Illabo

Appendix E3 – Impacts requiring a biodiversity offset (BC Act)

MAP 1 OF 5

0 100 200 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 12/10/2023 Paper: A3
Author: WSP Scale: 1:8,000
Data Sources: ARTC, NSWSS

Proposal site
Existing railway
Main road

BC Act - White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions – Critically Endangered

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OLYMPIC HIGHWAY

MARINNA ROAD

Albury to Illabo

Appendix E3 – Impacts requiring a biodiversity offset (BC Act)

MAP 2 OF 5

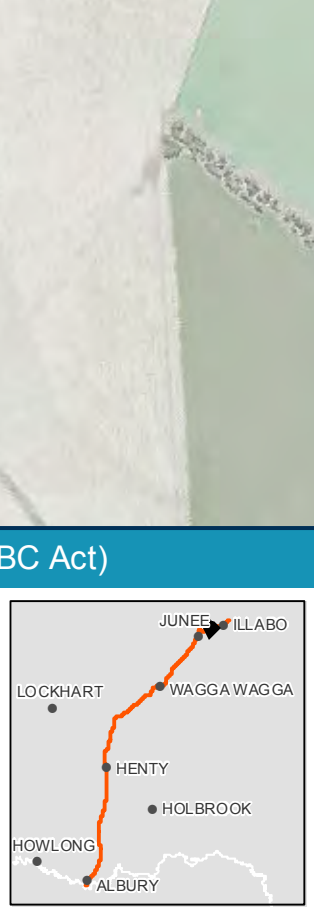
0 100 200 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 12/10/2023 Paper: A3
Author: WSP Scale: 1:8,000
Data Sources: ARTC, NSWSS

Proposal site
Existing railway
Main road

BC Act - White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions – Critically Endangered



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OLYMPIC HIGHWAY

Albury to Illabo

Appendix E3 – Impacts requiring a biodiversity offset (BC Act)

MAP 3 OF 5

0 100 200 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 12/10/2023 Paper: A3
Author: WSP Scale: 1:8,000
Data Sources: ARTC, NSWSS

Proposal site
Existing railway
Main road

BC Act - White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions – Critically Endangered

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JERALGAMBETH CREEK

OLYMPIC HIGHWAY

Albury to Illabo

Appendix E3 – Impacts requiring a biodiversity offset (BC Act)

MAP 4 OF 5

0 100 200 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 12/10/2023 Paper: A3
Author: WSP Scale: 1:8,000
Data Sources: ARTC, NSWSS

- Proposal site
- Existing railway
- Main road
- Watercourse

BC Act - White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions – Critically Endangered

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EURONGILLY ROAD
JERALGAMBETH CREEK
TURLAND STREET
CROWTHER STREET
MORRIS STREET
STANYER ROAD
BRABINS ROAD
OLYMPIC HIGHWAY

Albury to Illabo | Appendix E3 – Impacts requiring a biodiversity offset (BC Act) | MAP 5 OF 5

0 100 200 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 12/10/2023 Paper: A3
Author: WSP Scale: 1:8,000
Data Sources: ARTC, NSWSS

- Proposal site
- Existing railway
- Main road
- Watercourse
- BC Act - White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions – Critically Endangered

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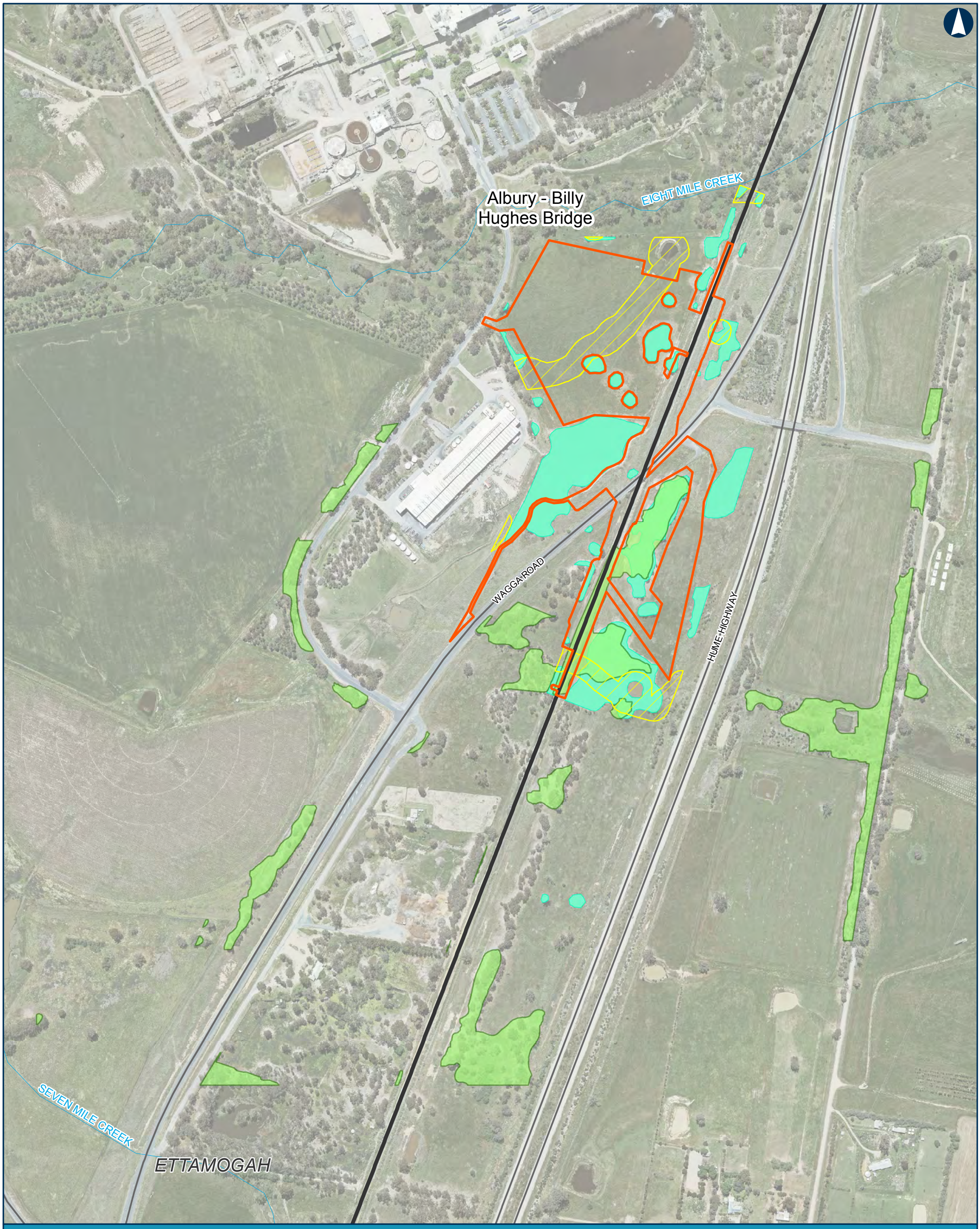
APPENDIX E-4
SENSITIVE AREAS MAP



Albury to Illabo

Appendix E4 –Sensitive Areas Map

MAP 1 OF 20

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 22/01/2024 Paper: A3
Author: WSP Scale: 1:5,500
Data Sources: ARTC, NSWSS

- Proposal site
- Existing railway
- Main road
- Watercourse
- Sloane's Froglet threatened fauna species polygon
- Superb Parrot and Squirrel Glider threatened fauna species polygon
- SAII - BC Act - White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions – Critically Endangered
- Regent Honeyeater - Important Area Map

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Albury - Table Top Yard

HUME HIGHWAY

Albury to Illabo

Appendix E4 –Sensitive Areas Map

MAP 2 OF 20

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 22/01/2024 Paper: A3
Author: WSP Scale: 1:3,000
Data Sources: ARTC, NSWSS

- Proposal site
- Existing railway
- Main road
- Sloane's Froglet threatened fauna species polygon
- Superb Parrot and Squirrel Glider threatened fauna species polygon
- SAII - BC Act - White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions – Critically Endangered

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LGH - Culcairn
Station Yard

MELVILLE STREET

BALFOUR STREET

RAILWAY PARADE

Albury to Illabo

Appendix E4 –Sensitive Areas Map

MAP 3 OF 20

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 22/01/2024 Paper: A3
Author: WSP Scale: 1:3,000
Data Sources: ARTC, NSWSS

- Proposal site
- Existing railway
- Main road
- Sloane's Froglet threatened fauna species polygon
- Superb Parrot and Squirrel Glider threatened fauna species polygon
- SAII - BC Act - White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions – Critically Endangered

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LGH - Henty Yard

SLADEN STREET

RAILWAY PARADE

ROSLER PARADE

HENTY WALLA ROAD

OLYMPIC HIGHWAY

Albury to Illabo

Appendix E4 –Sensitive Areas Map

MAP 4 OF 20

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 22/01/2024 Paper: A3
Author: WSP Scale: 1:3,000
Data Sources: ARTC, NSWSS

- Proposal site
- Existing railway
- Main road
- Sloane's Froglet threatened fauna species polygon
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HENTY PLEASANT HILLS ROAD

ALLAN STREET

OLYMPIC HIGHWAY

BUCKARGINGAH CREEK

LGH - Henty Yard

SLADEN STREET

RAILWAY PARADE

Albury to Illabo

Appendix E4 –Sensitive Areas Map

MAP 5 OF 20

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 22/01/2024 Paper: A3
Author: WSP Scale: 1:3,000
Data Sources: ARTC, NSWSS

- Proposal site
- Existing railway
- Main road
- Watercourse
- Sloane's Froglet threatened fauna species polygon
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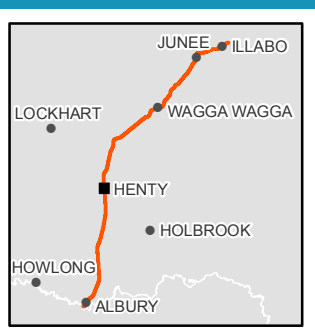

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RAILWAY STREET

OLYMPIC HIGHWAY

Albury to Illabo

Appendix E4 –Sensitive Areas Map

MAP 6 OF 20

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 22/01/2024 Paper: A3
Author: WSP Scale: 1:2,500
Data Sources: ARTC, NSWSS

- Existing railway
- Main road
- Sloane's Froglet threatened fauna species polygon
- Superb Parrot and Squirrel Glider threatened fauna species polygon
- SAII - BC Act - White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions – Critically Endangered

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Albury to Illabo Appendix E4 –Sensitive Areas Map MAP 7 OF 20

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 22/01/2024 Paper: A3
Author: WSP Scale: 1:2,500
Data Sources: ARTC, NSWSS

Proposal site
Existing railway
Main road
Watercourse

INLAND RAIL ARTC

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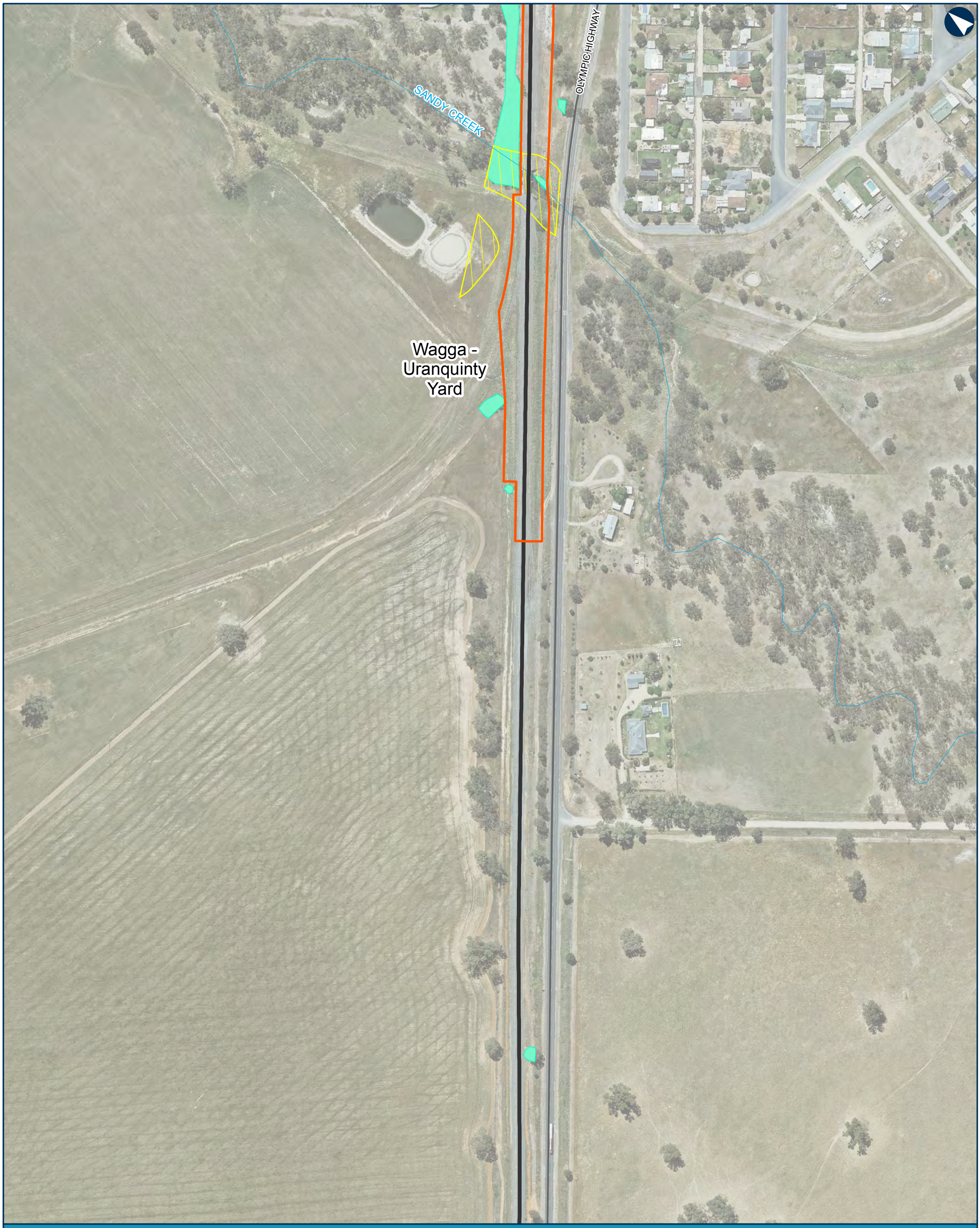


Albury to Illabo

Appendix E4 –Sensitive Areas Map

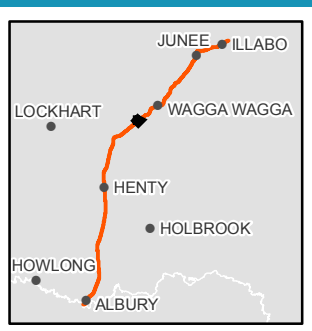
MAP 8 OF 20

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 22/01/2024 Paper: A3
Author: WSP Scale: 1:3,000
Data Sources: ARTC, NSWSS

- Proposal site
- Existing railway
- Main road
- Watercourse
- Sloane's Froglet threatened fauna species polygon
- Superb Parrot and Squirrel Glider threatened fauna species polygon
- SAII - BC Act - White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions – Critically Endangered



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OLYMPIC HIGHWAY

YARRAGUNDRY STREET

Wagga - Uranquinty Yard

RYAN STREET

MORGAN STREET

SANDY CREEK

Albury to Illabo

Appendix E4 –Sensitive Areas Map

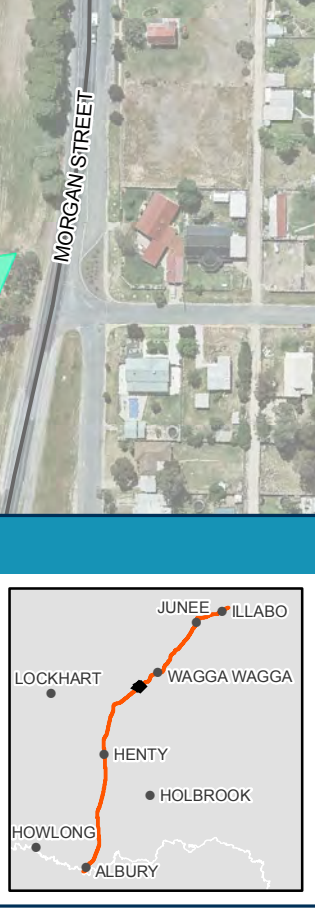
MAP 9 OF 20

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 22/01/2024 Paper: A3
Author: WSP Scale: 1:3,000
Data Sources: ARTC, NSWSS

- Proposal site
- Existing railway
- Main road
- Watercourse
- Sloane's Froglet threatened fauna species polygon
- Superb Parrot and Squirrel Glider threatened fauna species polygon
- SAII - BC Act - White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions – Critically Endangered



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Wagga -
Pearson
St Bridge

Albury to Illabo

Appendix E4 –Sensitive Areas Map

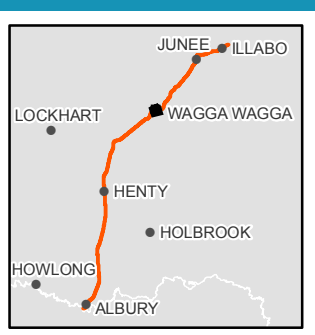
MAP 10 OF 20

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 22/01/2024 Paper: A3
Author: WSP Scale: 1:4,000
Data Sources: ARTC, NSWSS

- Proposal site
- Existing railway
- Sloane's Froglet threatened fauna species polygon
- Superb Parrot and Squirrel Glider threatened fauna species polygon
- SAII - BC Act - White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions – Critically Endangered



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Wagga -
Bomen Yard

BYRNES ROAD

Albury to Illabo

Appendix E4 –Sensitive Areas Map

MAP 11 OF 20

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 22/01/2024
Author: WSP
Paper: A3
Scale: 1:4,000
Data Sources: ARTC, NSWSS

- Proposal site
- Existing railway
- Main road
- Sloane's Froglet threatened fauna species polygon
- Superb Parrot and Squirrel Glider threatened fauna species polygon
- SAII - BC Act - White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions – Critically Endangered

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HAREFIELD ROAD

PATTERSONS ROAD

BUCKS CREEK

REEDY CREEK

Junee - Harefield Yard

BYRNES ROAD

Albury to Illabo

Appendix E4 –Sensitive Areas Map

MAP 12 OF 20

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 22/01/2024 Paper: A3
Author: WSP Scale: 1:5,000
Data Sources: ARTC, NSWSS

- Proposal site
- Existing railway
- Main road
- Watercourse
- Sloane's Froglet threatened fauna species polygon
- Superb Parrot and Squirrel Glider threatened fauna species polygon
- SAII - BC Act - White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions – Critically Endangered

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Albury to Illabo | Appendix E4 –Sensitive Areas Map | MAP 13 OF 20

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 22/01/2024 Paper: A3
Author: WSP Scale: 1:3,000
Data Sources: ARTC, NSWSS

Proposal site
Existing railway
Main road
Sloane's Froglet threatened fauna species polygon

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OLYMPIC HIGHWAY

Junee - Olympic Hwy underbridge

ILLABO ROAD

MAIN STREET

Albury to Illabo

Appendix E4 –Sensitive Areas Map

MAP 14 OF 20

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 22/01/2024 Paper: A3
Author: WSP Scale: 1:3,000
Data Sources: ARTC, NSWSS

- Proposal site
- Existing railway
- Main road
- Sloane's Froglet threatened fauna species polygon
- Superb Parrot and Squirrel Glider threatened fauna species polygon
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Junee - Junee to I2S dual track section

OLYMPIC HIGHWAY

Albury to Illabo

Appendix E4 –Sensitive Areas Map

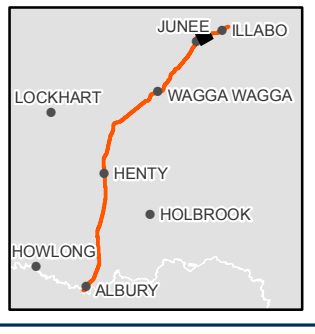
MAP 15 OF 20

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 22/01/2024 Paper: A3
Author: WSP Scale: 1:8,000
Data Sources: ARTC, NSWSS

- Proposal site
- Existing railway
- Main road
- Sloane's Froglet threatened fauna species polygon
- Superb Parrot and Squirrel Glider threatened fauna species polygon
- SAII - BC Act - White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions – Critically Endangered



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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OLYMPIC HIGHWAY

Junee - Junee to I2S dual track section

MARINNA ROAD

Albury to Illabo

Appendix E4 –Sensitive Areas Map

MAP 16 OF 20

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 22/01/2024 Paper: A3
Author: WSP Scale: 1:8,000
Data Sources: ARTC, NSWSS

- Proposal site
- Existing railway
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- SAII - BC Act - White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions – Critically Endangered

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Junee - Junee to I2S dual track section

OLYMPIC HIGHWAY

Albury to Illabo

Appendix E4 –Sensitive Areas Map

MAP 17 OF 20

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 22/01/2024 Paper: A3
Author: WSP Scale: 1:8,000
Data Sources: ARTC, NSWSS

- Proposal site
- Existing railway
- Main road
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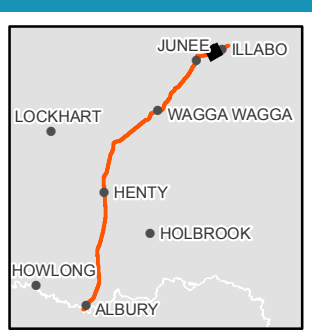

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Junee - Junee to I2S dual track section

JERALGAMBETH CREEK

OLYMPIC HIGHWAY

Albury to Illabo

Appendix E4 –Sensitive Areas Map

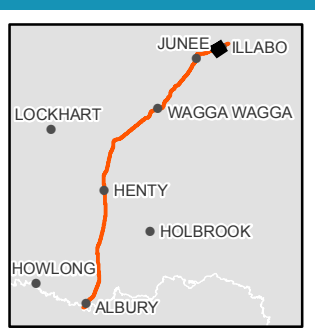
MAP 18 OF 20

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 22/01/2024 Paper: A3
Author: WSP Scale: 1:8,000
Data Sources: ARTC, NSWSS

- Proposal site
- Existing railway
- Main road
- Watercourse
- Sloane's Froglet threatened fauna species polygon
- Superb Parrot and Squirrel Glider threatened fauna species polygon
- SAII - BC Act - White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions – Critically Endangered



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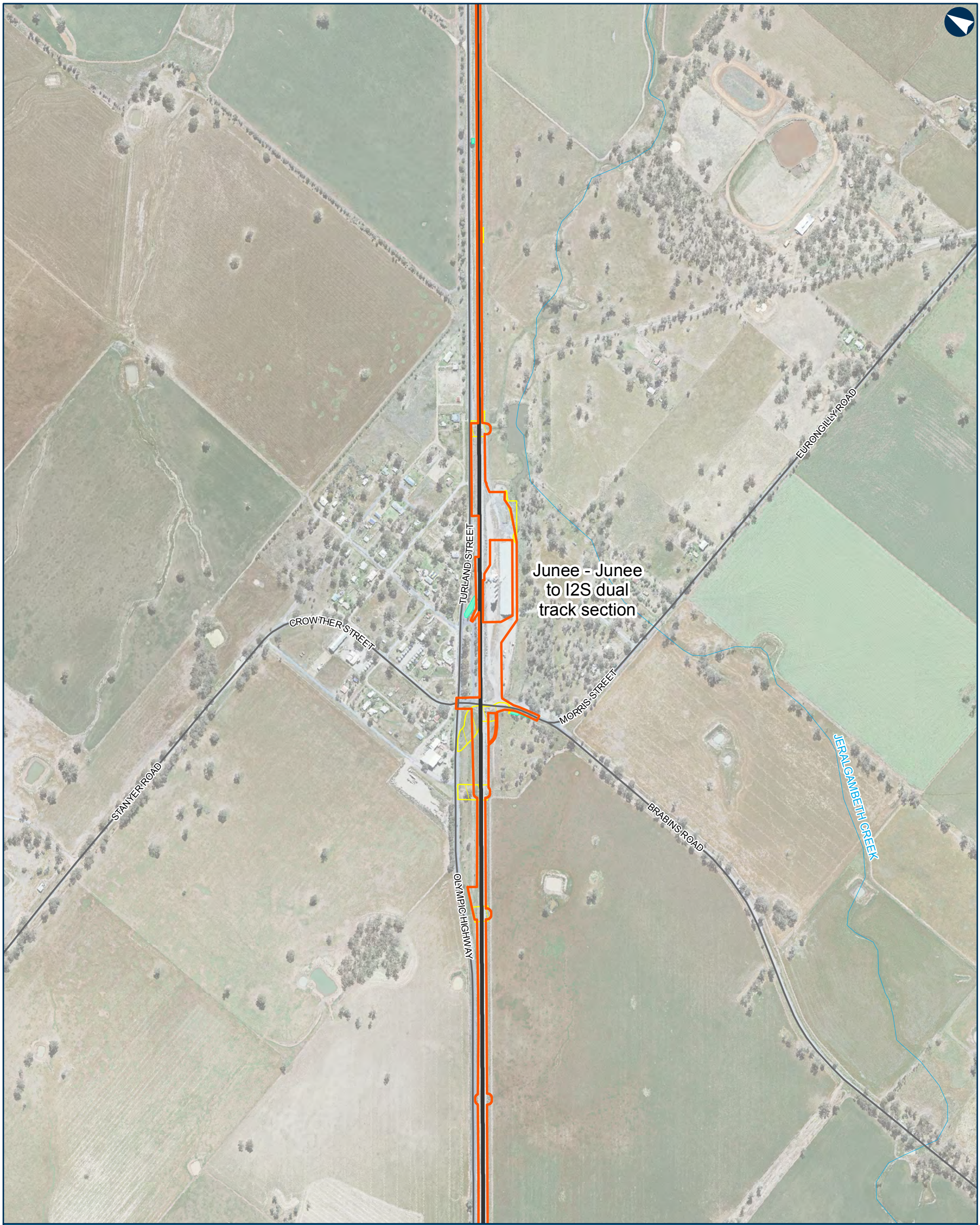

Albury to Illabo | Appendix E4 –Sensitive Areas Map | MAP 19 OF 20

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 22/01/2024 Paper: A3
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Data Sources: ARTC, NSWSS

- Proposal site
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- Sloane's Froglet threatened fauna species polygon
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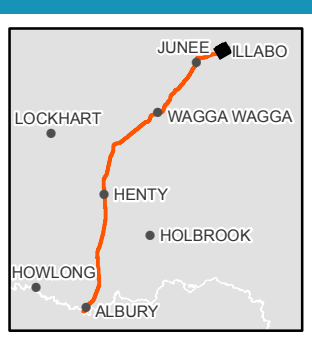

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WARRENS LANE

BILLABONG CREEK

Junee - Junee to I2S dual track section

OLYMPIC HIGHWAY

JERALGAMBETH CREEK

Albury to Illabo

Appendix E4 –Sensitive Areas Map

MAP 20 OF 20

0 50 100 m

Coordinate System: GDA 1994 MGA Zone 55

Date: 22/01/2024 Paper: A3
Author: WSP Scale: 1:8,000
Data Sources: ARTC, NSWSS

- Proposal site
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- Main road
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APPENDIX

G

Revised Technical Paper 8: Biodiversity Development Assessment Report

Appendix F Biodiversity credit report

ALBURY TO ILLABO PREFERRED INFRASTRUCTURE REPORT—RESPONSE TO SUBMISSIONS

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INLAND RAIL

APPENDIX F-1
BAM CREDIT REPORT LOWER SLOPES

BAM Credit Summary Report

Proposal Details

Assessment Id
00023236/BAAS18097/20/00023237

Proposal Name
A2I

BAM data last updated *
22/06/2023

Assessor Name
Mark Stables

Report Created
09/02/2024

BAM Data version *
61

Assessor Number
BAAS18097

BAM Case Status
Open

Date Finalised
To be finalised

Assessment Revision
4

Assessment Type
Major Projects

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Ecosystem credits for plant communities types (PCT), ecological communities & threatened species habitat

Zone	Vegetation zone name	TEC name	Current Vegetation integrity score	Change in Vegetation integrity (loss / gain)	Area (ha)	Sensitivity to loss (Justification)	Species sensitivity to gain class	BC Act Listing status	EPBC Act listing status	Biodiversity risk weighting	Potential SAII	Ecosystem credits
Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion												
1	277_poor	Not a TEC	21.5	21.5	0.14	PCT Cleared - 94%	High Sensitivity to Gain			2.50		2
											Subtotal	**2**

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.												
2	5_poor	Not a TEC	58.3	58.3	0.02	PCT Cleared - 40%	High Sensitivity to Gain			1.50		1
											Subtotal	**1**
											Total	**3**

Species credits for threatened species

Vegetation zone name	Habitat condition (Vegetation Integrity)	Change in habitat condition	Area (ha)/Count (no. individuals)	Sensitivity to loss (Justification)	Sensitivity to gain (Justification)	BC Act Listing status	EPBC Act listing status	Potential SAII	Species credits
Crinia sloanei / Sloane's Froglet (Fauna)									
277_poor	21.5	21.5	0.01			Vulnerable	Endangered	False	1
5_poor	58.3	58.3	0.02			Vulnerable	Endangered	False	1
								Subtotal	**2**
Petaurus norfolcensis / Squirrel Glider (Fauna)									
277_poor	21.5	21.5	0.14			Vulnerable	Not Listed	False	2
5_poor	58.3	58.3	0.02			Vulnerable	Not Listed	False	1
								Subtotal	**3**
Polytelis swainsonii / Superb Parrot (Fauna)									
277_poor	21.5	21.5	0.14			Vulnerable	Vulnerable	False	2
5_poor	58.3	58.3	0.02			Vulnerable	Vulnerable	False	1
								Subtotal	**3**

APPENDIX F-2
BAM CREDIT REPORT INLAND SLOPES

BAM Credit Summary Report

Proposal Details

Assessment Id
00024528/BAAS18097/21/00024529

Proposal Name
A2I-Inland Slopes

BAM data last updated *
22/06/2023

Assessor Name
Mark Stables

Report Created
09/02/2024

BAM Data version *
61

Assessor Number
BAAS18097

BAM Case Status
Open

Date Finalised
To be finalised

Assessment Revision
6

Assessment Type
Major Projects

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Ecosystem credits for plant communities types (PCT), ecological communities & threatened species habitat

Zone	Vegetation zone name	TEC name	Current Vegetation integrity score	Change in Vegetation integrity (loss / gain)	Area (ha)	Sensitivity to loss (Justification)	Species sensitivity to gain class	BC Act Listing status	EPBC Act listing status	Biodiversity risk weighting	Potential SAII	Ecosystem credits

Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion												
2	277_moderate	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	69.2	69.2	0.5	PCT Cleared - 94%	High Sensitivity to Gain	Critically Endangered Ecological Community	Critically Endangered	2.50	True	22

3	277_poor	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	35.3	35.3	1.3	PCT Cleared - 94%	High Sensitivity to Gain	Critically Endangered Ecological Community	Critically Endangered	2.50	True	28

4	277_derived	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	53.3	53.3	2.3	PCT Cleared - 94%	High Sensitivity to Gain	Critically Endangered Ecological Community	Critically Endangered	2.50	True	78

5	277_native plantings	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	45.3	45.3	0.26	PCT Cleared - 94%	High Sensitivity to Gain	Critically Endangered Ecological Community	Critically Endangered	2.50	True	7

6	277_non-native	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highla	0.3	0.3	30.5	PCT Cleared - 94%	High Sensitivity to Gain	Critically Endangered Ecological Community	Critically Endangered	2.50	True	0
											Subtotal	**135**
River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion.												
1	5_poor	Not a TEC	27.2	27.2	0.02	PCT Cleared - 40%	High Sensitivity to Gain			1.50		1
											Subtotal	**1**
											Total	**136**

Species credits for threatened species

Vegetation zone name	Habitat condition (Vegetation Integrity)	Change in habitat condition	Area (ha)/Count (no. individuals)	Sensitivity to loss (Justification)	Sensitivity to gain (Justification)	BC Act Listing status	EPBC Act listing status	Potential SAII	Species credits
Crinia sloanei / Sloane's Froglet (Fauna)									
5_poor	27.2	27.2	0.02			Vulnerable	Endangered	False	1
277_poor	35.3	35.3	0.04			Vulnerable	Endangered	False	1
277_nativeplantings	45.3	45.3	0.17			Vulnerable	Endangered	False	3
								Subtotal	**5**
Petaurus norfolcensis / Squirrel Glider (Fauna)									
5_poor	27.2	27.2	0.02			Vulnerable	Not Listed	False	1
277_moderate	69.2	69.2	0.5			Vulnerable	Not Listed	False	17
277_poor	35.3	35.3	1.3			Vulnerable	Not Listed	False	23
								Subtotal	**41**
Polytelis swainsonii / Superb Parrot (Fauna)									
5_poor	27.2	27.2	0.02			Vulnerable	Vulnerable	False	1
277_moderate	69.2	69.2	0.5			Vulnerable	Vulnerable	False	17
277_poor	35.3	35.3	1.3			Vulnerable	Vulnerable	False	23
								Subtotal	**41**

APPENDIX

G

Revised Technical Paper 8: Biodiversity Development Assessment Report

Appendix G BAM information requirements for a BDAR

ALBURY TO ILLABO PREFERRED INFRASTRUCTURE REPORT—RESPONSE TO SUBMISSIONS

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Table G.1 Minimum information requirements for a BDAR (Table 24 and 25 of the BAM)

REPORT SECTION	INFORMATION	SECTION IN BDAR	MAPS AND DATA	SECTION IN BDAR
Introduction	Introduction to the biodiversity assessment including: — brief description of the proposal — identification of subject land1 boundary, including: — operational footprint (if BDAR) — construction footprint indicating clearing associated with temporary/ancillary construction facilities and infrastructure (if BDAR) — land proposed for biodiversity certification (if BCAR) — general description of the subject land — sources of information used in the assessment, including reports and spatial data.	Chapter 1	— Map of the subject land boundary showing the final proposal site, including the construction footprint for any clearing associated with temporary/ancillary construction facilities and infrastructure (if BDAR).	Figure 1.1
Landscape features	Identification of site context components and landscape features, including: — general description of subject land topographic and hydrological setting, geology and soils — percent native vegetation cover in the assessment area (as described in BAM Section 3.2) — IBRA bioregions and subregions (as described in BAM Subsection 3.1.3(2.)) — rivers and streams classified according to stream order (as described in BAM Subsection 3.1.3(3.) and Appendix E) — wetlands within, adjacent to and downstream of the site (as described in BAM Subsection 3.1.3(3.)) — connectivity of different areas of habitat (as described in BAM Subsection 3.1.3(5–6))	Chapter 3	— Site Map — Boundary of subject land — Cadastre of subject land — Landscape features identified in BAM Subsection 3.1.3 — Location Map — Digital aerial photography at 1:1,000 scale or finer — Boundary of subject land — Assessment area, (i.e. the subject land and either 1500m buffer area or 500m buffer for linear development — Landscape features identified in BAM Subsection 3.1.3	Figure 3.1 Figure 3.2 Figure 3.3 Appendix A-1 Appendix A-2 Appendix A-3

REPORT SECTION	INFORMATION	SECTION IN BDAR	MAPS AND DATA	SECTION IN BDAR
	— karst, caves, crevices, cliffs, rocks and other geological features of significance and for vegetation clearing proposals, soil hazard features (as described in BAM Subsections 3.1.3(7.) and 3.1.3(12.) — areas of outstanding biodiversity value occurring on the subject land and assessment area (as described in BAM Subsection 3.1.3(8–9.)) — any additional landscape features identified in any SEARs for the proposal.		— Additional detail (e.g. local government area boundaries) relevant at this scale — Landscape features identified in BAM Subsection 3.1.3 and to be shown on the Site Map and/or Location map include: — IBRA bioregions and subregions — rivers, streams and estuaries — wetlands and important wetlands — connectivity of different areas of habitat — karst, caves, crevices, cliffs, rocks and other geological features of significance and if required, soil hazard features — areas of outstanding biodiversity value occurring on the subject land and assessment area — any additional landscape features identified in any SEARs for the proposal — NSW (Mitchell) landscape on which the subject land occurs.	

REPORT SECTION	INFORMATION	SECTION IN BDAR	MAPS AND DATA	SECTION IN BDAR
Native vegetation	Identify native vegetation extent within the subject land, including cleared areas and evidence to support differences between mapped vegetation extent and aerial imagery (as described in BAM Section 4.1(1–3) and Subsection 4.1.1) — provide justification for all parts of the subject land that do not contain native vegetation (as described in BAM Subsection 4.1.2) — review of existing information on native vegetation including references to previous vegetation maps of the subject land and assessment area (described in BAM Section 4.1(3.) and Subsection 4.1.1) — describe the systematic field-based floristic vegetation survey undertaken in accordance with BAM Section 4.2 — where relevant, describe the use of more appropriate local data, provide reasons that support the use of more appropriate local data and include the written confirmation from the decision-maker that they support the use of more appropriate local data (as described in BAM Subsection 1.4.2 and Appendix A). For each PCT within the subject land, describe: — vegetation class — extent (ha) within subject land — evidence used to identify a PCT including any analyses undertaken, references/sources, existing vegetation maps (BAM Section 4.2(1–3.)) — plant species relied upon for identification of the PCT and relative abundance of each species	Chapter 4	— Map of native vegetation extent within the subject land at scale not greater than 1:10,000 including identification of cleared areas (as described in BAM Section 4.1(1–3.)) and all parts of the subject land that do not contain native vegetation (BAM Subsection 4.1.2) — Map of PCTs within the subject land (as described in BAM Section 4.2(1.)) — Map of vegetation zones within the subject land (as described in BAM Subsection 4.3.1) — Map the location of floristic vegetation survey plots and vegetation integrity survey plots relative to PCTs boundaries — Map of TEC distribution on the subject land and table of TEC listing, status and area (ha) — Patch size areas (as described in BAM Subsection 4.3.2) — Table of current vegetation integrity scores for each vegetation zone within the site and including: — composition condition score — structure condition score — function condition score — Presence of hollow bearing trees.	Appendix A-4 Appendix B-1 Appendix B-2 Appendix B-3 Appendix B-4 Appendix B-5 Table 4.5 Table 4.6

REPORT SECTION	INFORMATION	SECTION IN BDAR	MAPS AND DATA	SECTION IN BDAR
	— if relevant, TEC status including evidence used to determine vegetation is the TEC (BAM Subsection 4.2.2(1–2.)) — estimate of percent cleared value of PCT (BAM Subsection 4.2.1(5.)) Describe the vegetation integrity assessment of the subject land, including: — identification and mapping of vegetation zones (as described in BAM Subsection 4.3.1) — assessment of patch size (as described in BAM Subsection 4.3.2) — survey effort (i.e. number of vegetation integrity survey plots) as described in BAM Subsection 4.3.4(1–2.) — use of relevant benchmark data from BioNet Vegetation Classification (as described in BAM Subsection 4.3.3(5.))			
Threatened species	Identify ecosystem credit species likely to occur on the subject land, including: — list of ecosystem credit species derived from the BAM-C (as described in BAM Subsection 5.1.1 and Section 5.2(1.)) — justification and supporting evidence for exclusion of any ecosystem credit species based on geographic limitations, habitat constraints or vagrancy (as described in BAM Subsections 5.2.1 and 5.2.2) — justification for addition of any ecosystem credit species to the list Identify species credit species likely to occur on the subject land, including: — list of species credit species derived from the BAM-C (as described in BAM Subsection 5.1.1) — justification and supporting evidence for exclusions based on geographic limitations, habitat constraints or	Chapter 5	— Table showing ecosystem credit species in accordance with BAM Section 5.1.1, and identifying: — the ecosystem credit species removed from the list — the sensitivity to gain class of each species — Table detailing species credit species in accordance with BAM section 5.2 and identifying: — the species credit species removed from the list of species because the species is considered vagrant, out of geographic range or the habitat or micro habitat features are not present	Table 5.4 Table 5.5 Table 5.6 Table 5.7 Table 5.8 Table 5.10 Table 5.11 Table 5.16 Table 5.17 Table 5.18 Appendix C-4

REPORT SECTION	INFORMATION	SECTION IN BDAR	MAPS AND DATA	SECTION IN BDAR
	— vagrancy (as described in BAM Subsections 5.2.1 and 5.2.2) — justification and supporting evidence for exclusions based on degraded habitat constraints and/or microhabitats on which the species depends (as described in BAM Subsection 5.2.2) — justification for addition of any species credit species to the list. From the list of candidate species credit species, identify: — species assumed present within the subject land (if relevant) (as described in BAM Subsection 5.2.4(2.a.)) — species present within the subject land on the basis of being identified on an important habitat map for a species (as described in BAM Subsection 5.2.4(2.d.)) — species for which targeted surveys are to be completed to determine species presence (Subsection 5.2.4(2.b.)) — species for which an expert report is to be used to determine species presence (Subsection 5.2.4(2.c.)). Present the outcomes of species credit species assessments from: — threatened species survey (as described in BAM Section 5.2.4) — expert reports (if relevant) including justification for presence of the species and information used to make this determination (as described in BAM Section 5.2.4 and 5.3, Box 3). Where survey has been undertaken include detailed information on: — survey method and effort, (as described in BAM Section 5.3)		— the candidate species credit species not recorded on the subject land as determined by targeted survey, expert report or important habitat map — Table detailing species credit species recorded or assumed as present within the subject land, habitat constraints or microhabitats associated with the species, counts of individuals (flora)/extent of suitable habitat (flora and fauna) (as described in BAM Subsection 5.2.6) and biodiversity risk weighting (BAM Section 5.4) — Map indicating the GPS coordinates of all individuals of each species recorded within the subject land and the species polygon for each species (as described in BAM Subsection 5.2.5).	

REPORT SECTION	INFORMATION	SECTION IN BDAR	MAPS AND DATA	SECTION IN BDAR
	— justification of survey method and effort (e.g. citation of peer-reviewed literature) if approach differs from the Department's taxa-specific survey guides or where no relevant guideline has been published — timing of survey in relation to requirements in the TBDC or the Department's taxa-specific survey guides. Where survey was undertaken outside these guides include justification for the timing of surveys — survey personnel and relevant experience — describe any limitations to surveys and how these were addressed/overcome. Where an expert report has been used in place of survey (as described in BAM Section 5.3, Box 3), include: — justification of the use of an expert report — identify the expert, provide evidence of their expert credentials and Departmental approval of expert status — all requirements of Box 3 have been addressed in the expert report. Where use of local data is proposed (BAM Subsection 1.4.2): — identify relevant species — identify data to be amended — identify source of information for local data, e.g. published literature, additional survey data, etc. — justify use of local data in preference to VIS Classification or TBDC data			

REPORT SECTION	INFORMATION	SECTION IN BDAR	MAPS AND DATA	SECTION IN BDAR
	— provide written confirmation from the decision-maker that they support the use of local data Species polygon completed for species credit species present within the subject land (assumed present or determined on the basis of survey, expert report or important habitat map) ensuring that: — the unit of measure for each species is documented — for species assessed by area: — the polygon includes the extent of suitable habitat for the target species within the subject land (as described in BAM Subsection 5.2.5) — a description of, and evidence-based justification for, the habitat constraints, features or microhabitats used to map the species polygon including reference to information in the TBDC for that species and any buffers applied — for species assessed by counts of individuals: — the number of individual plants present on the subject land (as described in BAM Subsection 5.2.5(3.)) — the method used to derive this number (i.e. threatened species survey or expert report) and evidence-based justification for the approach taken — the polygon includes all individuals located on the subject land with a buffer of 30m around the individuals or groups of individuals on the subject land Identify the biodiversity risk weighting for each species credit species identified as present within the subject land (as described in BAM Section 5.4).			

REPORT SECTION	INFORMATION	SECTION IN BDAR	MAPS AND DATA	SECTION IN BDAR

Prescribed impacts	— Identify potential prescribed biodiversity impacts on threatened entities, including:
	  — karst, caves, crevices, cliffs, rocks and other geological features of significance (as described in BAM Subsection 6.1.1)
	  — occurrences of human-made structures and non-native vegetation (as described in BAM Subsection 6.1.2)
	  — corridors or other areas of connectivity linking habitat for threatened entities (as described in BAM Subsection 6.1.3)
	  — water bodies or any hydrological processes that sustain threatened entities (as described in BAM Subsection 6.1.4)
	  — protected animals that may use the proposed wind farm development site as a flyway or migration route (as described in BAM Subsection 6.1.5)
	  — where the proposed development may result in vehicle strike on threatened fauna or on animals that are part of a threatened ecological community (as described in BAM Subsection 6.1.6)
	— Identify a list of threatened entities that may be dependent upon or may use habitat features associated with any of the prescribed impacts
	— Describe the importance of habitat features to the species including, where relevant, impacts on life-cycle or movement patterns (e.g. Subsection 6.1.3).
		Chapter 6	— Map showing location of any prescribed impact features (i.e. karst, caves, crevices, cliffs, rocks, human-made structures, etc.)	Appendix B-2
				Appendix C-7

REPORT SECTION	INFORMATION	SECTION IN BDAR	MAPS AND DATA	SECTION IN BDAR

Avoid and Minimise Impacts	— Demonstration of efforts to avoid and minimise impacts on biodiversity values (including prescribed impacts) associated with the proposal location in accordance with Chapter 7, including an analysis of alternative:
	  — modes or technologies that would avoid or minimise impacts on biodiversity values and justification for selecting
	  — the proposed mode or technology
	  — routes that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed route
	  — alternative locations that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed location
	  — alternative sites within a property on which the proposal is located that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed site
	— Describe efforts to avoid and minimise impacts (including prescribed impacts) to biodiversity values through proposal design (as described in BAM Sections 7.1 and 7.2)
	— Identification of any other site constraints that the proponent has considered in determining the location and design of the proposal (as described in BAM Section 7.2.1(3.)).
		Chapter 8	— Table of measures to be implemented to avoid and minimise the impacts of the proposal, including action, outcome, timing and responsibility
			— Map of alternative footprints considered to avoid or minimise impacts on biodiversity values; and of the final proposal site, including construction and operation
			— Maps demonstrating indirect impact zones where applicable.
				Table 8.1
				Table 8.2

REPORT SECTION	INFORMATION	SECTION IN BDAR	MAPS AND DATA	SECTION IN BDAR
Assessment of Impacts	— Determine the impacts on native vegetation and threatened species habitat, including a description of direct impacts of clearing of native vegetation, threatened ecological communities and threatened species habitat (as described in BAM Section 8.1) — Assessment of indirect impacts on vegetation and threatened species and their habitat including (as described in BAM Section 8.2): — description of the nature, extent, frequency, duration and timing of indirect impacts of the proposal — documenting the consequences to vegetation and threatened species and their habitat including evidence-based justifications — reporting any limitations or assumptions, etc. made during the assessment — identification of the threatened entities and their habitat likely to be affected — Assessment of prescribed biodiversity impacts (as described in BAM Section 8.3) including: assessment of the nature, extent and duration of impacts on the habitat of threatened species or ecological communities associated with: — karst, caves, crevices, cliffs, rocks and other features of geological significance — human-made structures — non-native vegetation — connectivity of different areas of habitat of threatened species that facilitates the movement of those species across their range — movement of threatened species that maintains their life cycle — water quality, water bodies and hydrological processes that sustain threatened species and threatened ecological communities	Chapter 9	— Table showing change in vegetation integrity score for each vegetation zone as a result of identified impacts.	Table 9.1 Table 9.2

REPORT SECTION	INFORMATION	SECTION IN BDAR	MAPS AND DATA	SECTION IN BDAR
	— Assessment of the impacts of wind turbine strikes on protected animals — Assessment of the impacts of vehicle strikes on threatened species of animals or on animals that are part of a TEC.			
Mitigation and Management of Impacts	— Identification of measures to mitigate or manage impacts in accordance with the recommendations in BAM Sections 8.4 and 8.5 including: — techniques, timing, frequency and responsibility — identify measures for which there is risk of failure — evaluate the risk and consequence of any residual impacts — document any adaptive management strategy proposed — Identification of measures for mitigating impacts related to: — displacement of resident fauna (as described in BAM Subsection 8.4.1(2.)) — indirect impacts on native vegetation and habitat (as described in BAM Subsection 8.4.1(3.)) — mitigating prescribed biodiversity impacts (as described in BAM Subsection 8.4.2) — Details of the adaptive management strategy proposed to monitor and respond to impacts on biodiversity values that are uncertain (BAM Section 8.5).	Chapter 10	— Table of measures to be implemented to mitigate and manage impacts of the proposal, including action, outcome, timing and responsibility	Table 10.1

REPORT SECTION	INFORMATION	SECTION IN BDAR	MAPS AND DATA	SECTION IN BDAR

Impact Summary	— Identification and assessment of impacts on TECs and threatened species that are at risk of a serious and irreversible impacts (SAII, in accordance with BAM Section 9.1) including:
	  — addressing all criteria in Subsection 9.1.1 for each TEC listed as at risk of an SAII present on the subject land
	  — addressing all criteria in Subsection 9.1.2 for each threatened species at risk of an SAII present on the subject land
	  — documenting assumptions made and/or limitations to information
	  — documenting all sources of data, information, references used or consulted
	  — clearly justifying why any criteria could not be addressed
	— Identification of impacts requiring offset in accordance with BAM Section 9.2
	— Identification of impacts not requiring offset in accordance with BAM Subsection 9.2.1(3.)
	— Identification of areas not requiring assessment in accordance with BAM Section 9.3.
	Ecosystem credits and species credits that measure the impact of the development on biodiversity values, including:
	— future vegetation integrity score for each vegetation zone within the subject land (Equation 25 and Equation 26 in BAM Appendix H)
	— change in vegetation integrity score (BAM Subsection 8.1.1)
	— number of required ecosystem credits for the direct impacts of the proposal on each vegetation zone within the subject land (BAM Subsection 9)
		Chapter 11	— Map showing the extent of TECs at risk of an SAII within the subject land
			— Map showing location of threatened species at risk of an SAII within the subject land
			— Map showing location of:
			  — impacts requiring offset
			  — impacts not requiring offset
			  — areas not requiring assessment
			— Table of PCTs requiring offset and the number of ecosystem credits required
			— Table of threatened species requiring offset and the number of species credits required
				Table 11.3
				Table 11.4
				Table 11.5
				Table 11.6
				Table 12.1
				Table 12.2
				Appendix E-2
				Appendix E-3

REPORT SECTION	INFORMATION	SECTION IN BDAR	MAPS AND DATA	SECTION IN BDAR
	— number of required species credits for each candidate threatened species that is directly impacted on by the proposal (BAM Subsection 10.1.3).			
Biodiversity Credit Report	— Description of credit classes for ecosystem credits and species credits at the development or clearing site or land to be biodiversity certified (BAM Section 10.2)	Chapter 12	— Table of credit class and matching credit profile	Table 12.3 Table 12.4 Table 12.5 Table 12.6