Jacobs

Native Vegetation Clearance

Riddoch Highway – Northern Overtaking Lane (updated alignment)

Data Report

Clearance under the *Native Vegetation Regulations 2017*

26 May 2025

Prepared by Accredited Consultant Emma Eichler

Table of contents

1. Application information

Application Details

Applicant:	Department for Infrastructure and Transport (DIT)		
Key contact:	(DIT, Environment Officer)		
Landowner:	Road easement owned by the Commonwealth Government and managed by DIT, but may impact the frontage of several private properties adjacent the footprint to accommodate earth works		
Site Address:	The northern overtaking lane is a proposed south bound overtaking lane approximately 22.5 kilometres (km) north of Naracoorte along the Riddoch Highway (Figure 4). The proposed overtaking lane commences at the Naracoorte Road-Riddoch Highway intersection and extends approximately 2.1 km to the south (from approx. MM 83.84 and MM 86.12).		
Local Government Area:	Naracoorte Lucindale Council Area	**Hundred:**	Hynam
Title ID (includes road Reserve and adjacent parcels, most of which will not be impacted).	NA for road reserve East of road: • CT/5420/858 • CT/6227/172 • CT/5186/805 West of road: • CT/6112/188 • CT/5441/580 • CT/5441/504 • CT/5490/407 • CT/5701/592	**Parcel ID (includes road Reserve and adjacent parcels, most of which will not be impacted).**	NA for road reserve East of road: • F200188 Q92 • D94999 Q3 • F8554 A4 West of road: • D20900 A11 • D20900 A13 • D20900 A15 • F9840 A7 • H430600 S165

Summary of proposed clearance

Summary of proposed clearance – Riddoch Highway Northern Overtaking Lane	
Purpose of clearance	Clearance is required to enable installation of the Riddoch Highway Northern Overtaking Lane and associated road furniture, drainage and safety features as required by the relevant standards.
Native Vegetation Regulation	The project falls under Part 6 – Other Activities, Regulation 12, Clause 32 (Works on Behalf of Commissioner of Highways) of the *Native Vegetation Regulations, 2003.* This clause relates to *"clearance of vegetation incidental to work being undertaken by or on behalf of the Commissioner of Highways (other than repair or maintenance work of a kind referred to in Part 1, Clause 2)".*
Description of the vegetation under application	The current design results in proposed clearance of: • 32 native trees including ten *Eucalyptus camaldulensis* ssp. *camaldulensis* and 22 *Acacia melanoxylon* (of the total 84 trees assessed); and • 0.110 ha of shrubland or grassland in BAM patches (A1, A2, B1 and D1) of the total 0.788 ha assessed as follows: - BAM A1: 0.0118 ha Kangaroo Thorn *(Acacia paradoxa)* Tall Shrubland over Exotic Grassland / Herbland +/- Native Grassland - BAM A2: 0.0615 ha Spear-grass *(Austrostipa* spp.) / Wallaby Grass *(Rytidosperma* spp.) Grassland on road verge - BAM B1: 0.0167 ha Spear-grass *(Austrostipa* spp.) / Wallaby Grass *(Rytidosperma* spp.) Grassland on road verge - BAM D1: 0.0197 ha Spear-grass *(Austrostipa* spp.) / Wallaby Grass *(Rytidosperma* spp.) Grassland on road verge BAM C1 River Red Gum *(Eucalyptus camaldulensis* ssp. *camaldulensis)* Closed Woodland near Morambro Creek over amenity plantings +/- native shrubs) is not impacted. In addition, 1.268 ha of planted vegetation not subject to the Native Vegetation Act is also impacted. Amenity vegetation is included on maps but is described in the separate amenity report (Appendix A.2).

Summary of proposed clearance – Riddoch Highway Northern Overtaking Lane	
Total proposed clearance - area (ha) and number of trees	Total proposed clearance subject to the NV Act: • 32 scattered paddock/roadside trees • 0.110 ha of shrubland or grassland in BAM patches (A1, A2, B1, D1). Refer to Figure 1, Figure 2 and Figure 3 for the location of surveyed vegetation (does not indicate impact)
Level of clearance	Level 4 Total Biodiversity score of 25.21 for proposed clearance of 32 scattered trees and 0.110 ha of BAM patches including some vegetation considered *Seriously at Variance to Principle 1(b) Wildlife Habitat,* mainly due to the potential presence of two *National Parks and Wildlife Act* 1972 (NPW Act) listed Vulnerable (V) species Yellow-tailed Black Cockatoo *(Zanda funerea whiteae)* and Black-chinned Honeyeater *(Melithreptus gularis gularis)* and three NPW Act Rare (R) species Blue-faced Honeyeater *(Entomyzon cyanotis cyanotis),* Black Falcon *(Falco subniger)* and Brush-tailed Possum *(Trichosurus vulpecula).* Nationally threatened (under the *Environment Protection and Biodiversity Act* 1999 (EPBC Act)) South-eastern Red-tailed Black Cockatoo *(Calyptorhynchus banksii graptogyne)* and Striped Legless Lizard *(Delma impar)* were excluded from BAM datasheets and scoresheets following consultation with the Native vegetation Branch (NVB) in the Department for Environment and Water (DEW).
Overlay (Planning and Design Code)	This project is not subject to a Development Application under the *Planning Development and Infrastructure Act, 2016* (PDI Act) (refer Section 2.5 below).

Maps of proposed clearance area with approximate potential impact area indicated by blue line (and not comprising the entire surveyed area). Some trees within the dark blue line (impact area) are avoided (including NT35 and NT36) through batter re-design and other mitigation measures. Figures show native vegetation and amenity vegetation but amenity vegetation is described in the separate amenity vegetation report (Appendix A.2).

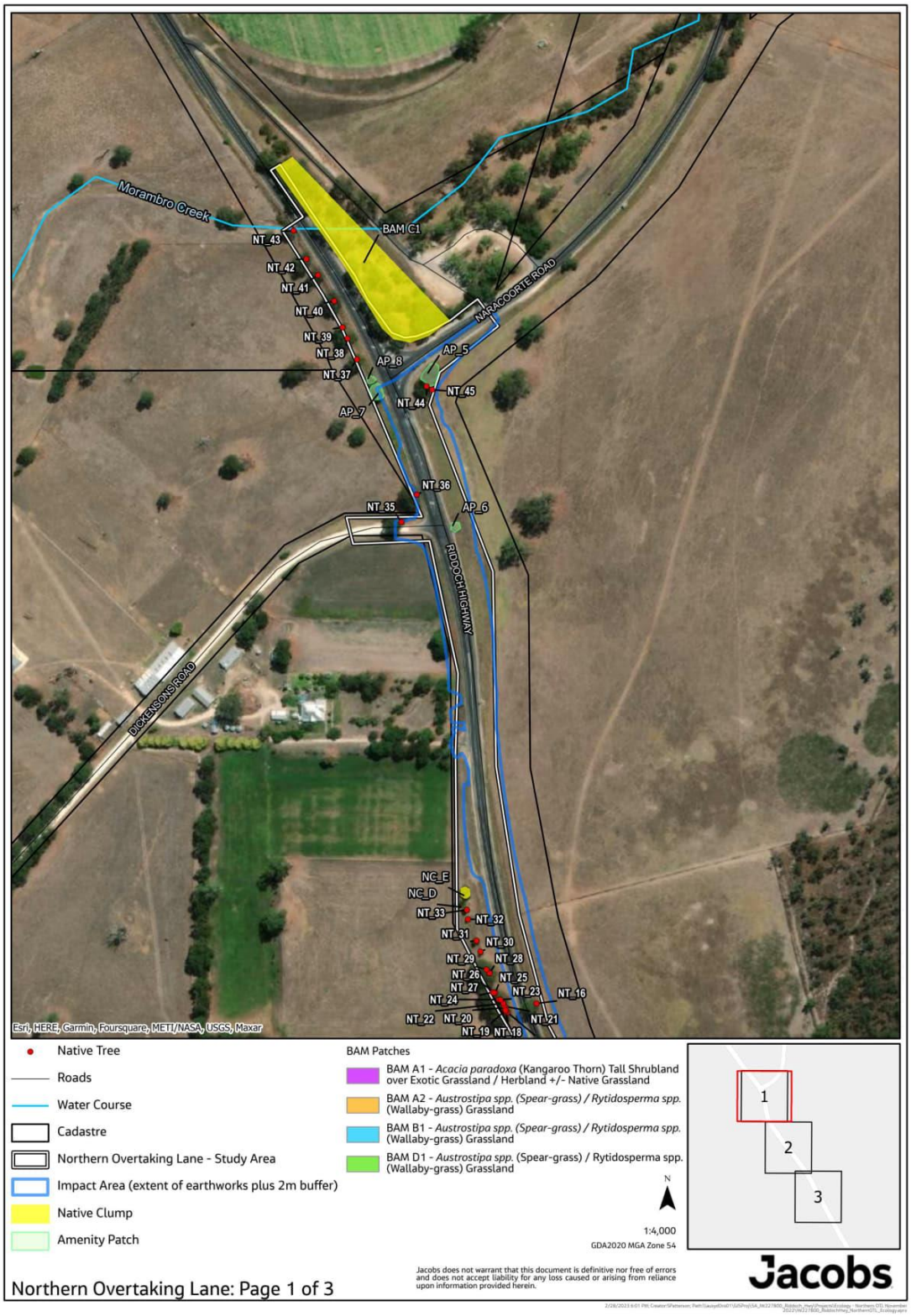

Figure 1. Northern extent of Project Area – map 1 of 3. Blue line indicates edge of earthworks with 2 m buffer, some vegetation is specifically avoided through mitigation and batter re-design. Impacts are summarised in Appendix A.7 and throughout this report.

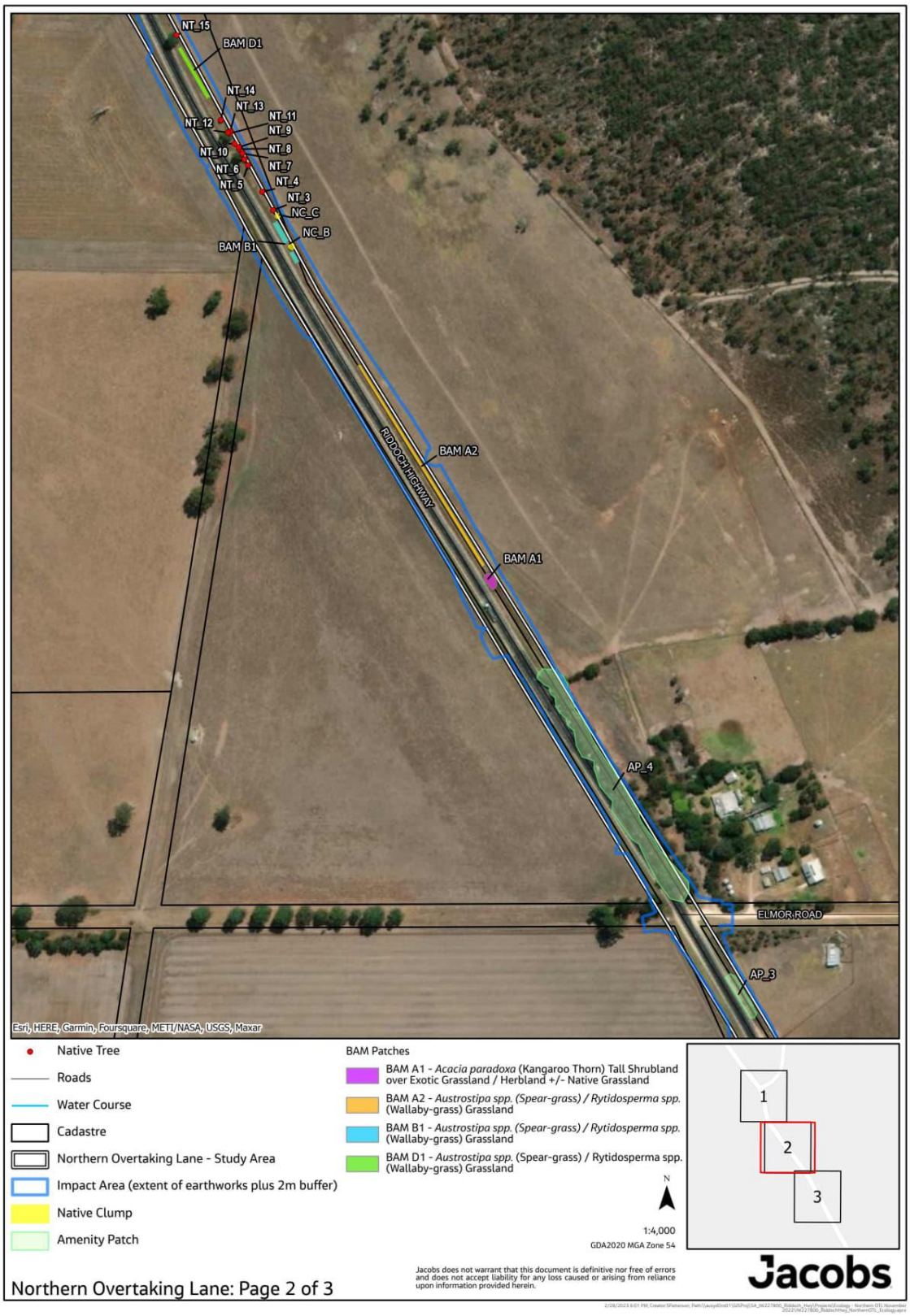

Figure 2. Central extent of Project Area – map 2 of 3. Blue line indicates edge of earthworks with 2 m buffer, some vegetation is specifically avoided through mitigation and batter re-design. Impacts are summarised in Appendix A.7 and throughout this report.

Figure 3. Southern extent of Project Area – map 3 of 3. Blue line indicates edge of earthworks with 2 m buffer, some vegetation is specifically avoided through mitigation and batter re-design Impacts are summarised in Appendix A.7 and throughout this report.

Application details	
Mitigation hierarchy	Avoidance and minimisation of impact has been a key component of planning and design at all stages of the project thus far, from pre-feasibility through to concept and detailed design, in conjunction with safety requirements and minimised construction envelopes. An initial feasibility study was completed by DIT in 2012. This study provided a cost versus benefit analysis, considering avoidance (do nothing case) and minimisation (do something case(s)) of impact to a range of factors including ecological (and other) environments. From this, DIT determined that the project was of sufficient value to proceed and identified three preferred options that represented a compromise between the factors considered and specifically minimised impact to scattered native trees. Three overtaking lanes were progressed (northern, central and southern), but the community were opposed to the initial location of the northern overtaking lane due to the proximity of the overtaking lane to the Range Rd / Ricketts Lane intersection, and the extent of land acquisition and vegetation removal required. As such, the northern overtaking lane was moved further north to the current position. This has resulted in the clearance of more trees overall, but noting the majority are smaller specimens and the larger trees under application (tree 2 and Clump A) were impacted in both the current and previous alignment for the northern overtaking lane. Additional mitigating approaches for the northern overtaking lane only are detailed below. The overtaking lane (northern) design has been developed to retain the existing horizontal road alignment as much as possible, thereby minimising the disturbance footprint and associated impacted to native vegetation. Minor adjustments have been made only, and include curve widening for all curves and increasing nearside shoulder widths to 2.0m, enabling the road to cater for the new PBS level 3 design vehicles and to accommodate a 1.4m wide centre line treatment. Both upgrades are in line with current road design standards implemented to enhance road safety and reduce the likelihood of head-on collisions. To further minimise impact to native vegetation within or near the road corridor, 1 (vertical) to 3 (horizontal) batter slopes with safety barrier protection have been implemented where possible (i.e. where sight visibility requirements are not impacted). Where not possible, batter slopes have been designed as 1 (vertical) to 6 (horizontal) slopes to provide an acceptable balance between motorist safety, cost of construction and potential impact to native flora and fauna. High value vegetation was identified and avoided as feasible including all vegetation north-east of the Riddoch Highway / Naracoorte Rd intersection, all large trees behind the barrier on the western side of the road (trees 37 to 43) and a large patch of large trees further south (trees 17 to 33 and Clumps D and E). In addition, batters have been re-designed to avoid impacts to one very large tree (tree 36) which contained a hollow of suitable size for South-eastern Red-tailed Black Cockatoo. However, three large trees (not containing large hollows) in the southern end of the alignment cannot be avoided as this would involve diversion away from the main road corridor and was not feasible.
SEB Offset proposal	To offset 32 scattered paddock trees and 0.11 ha of native vegetation in BAM patches (Total Biodiversity Score (TBS)) 25.21 requires an offset of : • A total of 32.88 SEB Points required equating to a total of $30,394.84 ex-GST including $28,715.52 for the SEB payment and $1,579.32 for the administration fee (values as per the Impact Summary). Noting $29,722.94 of this cost (including administration fee) is for the 32 scattered trees based on the Scattered tree scoresheet (Appendix A.6). The proponent (DIT) propose to achieve the offset via payment into the NVC fund

2. Purpose of clearance

2.1 Description

Clearance is required to permit the installation of an overtaking lane approximately 2.1 km long on the Riddoch Highway (Hwy) in South Australia (SA) between the Naracoorte Road (Rd) and Riddoch Hwy intersection with associated road furniture, drainage and safety features as required by relevant standards. The project will provide a safer method of travel, avoiding the need to enter the oncoming traffic lane when overtaking slower vehicles. The project will also improve stormwater drainage infrastructure within the road reserve, reducing the risk of the road being inundated during events of high rainfall.

2.2 Background and landscape context

The Riddoch Highway is a 240 km state-maintained highway between Keith and Port MacDonnell, near South Australia's (SA's) south eastern border with Victoria. The highway is vital for tourism, and primary production industries in the region, linking the high timber producing Limestone Coast to the major road network in SA. The site is located in the Limestone Coast Landscape Management Region (LC LMR) and falls within the area covered by the *Native Vegetation Act* 1991 (NV Act). The Riddoch Hwy is one of SA's major freight and commuter corridors and the main access through to Mt Gambier and Melbourne. Historically the road has been the location of many major accidents and fatalities (RAA reported nearly 200 vehicle crash-related injuries and eight deaths in the period 2013-2017 and 2019). This project is one of three separate overtaking lanes that were considered for the Riddoch Hwy to improve safety and reduce accidents and fatalities. The other two overtaking lanes have since been constructed with the northern overtaking lane (NOTL) being the final of the three to be proposed for construction following recent funding for the Project.

A pre-feasibility study conducted by DIT in 2012 noted that a do-nothing scenario is not acceptable in this circumstance. This study provided a cost versus benefit analysis, considering avoidance (do nothing case) and minimisation (do something case(s)) of impact to a range of factors including ecological (and other) environments. DIT determined that the project should proceed and then identified three preferred areas that represented a compromise between all factors considered, including minimising impact to scattered native trees.

In January 2020, DIT engaged Jacobs to undertake a planning study and detailed design for the three new overtaking lanes on the Riddoch Hwy: a northern lane (MM 83.6 – 87), a central lane (MM 128 – 131) and a southern lane (MM 141.02 – 145). The proposed alignment for the NOTL began north of Elmor Rd and ended at Range Rd / Ricketts Lane. However, some members of the community expressed concern regarding both the proximity of the overtaking lane to the Range Rd / Ricketts Lane intersection, and the extent of land acquisition and vegetation removal required. In response to the concerns, DIT commissioned several additional studies to assess alternative locations for the NOTL with a new preferred location for the northern lane determined, commencing from Naracoorte Rd and ending near the Naracoorte Rd / Riddoch Hwy intersection between MM83.84 and MM86.12. Jacobs was re-engaged in 2022 to undertake detailed design works for this NOTL redesign, including a detailed vegetation survey in line with NV Act and *Native Vegetation Regulations, 2017* requirements (in addition to survey in line with DIT vegetation assessment guidelines). Funding has become available for the Project in 2025 and given the time delay Jacobs were re-engaged to update documents into current templates and to assess the likelihood of occurrence of threatened species based on current records and listings, including consideration of several species listed under the EPBC Act between 2023 and 2025. Figure 4 below shows the location map of the proposed NOTL / Project Area.

<u>Landscape setting and local land use</u>

Vegetation in the broader Project Area comprises degraded road reserve with emergent native trees and shrubs varying from very low to very high value, in addition to amenity plantings and small patches of native shrubland and grassland. Not all vegetation in the Project Area is being impacted. The road reserve is bordered by agricultural land utilised for cropping and grazing in addition to residential properties with planted trees.

There are no formally mapped patches of remnant native vegetation within the Project Area (NatureMaps 2025).
A large patch of remnant vegetation (93.2 ha) is mapped as occurring on private land approximately 200m to the east, and comprises mainly *Eucalyptus arenacea / Eucalyptus baxteri* Woodlands. This area does not appear to be under any formal protection and may currently be grazed based on the distant roadside views. Regardless, it is likely to provide valuable fauna habitat opportunities, including for EPBC Act Critically Endangered South-eastern Red-tailed Black Cockatoo.

In addition, a dedicated Heritage Agreement (HA) 858 conservation area of significant size (492.1 ha) is located 3.2 km south-east of the southern end of the Project Area. HA 858 comprises *Eucalyptus arenacea / Eucalyptus baxteri* Woodlands and is considered important habitat for local fauna, particularly as it exceeds an area of 50 ha (NatureMaps 2023).

Formally defined nearby Conservation Parks (CP) are listed below:

- Grass Tree Conservation Park (CP) – 6 km southeast of the NOTL
- Talapar CP – 13 km northwest of the NOTL
- Padthaway Conservation Park – 17 km north of the NOTL
- Fairview Conservation Park – 20 km west of the NOTL

The land-uses within the Project Area (including a 1 km buffer) include:

- Agriculture (East)
- Rural residential (east & north-east)
- Commonwealth Road Reserve (within which the development is mostly located)

From review of the available aerial photography (earliest 1966, latest 2020), the Study Area and surrounding areas appear predominantly unchanged. In 1999, increased use of previously cleared agricultural land for cropping land uses in the southern and western extents was evident.

The Interim Biogeographical Regionalisation of Australia (IBRA) identifies geographically distinct bioregions based on common climate, geology, landform, native vegetation and species information (Thackway and Cresswell 1995). The bioregions are further refined into subregions and then environmental associations. The NOTL lies within the:

- Naracoorte Coastal Plain (NCP) bioregion
- Lucindale IBRA Subregion, or which there is an estimated 13 % remnant of native vegetation (Table 1).

Table 1. Vegetation, Landform, Geology and Soils of the Lucindale IBRA Subregion (NCP03)

Attribute	Description - Lucindale IBRA Subregion (NCP03)
Vegetation	The vegetation of this subregion is dominated by eucalypt woodlands with a shrubby understorey. Approximately 13% (93,770 ha) of the subregion is mapped as remnant vegetation, of which 30% (28,477 ha) is protected.
Landform	Swampy coastal plain with clayey lagoon deposits. Swampy plain overlain in large areas by gentle dunes and sheets of white arid sand. Adjacent to coast indurated dunes of calcareous sand and dunes of orange sand. The NOTL is not intersected by any major watercourses or drainage lines, but is situated just south of Morambo Creek and is subject by general cross landform drainage.
Geology	Sequence of stranded beach ridges (Tertiary); silicified & ferruginised sands (Karoonda Surface); Ripon calcrete
Soil	Nomopodsols, sandy leptopodsols, solodic soils, swamp soils, rendzinas & terra rossas

The boundary of the NOTL Project Area occurs on the boundary of the Angle Rock, Morambro and Naracoorte IBRA Associations with estimated remnancy of 5%, 0% and 18% (other than scattered trees), respectively. With approximately 50% in the Angle Rock / Morambro association and 50% in the Naracoorte association.

The native vegetation in the region of the NOTL project includes scattered remnant paddock trees mostly River Red Gum *(Eucalyptus camaldulensis* ssp. *camaldulensis)*, together with sparse roadside, rural and residential amenity tree plantings (various locally indigenous, non-indigenous and exotic species), over very sparse (if any) remnant native understorey scattered amongst a mixture of common exotic pasture grasses. The native vegetation remaining is highly fragmented and of varying quality, surrounded by agricultural landscape of cropping and pasture. The footprint itself is not mapped as native vegetation (NatureMaps, 2023).

2.3 General location map

The NOTL is a south bound overtaking lane approximately 22 km north-west of Naracoorte (Figure 4). The NOTL starts at the Naracoorte Rd-Riddoch Hwy intersection and finishes approximately 500 m south of Elmor Rd (from MM83.84 and MM86.12) as indicated in Figure 4.

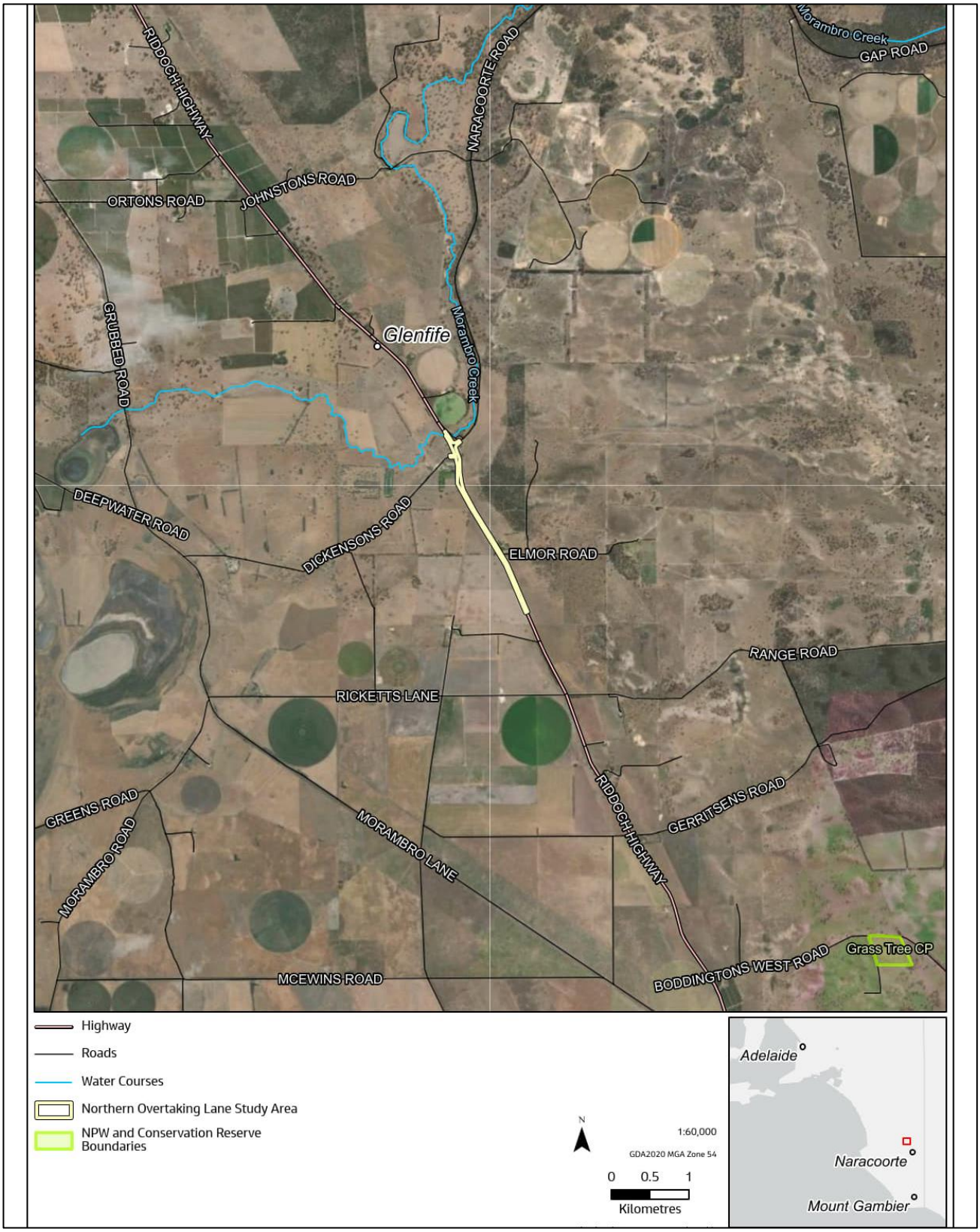

Figure 4. Overview of location and Project Area within wider study area.

2.4 Details of the proposal

The project involves the construction of an overtaking lane on the Riddoch Hwy servicing south-bound traffic, in Cadgee, south-eastern SA. The overtaking lane will measure approximately 2.1 km in length and will commence immediately south of the Riddoch Hwy and Naracoorte Rd junction. Earthworks and clearance of roadside vegetation is required to enable the project. However, efforts into clearance mitigation have formed an integral component of the planning and project design.

The earthworks boundary with a 2 m buffer is indicated on Figure 1, Figure 2 and Figure 3. However, this extent is greater than the proposed impact as mitigation measures have been implemented to avoid some significant trees (e.g. tree 35 and 36). The vegetation under application is documented in Table 9 and in the impact summary (Appendix A.7) in addition to being depicted on the construction drawings (Appendix E).

Detailed Project information is provided in the Design Report with additional information provided in the Environment and Heritage Impact Assessment (EHIAR). The Construction drawings are also provided as Appendix E.

2.5 Approvals required *or* obtained

The main approval required for this project relates to native vegetation removal (Section 2.6) and is the subject of this data report. Additional information is provided in regard to other relevant legislation and why it is / is not applicable each case.

Planning, Development and Infrastructure (PDI) *Act 2016*

The proposed works do not require development approval, as works for the construction or alteration of a road by the Crown (DIT) is exempt pursuant to section 3 of the PDI Act.

The Project also falls outside of the designated area in which the Regulated and Significant tree controls apply – which is limited to the whole of Metropolitan Adelaide (with exceptions), and parts of the Adelaide Hills Council and the District Council of Mount Barker (with exceptions).

Water Resources Act 1997

No additional water will need to be sourced or licensed for the construction of the overtaking lane.

Environment Protection and Biodiversity Conservation (EPBC) Act 1999

The project has been assessed as not having a significant impact upon any related Matter of National Environmental Significance (MNES), and therefore a referral under the EPBC Act is not required and has not been undertaken.

Whilst EPBC Act listed species may very occasionally utilise habitat on or near the Project Area, a Significant Impact Assessment (SIA) (Appendix D) has been undertaken for those species and it was deemed the Project would not have a significant impact, therefore the EPBC Act is not triggered.

National Parks and Wildlife (NPW) Act 1972

The Project is not impacting directly on State Reserves. A desktop likelihood assessment has been undertaken for all species listed as Endangered, Vulnerable or Rare recorded within 5km of the Project Area (Table 10). The project has been assessed as not having a significant impact upon any Endangered, Rare or Vulnerable species as listed by the schedules of this Act.

Landscapes South Australia Act 2019

The project seeks to remove, replace and install culverts to divert overland waters. As such, advice was sought from the Limestone Coast Landscape Board and the South East Water Conservation and Drainage Board regarding the need for a Water Affecting Activity Permit and/or Private Water Management Works Licence, respectively.

Representatives from both Boards have confirmed the nature of works do not trigger the need for a Water Affecting Activity Permit and/or Private Water Management Works Licence.

A permit will be sought (if required) from the relevant Limestone Coast Landscapes SA Board to remove, transport and seek appropriate disposal of any Declared or Weeds of National Significance (WoNS) removed during the land clearance required for this project.

Aboriginal Heritage Act 1988

A desktop assessment of Aboriginal (and non-Aboriginal) heritage was undertaken but did not result in any locations or items of note requiring protection or relocation (see DIT EHIAR). In relation to Native Title, on 10 November 2017, the Native Title claim of the First Nations of the South East #1 was accepted for registration by the National Native Title Tribunal and entered on the Register of Native Title Claims (NNTT No. SC2017/002). At the time of writing, a decision regarding the application of

Native Title to land within the Project Area remains undetermined (i.e. no land has been determined yet to be subject to Native Title).

Should the Native Title application be determined before the project commences, and Native Title has been determined to exist, there may be Native Title implications for the project that will require appropriate legal guidance from the Crown Solicitor's Office to navigate. However, this is only applicable where works are proposed to occur outside of the existing road reserve which based on the current design will not occur.

Environment Protection Act 1993

With a shallow water table present across much of this region, construction activities may require an Earthworks Drainage License from the EPA to dispose of excess water.

2.6 Native Vegetation Regulation

The project falls under Part 6 – Other Activities, Regulation 12, Clause 32 (Works on Behalf of Commissioner of Highways) of the *Native Vegetation Regulations, 2003*. This clause relates to *"clearance of vegetation incidental to work being undertaken by or on behalf of the Commissioner of Highways (other than repair or maintenance work of a kind referred to in Part 1, Clause 2)"*.

The proposal requires the removal of remnant native vegetation which is subject to approval and offset to achieve a Significant Environmental Benefit (SEB) to offset the clearance. Authority to approve clearance is dependent on the level of risk. DIT have delegated authority to approve Level 1 and Level 2 clearance. However, the clearance is currently classified as Level 4 based on the number of trees and escalating factors (clearance of some vegetation is Seriously at Variance with Principle 1b), in line with the *Guide to the Native Vegetation Regulations* (NVC 2017). Level 3 and Level 4 clearance requires approval by the Native Vegetation Council (NVC) or Native Vegetation Assessment Panel (NVAP), whilst Level 4 clearance also requires 30 days of public consultation.

However, moderating factors could potentially reduce the clearance to Level 3 if determined appropriate by the NVC, NVAP (or Delegate).

All native vegetation clearance is proposed to be offset by DIT through payment into the Native Vegetation Fund.

Amenity Vegetation clearance (DIT internal) approval and offsetting will also be required for the removal of Amenity Vegetation. DIT will offset all amenity vegetation losses 1:1.

2.7 Development Application information (if applicable)

Not applicable (see Section 2.5 above).

3. Method

3.1 Flora assessment

The assessment comprised a desktop review and field assessment of the indicative project footprint. Data was collected in accordance with assessment under the NV Act and Regulations. The main vegetation survey for the updated NOTL footprint was undertaken in November 2022. However, a small number of vegetation occurrences were surveyed in 2020 as part of the survey for the previous NOTL alignment.

The flora assessment was undertaken in line with the NVC Bushland Assessment Methodology (BAM) (NVC 2020a) for assessment of patches of native vegetation and the NVC Scattered Tree Assessment Methodology (STAM) (NVC 2020c) for assessment of scattered trees

3.1.1 Desktop assessment

In line with the BAM, the desktop review to assess potential impacts to terrestrial flora and fauna was undertaken using the following resources and search buffers:

- Output from the EPBC Act Protected Matters Search Tool (PMST) (DCCEEW 2025) (5 km buffer) (initially obtained 31 January 2023, then subsequently obtained 3 March 2025 and threatened species assessments updated as such).
- Biological Database of South Australia (BDBSA) observation records of species within the search area (5 km buffer). Initially obtained 2 February 2023 (Recordset 524-81-027059) then subsequently obtained 12 March 2025 (Recordset DEWNRBDBSA250311-1) and threatened species assessments updated as such.
- NatureMaps (http://spatialwebapps.environment.sa.gov.au/naturemaps/?locale=en-us&viewer=naturemaps);
- Species Profile and Threats Database for MNES.
- Ecological reports and publications where relevant.

A likelihood of occurrence (LoO) assessment for species identified in the PMST and BDBSA searches is provided in Section 4 based broadly on the criteria described in Table 2. However, the potential of species to occur was also considered qualitatively based on the Project impact, landscape features such as location on a major highway and the quality of the vegetation. The results were sent to DEW NVB for review and approval in line with BAM and STAM requirements.

It should be noted that to date three LoO assessments have been undertaken. The first was undertaken in 2020 based on the previous alignment and was submitted to DEW NVB for approval in 2020, then subsequently approved by Adam Schutz, Delegate to the NVC at that time. The LoO was then updated based on the current alignment and new PMST and BDBSA outputs in 2023. Given the time-lag to Project initiation and the new listing of several species under the EPBC Act during that time, the LoO was again updated in 2025 based on the current alignment and 2025 PMST and BDBSA outputs. The 2025 LoO was submitted to the DEW NVB on 15 April 2025 and approved by Graham Carpenter (Native Vegetation Officer) on 16 April 2025.

In addition, a Significant Impact Assessment (SIA) was undertaken for six Nationally threatened species which have records between one and 20km from the Project Area. This is provided as Appendix D to the EHIAR.

Table 2. General criteria for the likelihood of occurrence of assessment within the 5km study area.

Likelihood	Criteria
Highly Likely/Known	Recorded in the last 10 years, the species does not have highly specific niche requirements, the habitat is present and falls within the known range of the species distribution or; The species was recorded as part of field surveys.
Likely	Recorded within the previous 20 years, the area falls within the known distribution of the species and the area provides habitat or feeding resources for the species.
Possible	Recorded within the previous 20 years, the area falls inside the known distribution of the species, but the area provide limited habitat or feeding resources for the species.

Likelihood	Criteria
	Recorded within 20 -40 years, survey effort is considered adequate, habitat and feeding resources present, and species of similar habitat needs have been recorded in the area.
Unlikely	Recorded within the previous 20 years, but the area provide no habitat or feeding resources for the species, including perching, roosting or nesting opportunities, corridor for movement or shelter. Recorded within 20 -40 years; however, suitable habitat does not occur, and species of similar habitat requirements have not been recorded in the area. No records despite adequate survey effort.

3.1.1 Scoresheet species allocation

A LoO assessment was undertaken for each BAM patch and for scattered trees grouped into height classes of 0-5m, 5-9m and 10+ m which was considered a reasonable approach for scattered trees in the Project Area. Species were allocated to a BAM or scattered tree in line with Table 2 and based on specific habitat requirements for the species. For scattered trees, vegetation was also considered with regard to Appendix 8 of the Scattered Tree Assessment Manual (NVC 2020c).

The current LoO assessment was sent to DEW NVB on 15 April 2025 and subsequently approved with some amendments by Graham Carpenter (Native Vegetation Officer) on 16 April 2025. Scoresheets, and documents were updated in line with the results including the BAM and STAM scoresheets, the impact summary, the NVC report, the Significant Impact Assessment and the EHIAR.

3.1.2 Field Assessment

The field assessment was undertaken in line with the STAM for assessment of scattered trees and the BAM for assessment of patches of native vegetation.

The ecological assessment was undertaken on undertaken on 7 November 2022 by Jacobs Native Vegetation Accredited Consultant Emma Eichler and Ecologist Kale Szajer. In addition, three trees at the southern end (Tree 1-3) were assessed on 31st March 2020 by Dr Sonia Croft and Dr Lucy Clive. The survey included the following:

- Assessment of all native vegetation as scattered trees or BAM patches on both sides of the road to the boundary fence or other boundary and directly adjacent on private property if deemed appropriate/relevant.
- Mapping BAM vegetation into four vegetation Blocks (A to D) based on their spatial arrangement.
- Stratification of vegetation into five BAM Sites (vegetation associations) (BAM A1, A2, B1, C1 and D1) as required by the BAM.
- Notes on weeds of significance such as Declared Plants (LSA Act) and WoNS (EPBC Act).
- Fauna species were recorded if observed at BAM sites and opportunistically.
- Qualitative assessment of potential fauna habitat with specific consideration of Nationally threatened species South-eastern Red-tailed Black Cockatoo, Striped Legless Lizard and Growling Grass Frog *(Litoria raniformis).*
- Consideration of high to very high value vegetation and options for avoidance and mitigation.
- Collection of field data using *ESRI Field Maps* on an iPad.

The Project Area surveyed in 2020 and 2022 encompassed an area of vegetation adequate to enable design changes and inform mitigation during surveys (noting the final impact involves only a portion of the surveyed vegetation).

Note that amenity vegetation was assessed in line with Attachment 4A – Vegetation Survey Guidelines and Attachment 4B – Vegetation Impact Assessment Guideline of the DIT Environmental and Heritage Technical Manual (DIT 2021) with results documented in Appendix A.2 DIT Amenity Vegetation Report and Appendix A.13 DIT Vegetation Datasheet.

The following definitions were applied to the field assessment:

- **Native Vegetation:** A plant or plants of a species indigenous to SA including:
  - A plant or plants growing in or under waters of the sea.
  - Dead trees, with trunk circumference > 200 cm (> 100 cm on Kangaroo Island), measured at 300 mm above natural ground level, which provide habitat for threatened species listed under the EPBC Act.
  - Also includes vegetation that was sown or planted to comply with a condition of clearance approval under the NV Act.

- **Tree / Scattered Tree:**
  For native vegetation assessments, 'scattered trees' are defined by guidelines within the STAM Manual (NVC 2020c) as naturally occurring indigenous trees, usually two or more meters in height that occur over little or no native understorey. However, height can vary depending on the species, habit and vegetation features. In some instances, trees < 2 m may be considered scattered trees, and some >2 m in height may still be classed as saplings. It is noted that the assessment did include some young trees of species Blackwood *(Acacia melanoxylon)* which could potentially just be listed as saplings if deemed appropriate by NVAP or Delegate. However, the SEB requirement / impact for these species is minimal. Each scattered tree or clump of scattered trees is given an individual code (e.g. NT, NC).
- **Amenity Tree/patch:** A tree which is determined by factors such as its species, suitability in the local area, size, spatial arrangement and age class, in addition to consideration of its aesthetic qualities, provides amenity. Amenity trees do not include native vegetation as defined by the NV Act or Declared Plants (PDI Act) or environmental weeds (with the exception of environmental weeds that are planted and have amenity value). Amenity trees are usually planted trees but may include self-sown plants if they have high amenity value (DIT 2021). Each amenity tree was given an individual code (e.g. AT 1).
- **Environmental Weeds:** Native or exotic species that invade and degrade native vegetation (DIT 2021). For the purpose of this report, environmental weeds are those listed in the DPTI Weeds List, available from link at https://www.dpti.sa.gov.au/standards/environment.

4. Assessment Outcomes

4.1 Vegetation Assessment

4.1.1. General description of the vegetation, the site and matters of significance

Vegetation in the Project Area comprises exotic and native grasslands with emergent River Red Gum, Blackwood *(Acacia melanoxylon)*, Golden Wattle *(Acacia pycnantha)* and Kangaroo Thorn *(Acacia paradoxa)*. A creekline with a mix of native and planted species including wetland species Bullrush (*Typha domingensis)* and Common Reed *(Phragmites australis)* occurred on the northeast corner of the Naracoorte Rd intersection. This area was surveyed but is not impacted following mitigation. Patches of amenity plantings occurred along the eastern side of the road and opposite the Naracoorte Rd intersection. These are included on the map set (Figure 1, Figure 2 and Figure 3) with further detail provided in the associated amenity report (Appendix A.2). Native and amenity vegetation generally supported an understorey comprising exotic herbs and grasses, particularly Canary Grass *(Phalaris aquatica)* and Cocksfoot *(Dactylis glomerata)*.

Surveyed vegetation included five BAM patches comprising 0.788 ha (A1, A2, B1, C1 and D1) and 84 native scattered trees recorded as five clumps (of total 40 trees) and 44 individual trees, noting that one clump comprised a cluster of 23 Blackwood (clump 37). Eight patches of planted amenity patches were also recorded and are displayed on Figure 1, Figure 2 and Figure 3. Amenity vegetation occurred predominantly on the eastern side of Riddoch Hwy in addition to two small patches opposite the intersection. Vegetation was deemed planted based on factors including species composition, age class and spatial arrangement. Where it was unclear if vegetation was planted or remnant such as tree NT44 and NT45), it was classified as native. Appendix A.3 Photo Log – native vegetation and Appendix 1.4 – amenity vegetation photo log provides images of all vegetation surveyed including remnant vegetation and amenity vegetation. Figure 1, Figure 2 and Figure 3 indicate all vegetation surveyed, with an approximate impact boundary indicated in blue (earthworks plus 2m buffer), noting that not all in the impact boundary will be impacted following mitigation.

Of the trees surveyed, approval is sought for clearance of 32 trees including ten River Red Gum and 22 Blackwood; in addition to 0.11 ha of vegetation in BAM patches (A1, A2, B1 and D1).

The trees under application are provided in Table 3 and Appendix A.6 Impact Summary. All trees surveyed are included in Appendix A.5 (STAM datasheet) and in the photolog (Appendix A.3). Amenity vegetation not subject to the NV Act has been included in Table 3 for context but is not the subject of approval for this application. Trees under application are not considered core fauna habitat but are recognised as providing stepping-stone habitat for more mobile native fauna in the region (particularly larger tree specimens), in a landscape where the native understorey habitat has been largely cleared. While the (larger) scattered trees may provide potential habitat for threatened birds and bats, utilisation is likely to be restricted to occasional temporary roosting habitat given the landscape context, lack of diversity, and general lack of hollows (Table 2). Two hollows were observed in trees on site including one medium hollow in tree 2 (tree under application) and one large hollow in tree 36 (tree not under application – clearance avoided through batter design). Table 3 provides a summary of vegetation surveyed and under application for the Project.

Table 3. Summary of vegetation surveyed for the Northern Overtaking Lane

Surveyed vegetation	Description	Total surveyed	Total impacted
Scattered native trees (including clumps of trees)	33 River Red Gum 51 Blackwood	84 trees	32 trees
BAM patches (patches of native vegetation)	Five patches of native vegetation including:		
	• BAM A1 – Kangaroo Thorn *(Acacia paradoxa)* Tall Shrubland over Exotic Grassland / Herbland +/- Native Grassland	0.01 ha	0.01 ha
	• BAM A2 – Spear-grass *(Austrostipa* spp.) / Wallaby-grass *(Rytidosperma* spp.) Grassland on road verge	0.06 ha	0.06 ha
	• BAM B1 - Spear-grass *(Austrostipa* spp.) / Wallaby-grass *(Rytidosperma* spp.) Grassland on road verge	0.02 ha	0.02 ha
	• BAM C1 – River Red Gum *(Eucalyptus camaldulensis* ssp. *camaldulensis)* Closed Woodland near drainage line over amenity plantings +/- native shrubs	0.678 ha	0.0 ha

Surveyed vegetation	Description	Total surveyed	Total impacted
	BAM D1 - Spear-grass *(Austrostipa* spp.) / Wallaby-grass *(Rytidosperma* spp.) Grassland on road verge.	0.02 ha	0.02 ha
Total native vegetation surveyed and proposed for impact		**0.788 ha**	**0.110 ha**
Amenity patches	Eight discreet patches (AP1 to AP8) comprising plantings including local native plantings of *Eucalyptus viminalis* ssp. *cygnetensis, Eucalyptus viminalis* ssp. *viminalis, Eucalyptus leucoxylon* ssp. *megalocarpa, Eucalyptus incrassata* and *Acacia melanoxylon*; non-local planted species *Melaleuca armillaris* and species not native to SA including *Eucalyptus* spp., *Casuarina* sp., *Eucalyptus globulus,* exotic *Banksia* sp., *Hakea* sp. and Conifer species.	1.268 ha	1.268 ha

4.1.2. Bushland Assessment Methodology patches

Five BAM patches (A1, A2, B1, C1 and D1) were surveyed across four vegetation Blocks totalling 0.788 ha of which four will be impacted (A1, A2, B1, D1) comprising 0.110 ha. The four BAM patches impacted comprise predominantly degraded native grassland (A2, B1, D1) and one small patch of Kangaroo Thorn (*Acacia paradoxa*) Shrubland (A1).

The design has been progressed to avoid clearance in BAM C1 (0.678 ha) which comprises a large high value patch containing large trees, mixed native and planted understorey in addition to natural regeneration from planted specimens (classified as native vegetation). Patch C1 also fringes Morambro Creek to the north which has also been avoided on both sides of the road.

Approval of exclusion of threatened species identified as known in the PMST search and with records within 5km of the Project Area observed since 1995 and with a spatial reliability of 1km of less was submitted to the NVB (DEW) on Tuesday 15th April and approved with some amendments by Graham Carpenter on Wednesday 16th April 2025.As such, all threatened fauna species have been excluded from the BAM patches under application (e.g. A1, A2, B1 and D1) and associated scoresheets. The higher value BAM C1 has been included in reporting for context and to illustrate the efforts in meeting the mitigation hierarchy.

A summary of vegetation surveyed in BAM patches is provided in Table 4 to Table 8, whilst BAM scoresheets are provided in Appendix A.8 to A.12 and summarised in Appendix A.7 (the Impact Summary).

Table 4. BAM patch A1 description

Vegetation Association BAM A1	*Kangaroo Thorn (Acacia paradoxa) Tall Shrubland over exotic species +/- Wallaby Grass (Rytidosperma sp.)*				
  *Figure 5. BAM site A1 – looking north and south*					
General description	Small patch of Kangaroo Thorn over exotic species with scattered native grass Low diversity and small roadside patch.				
Threatened species or community	None				
Landscape context score	1.10	**Vegetation Condition Score**	6.46	**Conservation significance score**	1
Unit biodiversity Score	7.11	**Area (ha)**	0.0118	**Total biodiversity Score**	0.08

Table 5. BAM Patch A2 description

Vegetation Association BAM A2	*Austrostipa spp. (Spear-grass) / Rytidosperma spp. (Wallaby-grass) Grassland*				
  *Figure 6. BAM site A2 – looking south and north – native grasses occur on steeper banks and occasionally in lower lying area*					
General description	Degraded patch of scattered native grasses predominantly on the steeper bank.				
Threatened species or community	None				
Landscape context score	1.10	**Vegetation Condition Score**	7.11	**Conservation significance score**	1
Unit biodiversity Score	3.72	**Area (ha)**	0.0615	**Total biodiversity Score**	0.22

Table 6. BAM patch B1 description

Vegetation Association BAM B1	*Spear-grass (Austrostipa spp.) / Wallaby Grass (Rytidosperma spp.) Grassland*

Figure 7. BAM site B1 – looking north and south

General description	Degraded patch of scattered native grasses predominantly on the steeper bank.				
Threatened species or community	None				
Landscape context score	1.10	**Vegetation Condition Score**	7.11	**Conservation significance score**	1
Unit biodiversity Score	7.82	**Area (ha)**	0.0167	**Total biodiversity Score**	0.13

Table 7. BAM patch C1 description – included for context but not under application

Vegetation Association BAM C1	*River Red Gum (Eucalyptus camaldulensis ssp. camaldulensis) Closed Woodland near drainage line over amenity plantings +/- native shrubs*

Figure 8. BAM site B1 – looking north and west

General description	BAM C1 is located directly adjacent Morambo Creek and comprises mixed woodland of River Red Gum, Blackwood and Golden Wattle in addition to mixed age Drooping Sheoak *(Allocasuarina verticillata),* Sticky Hopbush *(Dodonaea viscosa*) and Myrtle Wattle *(Acacia myrtifolia).* The latter three species are likely to have regenerated from plantings as tree guards were observed on older specimens. However larger trees were not planted and regeneration of local native species is classified as native vegetation regardless of whether its parent plant was planted. This patch was classified entirely as a native BAM patch rather than separating amenity plants as it was unclear what was planted and if cleared, the SEB for native vegetation would likely be considered sufficient to offset scattered understorey plantings.
Threatened species or community	Yellow-tailed Black Cockatoo heard flying over (SA VU) and Swamp Wallaby *(Wallabia bicolor)* observed in addition to other more common bird species.

Vegetation Association BAM C1	*River Red Gum (Eucalyptus camaldulensis ssp. camaldulensis) Closed Woodland near drainage line over amenity plantings +/- native shrubs*				
	Other species that may occur and included in the BAM scoresheet include Red-tailed Black Cockatoo (AUS EN, SA E), Growling Grass Frog (creek area) (AUS VU, SA V), Black-chinned Honeyeater (SA V), Restless Flycatcher (*Myiagra inquieta* (SA R), Blue-faced Honeyeater (SA R), Jacky Winter *(Microeca fascinans fascinans)* (SA R), Black Falcon (SA R), Musk Duck *(Biziura lobata menziesi*) (SA R), Common Brush-tailed Possum (SA R), Barking Owl *(Ninox connivens connivens)* (SA R),				
Landscape context score	1.12	**Vegetation Condition Score**	19.25	**Conservation significance score**	1.10
Unit biodiversity Score	23.72	**Area (ha)**	0	**Total biodiversity Score**	Loss factor "0" not impacted

Table 8. BAM patch D1 description

Vegetation Association BAM D1	*Spear-grass (Austrostipa spp.) / Wallaby-grass (Rytidosperma) Grassland*				
 *Figure 9. BAM site D1 – looking east*					
General description	Degraded patch of scattered native grasses.				
Threatened species or community	None				
Landscape context score	1.10	**Vegetation Condition Score**	6.85	**Conservation significance score**	1
Unit biodiversity Score	7.54	**Area (ha)**	0.0197	**Total biodiversity Score**	0.15

4.1.3 Scattered trees

Surveyed vegetation included 84 native trees recorded as five clumps (of total 40 trees) and 44 individual trees noting that one clump comprised a cluster of 23 Blackwood (clump 37) which is not impacted. Of the total trees surveyed, there are expected impacts to 32 trees including ten River Red Gum and 22 Blackwood as listed in Table 9.

A number of large to very large trees were surveyed in the Project Area, particularly on the western side of the Riddoch Hwy and north east of the Naracoorte Rd intersection. However, the majority of trees under application comprise smaller specimens along the eastern side of the road. These include 21 juvenile to young trees that are just 0 m to 4 m tall, three trees 5-9m tall and eight trees 10m or taller including three very large trees 18-20m tall (tree 2 and Clump A) which cannot be avoided based on the current design.

A full list of the trees surveyed is provided in Appendix A.5 and is included on maps (Appendix A.14) and in photo files (Appendix A.3). However, clearance or impact to a number of large to very large trees on the western side of the Highway and north-east of the Naracoorte Rd / Riddoch Hwy has been avoided through specific design components to minimise impact to high value specimens where possible. This includes batter redesign to avoid clearance or impact to tree 36, a very large tree specimen with a large hollow suitable for a South-eastern Red-tailed Black Cockatoo in addition to avoidance of works on

Dickensons Rd to avoid tree 35, avoiding laydown areas that may impact a cluster of large trees 17 to 33 west of the highway and Clumps D and E west of the highway; and termination of works south of a row of large trees in the north west of the Project Area (trees 37-43). The trees impacted are summarised in Appendix A.6 and in the Impact Summary (Appendix A.7).

As many trees for the new alignment were small, an anecdotal/indicative tiered approach was applied such that more threatened species were included for larger trees given the higher arbitrary likelihood of utilisation and value. Trees were separated as follows:

- Trees 0-4m tall (one uncommon species Long-billed Corella)
- Trees 5-9m tall (one uncommon species Long-billed Corella and two NPW Act Rare species Brush-tailed Possum and Blue-faced Honeyeater).
- Trees 10m or taller (one uncommon species Long-billed Corella, two NPW Act Vulnerable species Yellow-tailed Black Cockatoo and Black-chinned Honeyeater and three NPW Act Rare species Blue-faced Honeyeater, Black Falcon and Brush-tailed Possum.

The list of numbers of species to be included in the Scattered Tree Scoresheet (STAM) was emailed to Adam Schutz for the previous NOTL alignment on 7/4/2021 for approval. Based on the updated design, the updated list was sent to the NVB on Tuesday 15th April and approved with some amendments by Graham Carpenter on Wednesday 16th April 2025. The STAM and BAM sheets have been updated as such.

The STAM scoresheet containing only those trees impacted is included as Appendix A.6, whilst the full list of surveyed trees is provided in the STAM scoresheet in Appendix A.5. Photos of all trees are provided in Appendix 1.3.

Table 9. Scattered trees under application (individual and clumps). Data for all trees surveyed is provided in Appendix A.5

Tree (T) or Clump (C) #	Species	No of trees	Height (m)	Diameter at 1m	Dieback	Hollows	Biodiversity score (max 15)	Comments
NT_2 (tree 2)	*Eucalyptus camaldulensis var camaldulensis*	1	20.0	92	5	1 medium	5.95	Large high value tree
NC_A (clump A)	*Eucalyptus camaldulensis var camaldulensis*	2	18.0	60	5	none	2.59	Large high value tree
NC_B (clump B)	*Acacia melanoxylon*	8	4.0	8	0	none	0.20	Patch of smaller trees
NC_C (clump C)	*Acacia melanoxylon*	5	3.0	8	10	none	0.17	Patch of very small trees
NT_3 (tree 3)	*Acacia melanoxylon*	1	3.0	20	0	none	0.26	One small tree
NT_4 (tree 4)	*Acacia melanoxylon*	1	5.0	20	5	none	0.39	One small tree
NT_5 (tree 5)	*Eucalyptus camaldulensis var camaldulensis*	1	8.0	18	0	none	0.32	Young tree
NT_6 (tree 6)	*Acacia melanoxylon*	1	3.0	11	20	none	0.12	One small tree
NT_7 (tree 7)	*Eucalyptus camaldulensis var camaldulensis*	1	12.0	53	15	none	1.38	Medium tree
NT_8 (tree 8)	*Acacia melanoxylon*	1	2.0	5	15	none	0.13	Very small tree/shrub
NT_9 (tree 9)	*Acacia melanoxylon*	1	1.0	3	50	none	0.05	Very small tree/shrub
NT_10 (tree 10)	*Acacia melanoxylon*	1	1.0	2	75	none	0.02	Very small tree/shrub
NT_11 (tree 11)	*Acacia melanoxylon*	1	1.5	5	70	none	0.03	Very small tree/shrub
NT_12 (tree 12)	*Acacia melanoxylon*	1	1.0	2	15	none	0.09	Very small tree/shrub
NT_13 (tree 13)	*Eucalyptus camaldulensis var camaldulensis*	1	12.0	70	5	none	2.18	Medium to large tree
NT_14 (tree 14)	*Acacia melanoxylon*	1	3.0	20	0	none	0.26	Very small tree/shrub
NT_15 (tree 15)	*Eucalyptus camaldulensis var camaldulensis*	1	14.0	110	10	none	3.74	Large tree
NT_16 (tree 16)	*Eucalyptus camaldulensis var camaldulensis*	1	16.0	120	5	none	4.22	Large tree
NT_44 (tree 44)	*Eucalyptus camaldulensis var camaldulensis*	1	11	90	5	none	2.40	Low spreading tree – could be planted but unclear.
NT_45 (tree 45)	*Eucalyptus camaldulensis var camaldulensis*	1	5	8	30	none	0.12	Small tree amongst planted specimens – could be planted.
Total (where applicable)		**32**						

4.2 Threatened Species assessment

In-line with the BAM and STAM methodologies (NVC 2023a, 2023c), a 5km buffer was applied to the Project Area to identify threatened species that have been recorded or are considered as potentially occurring in the Project Area herein referred to as the "study area" (Figure 10). In addition, a 20 km buffer search of the BDBSA was obtained to support investigations given the high number of threatened species in the vicinity (Figure 11).

The vegetation under application predominantly comprises small to medium trees with occasional larger specimens in a locally heavily cleared area in addition to small patches of degraded grassland and one small area of shrubland. Given the broadscale clearance and disturbance in the region where the Project Area is situated, and location adjacent a major highway, the environment is not expected to provide any core habitat for threatened species but may provide occasional habitat, mainly for roosting. The vegetation could also provide temporary, stepping-stone habitat for more mobile species. Better quality habitat occurs in the nearby vegetation HA's and CP's, in BAM C1 (not impacted) and in larger high value trees in the survey area (generally not impacted).

4.2.1 EPBC Act Listed Species

The 5 km PMST output for the footprint identified 22 EPBC Act listed threatened fauna species that could potentially occur including five listed as Migratory under the EPBC Act (excluding fish) including (Table 10):

- 17 birds (including five Migratory species)
- Three mammals - Southern Bent-wing Bat *(Miniopterus orianae,* AUS:CE, SA:E*),* Southern Brown Bandicoot *(Isoodon obesulus obesulus,* AUS:EN, V*)* and Grey-headed Flying-Fox *(Pteropus poliocephalus,* AUS:VU, SA:V*)*
- One reptile - Striped Legless Lizard *(Delma impar,* AUS:VU, SA: E*)*
- One amphibian - Growling Grass-frog *(Litoria raniformis,* (AUS:VU, SA:V*)*

An additional four species were identified as Migratory but not threatened under the EPBC Act (Table 10).

Of the species identified, four species (or species habitat) are predicted as known to occur in the PMST search; South-eastern Red-tailed Black Cockatoo; Diamond Firetail, Growling Grass Frog and Striped Legless Lizard. Based on 1km searches Diamond Firetail, Growling Grass Frog and Striped Legless Lizard are considered likely to occur in the PMST, whilst South-eastern Red-tailed Black Cockatoo is listed as known to occur (refer SIA Appendix D). All four species are considered unlikely to occur in the vegetation under application although Red-tailed Black Cockatoo may occasionally perch in larger trees and may have occurred in higher quality vegetation surveyed but avoided in the final impact footprint..

There were records for four EPBC Act threatened species (> 1995, 1 km reliability) within 5 km of the Project Area including one record for Red-tailed Black Cockatoo (Birdlife, 2011), two records for Hooded Robin *(Melanodryas cucullata cucullata,* EN, R*)* in nearby HA and CP, one record for Blue-winged Parrot *(Neophema chrysostoma*, AUS:VU, SA:V) in HA 848 and four records for Growling Grass Frog (most recent 2005) all around Cockatoo Lake. All four species are considered unlikely to occur in the vegetation under application. There were no records for any migratory species within 5km of the project area.

Overall, vegetation under application is not considered core habitat for the fauna of the region with better quality habitat occurring in large patches of vegetation mainly east of the Project Area.

An EPBC SIA was undertaken for six species including Striped Legless Lizard, South-eastern Red-tailed Black Cockatoo, Blue-winged Parrot, Diamond Firetail, Hooded Robin and Southern White-face given these species were highlighted the PMST output and all have records within 5 to 20 km of the Project Area and throughout the region (See complete memo as Appendix D of the EHIAR). The SIA identified that the Project is not considered to have a significant impact on any of the species assessed. The SIA does not include Growling Grass Frog which could potentially occur in Morambro Creek north of the site but for which there is currently no potential habitat being impacted. However, should the design alter to include any impact to the creek, potential impacts on this species should be further considered. Further information on the six species assessed in the SIA is provided below and is included in the EHIAR.

Blue-winged Parrot *(Neophema chrystostoma)*

Nationally listed as Vulnerable and listed as Vulnerable for SA, the Blue-winged Parrot inhabits a range of habitats from coastal, sub-coastal and inland areas, right through to semi-arid zones (Birds in Backyards 2025, DCCEEW 2021). The species feeds in grasslands, weed areas, saltmarsh, nests in tree hollows, coastal and subcoastal eucalypt forest and woodland. Although the

species does utilises grassland for feeding, it is considered unlikely to utilise the small and highly degraded grassland in the Project Area (pers. comm. G. Carpenter, NVB), particularly on a busy highway. Similarly based on the likelihood assessment and advice from G. Carpenter, the species is considered unlikely to utilise trees along the Riddoch Highway. The species is excluded from BAM and STAM scoresheets.

Diamond Firetail *(Staggonopleura guttata)*

Nationally listed as Vulnerable and listed as Vulnerable for SA, Diamond Firetail occurs in grassy Eucalypt woodlands, open forest, mallee, natural temperate grassland, and in secondary grassland derived from other communities. The species is often found in riparian areas (rivers and creeks), and sometimes in lightly wooded farmland (DCCEEW 2023a). The species is also listed as utilising scattered trees for perching and nesting (NVC 2023c). There are no records for the species within 5km but there are two recent Birdlife records at 6 and 7 km from the Project Area along Morambo Creek which runs just north of the Project Impact Area (north of the Naracoorte Highway). However, given the sparse vegetation under application located on a busy highway and based on advice from G. Carpenter, the species is considered unlikely to utilise the vegetation under application and is excluded from BAM and STAM scoresheets.

Hooded Robin *(Melanodryas cucullata cucullata)*

Nationally listed as Endangered and listed as Rare for SA, Hooded Robins prefer dry Eucalypt and Acacia woodlands and shrublands with an open understorey, some grassy areas and a complex ground layer (DCCEEW 2023c). There are two records for the species within 5km but both are in larger patches (HA 858 and Grass-tree CP). The species may be a very occasional visitor with large areas of bushland nearby, but vegetation is not considered to provide core habitat as a complex ground layer is absent and the vegetation is located on a busy highway. Overall the species is considered unlikely to occur and is excluded from BAM and STAM scoresheets.

Southern Whiteface *(Aphelocephala leucopsis)*

Nationally listed as Vulnerable Southern Whiteface occurs in a wide range of open woodlands and shrublands where there is an understory of grasses or shrubs, or both (DCCEEW 2023b). Habitat is usually dominated by Acacias or Eucalypts on ranges, foothills, lowland, and plains (DCCEEW 2023b). There are no records for the species within 5km but there is one recent record (2000) approximately 6km to the south-east in Grasstree CP (Birdlife SA database search 2025) prior to the species being listed in 2023. In addition, there are two historical records (1982) 15km to the northwest in Talapar CP (BDBSA, Naturemaps). The species is also listed as utilising scattered trees for perching and nesting hollows (NVC 2020c) but records in the region appear more associated with larger patches of bushland. The species is generally considered to utilise taller trees but may also utilise smaller trees and shrubs. However, based on scattered nature of vegetation located on a busy highway and advice from G. Carpenter (DEW NVB), this species is considered unlikely to utilise the scattered vegetation under application and is excluded from BAM and STAM scoresheets.

South-eastern Red-tailed Black Cockatoo *(Calyptorhynchus banksii graptogyne)*

Nationally listed as Critically Endangered and listed as Endangered for SA, the South-eastern Red-tailed Black Cockatoo occurs from south east SA to western Victoria (Commonwealth of Australia 2006). The species is widespread, but rare throughout the range. Core habitat includes Desert Stringybark (*Eucalyptus arenacea*) and Brown Stringybark (*E. baxteri*) woodlands in the Glenelg, Wimmera and Naracoorte Plains and adjacent woodlands of River Red Gum, Yellow Gum (*E. leucoxylon*) and Buloke (*Allocasuarina luehmannii*). Habitat is defined as feeding trees (Stringybark and Buloke), nesting trees (large old Eucalypt trees (*Eucalyptus camaldulensis, E. baxteri, E. arenacea, E. viminalis, E. leucoxylon and E. fasciculosa*), with nesting restricted to available large hollows(Commonwealth of Australia 2006). There was one record of the species 1.4 km south-east of the Project Area in 2011 in a small patch of River Red Gum Woodland on private land.

There were no feeding trees observed within the Project Area but taller trees may provide very occasional roosting habitat. The species prefers trees 26m or taller (none of which occur in the Project Area) but the occasional use of smaller trees for temporary perching (e.g. use as stepping stones') cannot be ruled out. Tree 36 was 20m (e.g. not the optimal size of 26m or greater), but is considered to contain a hollow of suitable nesting size for Red-tailed Black Cockatoo and is noted as occurring less than 300m from a 93ha block of vegetation containing food trees for the species, however clearance of tree 36 has been avoided through batter re-design. It was observed by Hill and Burnard (2001) that over 95% of the species known nest sites are within 2km of >5ha blocks of Stringybark which provides supportive evidence that tall trees with large hollows in the Project Area may provide potential habitat. Furthermore, older and larger trees also have more potential to form large hollows suitable for nesting in the future. However, the significant majority of larger trees in the survey area have been avoided and there is no clearance of trees with large hollows. In addition, it is considered less likely the species would occur given the Project area location on a busy highway (pers. comm. G. Carpenter). Overall, the species is considered unlikely to occur in the vegetation proposed for clearance and has been excluded from those BAM and STAM scoresheets. However, the species is included in BAM C1 which is not being impacted.

Striped Legless Lizard *(Delma impar)*

Nationally listed as Vulnerable and listed as Endangered for SA, Striped Legless Lizard occurs in native and non-native grasslands, including roadside vegetation areas. A Naracoorte population listed as important occurs 6-9 km south of the proposed Project Area. The species range extends from south east SA throughout Victoria to eastern New South Wales. Whilst they can occur in grasslands that are disturbed and undisturbed, particularly along roadsides, the species cannot persist if adjacent lands do not allow the populations to spread (M. Hutchinson pers. Comm, SA Museum). This may include areas with

cropping or grazing such as those adjacent the Project Area. There are no records of this species recorded in the Study Area, but the nearest is relatively close being 5.7 km to the south.

The species is known to require larger more connected grassland which is not representative of vegetation on site which comprised small and degraded grasslands adjacent cropping and grazing land with exotic species. Grassland in the Project Area is degraded and of very limited extent and surrounded by cropping and/or grazing land. Overall, it is considered relatively unlikely that the species would occur (pers. comm. G. Carpenter) and considered unlikely for the Project to pose a Significant Impact.

Growling Grass Frog *(Litoria raniformis)*

Nationally listed as Vulnerable and listed as Vulnerable for SA, Growling Grass Frog occurs in habitat within or on the edges of permanent water, such as slow-flowing streams, lagoons and lakes (Clemann & Gillespie, 2012), but also farm dams, irrigation channels, irrigated rice crops and disused quarries. Waterbodies nearby (Hacks Lagoon, Bool's Lagoon) would provide core habitat for this species. There are four records within 5km including three more recent records from 1995, 2003 and 2005 in a swamp 4.3 km to the west. It is considered that Morambo Creek in the northern extent of the Project Area (north of the Naracoorte Hwy intersection) may provide potential habitat. However, the creek is outside the impact area and was not specifically assessed (it was partly combined in the broader woodland). However, it was noted to contain localised wetland vegetation and contained water during the survey, conditions considered appropriate to support the species. There are no impacts to vegetation within 145m of the creek either side of the road and there is no impact expected to creekline habitat. As such, the species is considered unlikely to occur and it has been excluded from all BAM and STAM datasheets. However, should the potential impact area of the Project alter to encroach on the creekline, further consideration will be required regarding potential impact to this species.

Threatened flora

The PMST search identified four flora species as potentially occurring. All four species are considered unlikely to occur. There were no EPBC Act listed threatened flora species recorded during the survey or within 5km of the Project Area.

4.2.2 NPW Act listed Species

The BDBSA search identified six species listed under the NPW Act (not including EPBC Act listed species) as recorded within 5km including Australian Darter *(Anhinga novaehollandiae novaehollandiae*, SA:R*)*, Chestnut-rumped Heathwren *(Hylacola pyrrhopygia*, SA:V*),* Black-chinned Honeyeater *(Melithreptus gularis*, SA:V*),* Jacky Winter *(Microeca fascinans*, SA:R*)*, Yellow-tailed Black Cockatoo *(Zanda funerea whiteae*, SA:V*)* and Common Brush-tailed Possum *(Trichosurus vulpecula,* SA:R*).* Of these, the Birdlife Australia search identified records for Black-chinned Honeyeater, and Yellow-tailed Black Cockatoo.

In addition, the Birdlife Australia search identified a further eight species with records within 5km including Musk Duck *(Biziura lobata menziesi*, SA:R*),* Black Falcon *(Falco subniger*, SA:R*)*, Little Eagle *(Hieraaetus morphnoides*, SA:V*)*, Restless Flycatcher *(Myiagra inquieta*, SA:R*)*, Blue-billed Duck *(Oxyura australis*, SA:R*)*, Glossy Ibis *(Plegadis falcinellus*, SA:R*)* Australian Shoveler *(Spatula rhynchotis*, SA:R*)* and Freckled Duck *(Stictonetta naevosa*, SA:V*).* Core habitats for these species are not considered present within the footprint and will not be impacted by the Project. As indicated in the LoO assessment (Table 10) only Black-chinned Honeyeater, Yellow-tailed Black Cockatoo (also heard during the survey), Black Falcon and Common Brush-tailed Possum are considered as possibly occurring in higher value vegetation under application (refer tiered approach in Section 3 and Sections 4.1.2, 4.1.3). Two additional species species Blue-faced Honeyeater *(Entomyzon cyanotis cyanotis*, SA:R*)* was identified as utilising scattered trees (ALA 2025, STAM manual NVC 2023c, pers. comm. G. Carpenter) and Barking Owl *(Ninox connivens*, SA:R*)* was identified as occasionally utilising vegetation in the Project Area, particularly near Morambo Creek (although most has been avoided). These species have been included in STAM scoresheets for some tree height classes as agreed with G. Carpenter. A broader range of species were included for BAM C1 which is not currently impacted.

There were no NPW listed threatened flora species identified during the survey, and the BDBSA output did not include records for any species within 5km of the Project Area.

A LoO assessment for species identified in the PMST and in BDBSA and Birdlife outputs is provided in Table 10.

Table 10. Species observed on site, or recorded within 5km of the application area since 1995, considered 'known to occur' based on the PMST output for which or the vegetation is considered to provide suitable habitat

Species (common name)	EPBC Act	NP&W Act	Data source	Date of last record within 5km	Species known habitat preferences	Likelihood of use for habitat – Comments	Included in Scattered Tree Scoresheet
Birds/Aves							
Actitis hypoleucos (common Sandpiper)	Mi W	R	3	None	PMST suggests species is likely to occur. The Common Sandpiper is a migratory shorebird that occurs in a variety of habitats, including a wide range of coastal and inland wetlands with varying levels of salinity. It is mostly found around muddy margins or rocky shores and rarely on intertidal mudflats. The species also occurs on steep sided sewage ponds, dams, muddy habitats, and mangrove-lined inlets. Has a widespread distribution across Australia, in late July to March (Simpson and Day 2010). No records within 5km. Records are scattered in coastal areas, the nearest to the Project Area being Tilley Swamp and near Kingston	**Unlikely** Wetland species, no nearby records, unlikely to occur	**No**
Aphelocephala leucopsis (Southern Whiteface)	EN	-	1,2, 3, 6	None	PMST suggests species is likely to occur. Southern Whiteface occur in wide range of open woodlands and shrublands where there is an understory of grasses or shrubs, or both. Habitat is usually dominated by Acacias or Eucalypts on ranges, foothills, lowland, and plains (DCCEEW 2023c). The species is considered sedentary except during drought when individuals have been recorded travelling for resources (DCCEEW 2023c). The species is listed as utilising scattered trees for perching and nesting hollows (NVC 2020c). However, the species does not require hollows for nesting as they build large bulky domed nests of grass, bark and roots, usually in a hollow or crevice, although sometimes in low bushes (Higgins & Peter 2002 in DCCEEW 2023c)). The species is widespread through SA although records appear sparser in the LC LMR and clustered predominantly around Ngarkat CP and Bordertown in Geegela CP and Bangham CP (Naturemaps SA 2025). There are no records within 5km of the Project Area but there is one recent record approximately 6km to the south east in Grasstree CP from 2000 (Birdlife SA) prior to the species being listed in 2023. In addition there are two historical records (1982) 15km to the northwest in Talapar CP (BDBSA, Naturemaps). It appears the species is more associated with larger native patches (particularly CP) in the LC LMR based on records distribution but there may be some bias in increased survey effort in reserves. Overall, it is considered vegetation impacted in the Project Area does not provide core habitat for the species and it is unlikely to occur.	**Unlikely** Considered unlikely to utilise scattered roadside vegetation on main road adjacent to paddocks. Considered Possible for BAM C1 which is not impacted based on the current design.	**No**
Apus pacificus (Fork-tailed Swift	Mi	-	3	None	Classified as likely to occur in PMST search.	**Possible – fly over** Not included in BAM	**No**

Species (common name)	EPBC Act	NP&W Act	Data source	Date of last record within 5km	Species known habitat preferences	Likelihood of use for habitat – Comments	Included in Scattered Tree Scoresheet
					Aerial species, may fly over but would not utilise habitat in the Project Area. No records within 5km.		
Anhinga novaehollandiae novaehollandiae (Australian Darter)	-	R	1, 2	2004	Species mainly found in still, shallow inland waters but also in slow flowing rivers, swamps and reservoirs. They are less often found in marine habitats (Birds SA 2025). Vegetation impacted in the Project Area is not considered suitable for the species based on the current design. However, Morambro Creek (adjacent BAM C1) could provide habitat but this vegetation is not impacted. Two BDBSA records (2002 and 2004) 4.85 km west of the Project Area near Cockatoo Lake	**Unlikely** Wetland bird Only included in BAM C1 which is not impacted based on the current design.	**No**
Botaurus poiciloptilus (Australasian Bittern)	EN	E	3, 6	None	PMST describes as likely to occur. Australasian Bittern are widespread, but uncommon over south-eastern Australia. Shy elusive species that favours permanent freshwater wetlands with tall, dense vegetation, particularly Bullrush *(Typha domingensis)* and Spikerush *(Eleocharis* spp.*)*. Hides during the day amongst dense reeds or rushes and feeds mainly at night on frogs, fish, yabbies, spiders, insects, and snails. No records within 5km. Nearest records at Bool Lagoon and Tilley Swamp.	**Unlikely** Wetland bird with no records nearby, very rare.	**No**
Biziura lobata menziesi (Musk Duck)	-	R	2	2021	Wetlands (inland), Bogs, Marshes, Swamps, Fens, Peatlands, major; Wetlands (inland), Permanent Freshwater Lakes (over 8ha) (Birdlife 2023). Habitat in the Project Area is largely not suitable for the species except for BAM C10 on a creek which is not impacted based on the current design. Nine records 2004- 2019 (Birdlife). All records 4.9 km west from the Project Area near Cockatoo Lake	**Unlikely** Wetland bird, habitat not suitable Only included in BAM C1 which is not impacted based by the current design.	**No**
Calidris acuminata (Sharp-tailed Sandpiper)	Mi W, VU	-	1, 3	None	PMST describes as likely to occur. Sharp-tailed Sandpiper, a migratory shorebird was recently listed as threatened (VU) in Jan 2024. The species occurs in coastal and inland areas but prefers non-tidal fresh or brackish wetlands, damp grasslands, will also use dams, artificial habitats with water / mud edge and coastal populations will use tidal flats (Geering et al. 2007, Simpson and Day 2010, Menkhorst et al. 2019). Breeds in Siberia and migrates to New Guinea and Australia (summer). This species has a widespread distribution across Australia when present (ALA 2024). No records within 5km, but one recent BDBSA record (2003) 13.5km west between Fairview CP and Clay Lake (Naturemaps 2025).	**Unlikely** Wetland bird, habitat not suitable	**No**
Calidris ferruginea (Curlew Sandpiper)	Mi W, CE	E	3, 6	None	PMST describes as may occur. Curlew Sandpiper is a migratory shorebird which prefers coastal or inland mudflats but will also visit artificial dams and inland water habitats,	**Unlikely** Wetland bird, habitat not suitable and very rare.	**No**

Species (common name)	EPBC Act	NP&W Act	Data source	Date of last record within 5km	Species known habitat preferences	Likelihood of use for habitat – Comments	Included in Scattered Tree Scoresheet
					freshwater and brackish wetlands (Simpson and Day 2010, Menkhorst et al. 2019). A common summer migrant widespread across Australia, in spring and summer, but does not breed in Australia (Geering et al. 2007, ALA 2024). Juveniles remain in Australia for first Austral Winter (2 years old) (Menkhorst et al. 2019). It is most common in the far south-east and north-west of Australia. It is found on intertidal mudflats of estuaries, lagoons, mangroves, as well as beaches, rocky shores and around lakes, dams, and floodwaters. No records within 5km nor within 20km. Nearest records are at Bool Lagoon and Paranki Lagoon CP south of the Coorong (Naturemaps 2025).		
Calidris melanotos (Pectoral Sandpiper)	Mi W	R	3, 6	None	PMST describes as may occur Pectoral Sandpiper is a migratory shorebird that occurs in freshwater or brackish wetlands, grassy or lightly vegetated coastal and inland swamps (Geering et al. 2008). Is widespread across south-east Australia (ALA 2025). Usually occurs solitarily or in small flocks, range does not include inland SA (Geering et al. 2007; Menkhorst et al. 2019). No records within 5km. Nearest records at Bool Lagoon and around the coast (Naturemaps 2025).	**Unlikely** Wetland bird, habitat not suitable, outside likely range	**No**
Callocephalon fimbriatum (Gang-gang Cockatoo)	EN	-	3, 6	None	PMST describes as may occur In summer months, Gang-gang Cockatoos generally occur in tall mountain forests and woodlands - particularly within mature, wet sclerophyll forests, dominated by eucalypts with dense, shrubby acacia and banksia understories, often in secluded valleys (Higgins 1999 in DAWE 2022). No records within 5km. Nearest records clustered around Mount Gambier (Naturemaps 2025).	**Unlikely** Habitat unsuitable, no nearby records, outside known range	**No**
Calyptorhynchus banksii graptogyne (South-eastern Red-tailed Black-cockatoo)	EN	E	1, 2, 3	2011	PMST suggests known to occur, breeding known to occur Endemic to the south-east of South Australia, this species occurs in a single population in a small area of south-eastern Australia delimited by Keith to Lucindale to Mt Gambier in South Australia (west of the Project Area) and also in Victoria. Restricted to Desert Stringybark (*Eucalyptus arenacea)* and Brown Stringybark (*E. baxteri)* woodlands occurring on deep aeolian sands in the Glenelg, Wimmera and Naracoorte Plains, and adjacent woodlands of River Red Gum(*E. camaldulensis)*, Blue Gum (*E. leucoxylon)* and Buloke (*Allocasuarina luehmannii)* (Hill and Burnard 2001, Koch 2003) woodlands. The species requires very old, large hollow eucalypts for nesting (Joseph et al. 1991) with nests being recorded in *Eucalyptus camaldulensis, E. baxteri, E. arenacea, E. viminalis, E. leucoxylon* and *E. fasciculosa*. Species has also been recorded roosting in clumps of tall eucalypts. Whilst River Red Gums may provide suitable perching habitat, core nesting and feeding habitat is	**Unlikely** Core feeding or nesting habitat not impacted in the vegetation proposed for clearance. Trees present are approx. or less than 75 years old with small to medium hollows that do not provide suitable nesting habitat. Trees with suitable nesting habitat have been avoided. Trees may provide occasional perching habitat but defined as unlikely (supported by G. Carpenter).	**No**

Species (common name)	EPBC Act	NP&W Act	Data source	Date of last record within 5km	Species known habitat preferences	Likelihood of use for habitat – Comments	Included in Scattered Tree Scoresheet
					not present within the Project footprint. Species not observed during survey. One record from 2011 located 1.5km east of the Project Area (Birdlife SA 2025). An additional 18 records within 20km of the Project Area, predominantly at Naracoorte, and large patches of native bushland including near Grass Tree CP (BDBSA). An additional 75 recent records within 20km recorded in Birdlife data predominantly around large patches of scrub to the south-east and north-east of the Project Area.		
Entomyzon cyanotis cyanotis (Blue-faced Honeyeater)	-	R	5, 7	None	Species prefers riverine forest, gardens and rainforest. Closest records for this species are known from the Naracoorte Caves region, with no verified recent records from the Study or Project Area. No records within 5km but records scattered around the Limestone Coast LMR predominantly near large patches of vegetation and including Bangham CP, near Geegela CP, Pink Hill Soak CP and east of Grass Tree CP (Naturemaps). Nearest records are within 30km. However, considered as possibly occurring in trees above 5m (pers. comm. G. Carpenter).	**Possible** Scattered River Red Gums within the study could provide occasional, suitable habitat for this species but core habitat not present. Only included in BAM C1 which is not impacted based by the current design.	**Yes** Trees above 5m
Falco hyloleucos (Grey falcon)	VU	R	3, 6	No records	Classified as likely to occur in PMST search. This species favours lightly timbered and un-timbered lowland plains that are crossed by tree-lined watercourses but frequents other habitats including grassland and sand dune habitats (J. Schoenjah in litt. 2016 and Schoenjahn in litt. 2016 in Birdlife 2023). No records within 5km and no nearby records. Nearest is at Ewens Ponds CP. The majority of records are in the vicinity of the River Murray (Naturemaps).	**Unlikely** Very rare, no records, no suitable habitat Not included in BAM	**No**
Falco peregrinus macropus (Peregrine Falcon)	-	R	6, 7	None	Widespread across Australia but generally uncommon to rare, this species builds no nests but uses ledges of cliff faces or sometimes large, very open tree hollows. Suitable nesting habitat is not present within the Study Area, which may provide general (not core) feeding habitat. No recent verified records exist for this species within the Study or Project Area. However, records are dotted around the LC LMR including at Fairview CP (13.5km), Bangham CP, Padthaway CP and around Bool Lagoon and the Naracoorte Caves (Naturemaps 2025).	**Unlikely** Core habitat not present, and unlikely to utilise degraded roadside vegetation Considered Possible for BAM C1 which is not impacted based on the current design.	No
Falco subniger (Black Falcon)	-	R	2	2006	Preferred residential habitat includes shrubland, including subtropical/tropical dry. Wetlands (inland), bogs, marshes, swamps, peatlands are also considered suitable (Birdlife 2023). Can use scattered trees for perching and nesting (NVC 2020c). One Birdlife record from 2006, Cockatoo Lake 4.6 km from Project Area	**Possible** Only included in BAM C1 which is not impacted based on the current design.	**Yes** Trees 10m or taller
Gallimago hardwickii (Lathams Snipe)	Mi VU	R	2, 3, 6	None	PMST lists as likely to occur in PMST search. Within Australia, Latham's snipe are generally widely dispersed in low numbers, but occasionally occur in larger groups. They usually inhabit open, freshwater wetlands with low, dense vegetation (DCCEEW 2024). However,	**Unlikely** No suitable habitat except in C1 which is not impacted by the Project.	**No**

Species (common name)	EPBC Act	NP&W Act	Data source	Date of last record within 5km	Species known habitat preferences	Likelihood of use for habitat – Comments	Included in Scattered Tree Scoresheet
					they can also occur in habitat with saline or brackish water, in modified or artificial wetlands, and in areas located close to humans or human activity (Frith et al. 1977; Naarding 1983 in DCCEEW 2024b). No nearby or recent records. One historical (1981) BDBSA record in Talapar CP. Also multiple records around Bool Lagoon, Hacks Lagoon, Naracoorte Caves, Fairview CP and Big Heath CP.		
Grantiella picta (Painted Honeyeater)	VU	R	3, 5, 6,	None	Classified as likely to occur in PMST search. The species lives in dry forests and woodlands dominated by Acacias. No records in the Limestone Coast LMR. Nearest in the Riverland and on the Fleurieu Peninsula (but very few records in SA) (Naturemaps 2025).	**Unlikely** Very rare, habitat not suitable. Not included in BAM.	**No**
Hieraatus morphnoides (Little Eagle)	-	V	2	2017	Occupies open eucalypt forest, woodland or open woodland. Sheoak or Acacia woodlands and riparian woodlands (NSW Office of Environment and Heritage 2025). May use taller scattered trees for perching. One Birdlife record from 2017, 4.6 km west of Project Area Cockatoo Lake. Also records at Bool Lagoon, Bangham CP, and Naracoorte Caves	**Unlikely** Not likely to use scattered roadside vegetation on a main road adjacent paddocks (pers. comm. G. Carpenter).	**No**
Hirundapus caudacutus (White-throated Needletail)	Mi T, VU	V	3, 6	None	Classified as may occur in PMST search. The species does not breed in Australia (TSSC 2019). In Australia, the White-throated Needletail is mostly aerial, from heights of less than 1 m up to more than 1000 m above the ground (Coventry 1989; Tarburton 1993 in TSSC 2019). Although they occur over most types of habitat, they are recorded most often above wooded areas, including open forest and rainforest, and may also fly below the canopy between trees or in clearings (Higgins 1999 in TSSC 2019). When flying above farmland, they are more often recorded above partly cleared pasture, plantations or remnant vegetation at the edge of paddocks (Emison & Porter 1978; Friend 1982; Tarburton 1993 in TSSC 2019). The species roosts in trees amongst dense foliage in the canopy or in hollows (Corben et al. 1982; Day 1993; Quested 1982; Tarburton 1993, 2015 in TSSC 2019). No records within 5km but records scattered throughout the Limestone Coast LMR, particularly in larger patches of native vegetation (Naturemaps 2025).	**Unlikely** Predominantly aerial species, considered to possibly occasionally fly-over given the numerous records in the Limestone Coast but highly unlikely to roost in trees in the Project Area	**No**
Hylacola pyrrhopygius pyrrhopygius (Chestnut-rumped Heathwren)	-	V	1	2005 (1-10km reliability)	The Chestnut-rumped Heathwren (Mount Lofty Ranges) often occurs in dry-heathland habitat that is also inhabited by the Southern Emu-wren. One BDBSA record from 2005 with low spatial reliability (1-10km).	**Unlikely** Habitat unsuitable Not included in BAM	**No**
Lathamus discolor (Swift parrot)	CE	E	3, 5	None	Classified as may occur in PMST search. Swift Parrots are found in dry sclerophyll forests and woodlands, suburban parks and gardens, and flowering fruit trees (Birdlife 2023). Swift Parrots occur in eucalypt forests and woodlands, nesting in tree hollows and feeding in the outer canopy of flowering eucalypts, eating mainly nectar, as	**Unlikely** Very rare, however some records in the broader region in the vicinity of the Project Area (30-	**No**

Species (common name)	EPBC Act	NP&W Act	Data source	Date of last record within 5km	Species known habitat preferences	Likelihood of use for habitat – Comments	Included in Scattered Tree Scoresheet
					well as some insects (psyllids and lerps), seeds and flowers (DCCEEW 2025). The species is listed as using scattered trees for perching and feeding in the Scattered Tree Assessment Manual (NVC 2023c). Very rare. However historical and recent records are centred around the LC LMR including at Bangham CP, Big Heath CP. The nearest records are two historical records (1982) at Padthawa CP within 20km to the north and one recent record (2006) at the Naracoorte Caves CP within 30km) (Naturemaps 2025).	50km). Mostly associated with larger bushland patches.	
Leipoa ocellata (Malleefowl)	VU	V	3	None	Classified as likely to occur in PMST search. Occurs in mallee vegetation. No nearby records and no Mallee habitat in Project Area	**Unlikely** Habitat not suitable, mallee not present and species requires more continuous vegetation. Not included in BAM	**No**
Melanodryas cucullata cucullata (Hooded Robin (YP, MN, AP, MLR, MM, SE)).	EN	R	1, 2	1997 (BDBSA) 2000 (Birdlife)	Classified as likely to occur in the PMST search. Species prefers lightly timbered habitats, woodlands and shrublands with wattles. Hooded Robins prefer dry eucalypt and acacia woodlands and shrublands with an open understorey, some grassy areas and a complex ground layer. They avoid woodlands with tall trees or dense tree cover but sometimes occur in tall, dense heaths with scattered open areas (DCCEEW 2023). Standing live or dead trees are considered essential for nesting, roosting and foraging (DCCEEW 2023) One BDBSA Record from 1997 (1-50m reliability) observed in HA 858 within 3.6km to the south-east of the Project Area. Record observed in eucalyptus mid open woodland with wattles and *Astroloma* spp. (mixed) shrub (Naturemaps 2025) One Birdlife record recorded in 2000 with good spatial reliability although location of record is located 4.49km south-east of the Project Area in a paddock whereas in the data the location code is described as Grass Tree CP which is 3.19km to the east and 6.15km from the Project Area. Grass Tree CP supports *Eucalyptus arenacea/baxteri* mid woodland over *Leptospermum myrsinoides, Banksia marginata, Xanthorrhoea caespitosa* shrubs over *Pteridium esculentum, Astroloma conostephioides ferns* (Naturemaps). The species is described here as *M. cucullata* (e.g. not to subspecies level) however based on the location it is assumed the bird was the Nationally threatened species. Regardless, it is clear that the species occurs in nearby areas.	**Unlikely** Potential occasional visitor with large areas of bushland nearby, but not core habitat as complex ground layer is absent. Overall species is considered unlikely to occur.	**No**
Melithreptus gularis gularis (Black-chinned Honeyeater)	-	V	1, 2, 6	2004 (BDBSA) 2004 (Birdlife)	Species prefers mostly upper levels of dry 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*) (NSW Government 2025, Australian	**Possible** Use of scattered trees for feeding and perching.	**Yes** Trees above 10m

Species (common name)	EPBC Act	NP&W Act	Data source	Date of last record within 5km	Species known habitat preferences	Likelihood of use for habitat – Comments	Included in Scattered Tree Scoresheet
					Museum 2025). Listed in Scattered tree Manual as utilising scattered trees for perching and feeding (NVC 2023c). One record from 2004 (BDBSA), 3.5 km to the south east in HA 805. One Birdlife record 4.6km to the west at Cockatoo Dam. Some uncertainty about taxonomy and sub-species not provided. It is understood this is likely to be the subspecies gularis rated Vulnerable for SA.	Not included for any BAM except C12 (not impacted)	
Microeca fascinans fascinans (Jacky Winter (SE))	-	R	1	1997	Prefers lightly timbered woodlands with open shrub layer, remnants near farmlands, roadside. Jacky Winters inhabit open woodland habitats with a sparse shrub layer, some bare soil and fallen timber, and often occur at the margins of woodlands and farmland. Healthy native patches provide ample food, however, they are generally absent from small, isolated patches of trees (Birds Australia 2025). Vegetation in the Project Area is probably less favourable given its isolated nature but Jacky Winter may be occasional visitors. They are listed as utilising scattered trees for Perching in the Scattered Tree Manual (NVC 2023c). Two BDBSA records 3.6km away in HA 858. Multiple records (1997-2003) approximately 13km to the south-east in *Eucalyptus arenacea/baxteri* mid woodland over *Leptospermum myrsinoides, Banksia marginata, Xanthorrhoea caespitosa* shrubs over *Pteridium esculentum, Astroloma conostephioides* ferns (Naturemaps 2025).	**Unlikely** Not likely to use scattered roadside vegetation on a main road adjacent paddocks (pers. comm. G. Carpenter).	**No**
Motacilla flava (Yellow Wagtail)	Mi (T)		2	None	PMST describes as May occur This species occupies a range of damp or wet habitats with low vegetation, from damp meadows, marshes, waterside pastures, sewage farms and bogs to damp steppe and grassy tundra (Birdlife 2025). In the north of its range it is also found in large forest clearings (Birdlife 2025). No records, unlikely to occur	**Unlikely**	**No**
Myiagra cyanoleuca (Satin Flycatcher)	Mi (T)	E	5	None	Not identified in 2025 PMST search but retained as species was classified as likely to occur in previous (2023) PMST search. Satin Flycatchers mainly inhabit eucalypt forests, often near wetlands or watercourses. (DCCEEW 2023). No records within 5km. Nearest records at Naracoorte Caves CP and near Bool Lagoon.	**Unlikely** Occurs near watercourses but no nearby records. Not included in BAM.	**No**
Myiagra inquieta (Restless Flycatcher)	-	R	2	2019	The Restless Flycatcher is found in open forests and woodlands and is frequently seen in farmland. Nine Birdlife records 2006-2014, all at Cockatoo Lake 4.9km to the west.	**Unlikely** Habitat not suitable. However, may occur near waterway so included for BAM C1 which is not impacted	**No**
Neophema chrysostoma (Blue-winged Parrot)	VU	V	1, 2, 3	2024	Described as likely to occur in PMST. The Blue-winged Parrot inhabits a range of habitats from coastal, sub-coastal and inland areas, right through to semi-arid zones (Birds in	**Unlikely** Not likely to use scattered roadside vegetation on a main	**No**

Species (common name)	EPBC Act	NP&W Act	Data source	Date of last record within 5km	Species known habitat preferences	Likelihood of use for habitat – Comments	Included in Scattered Tree Scoresheet
					Backyards 2025, DCCEEW 2023). Feeds in grasslands, weed areas, saltmarsh, nests in tree hollows, coastal and subcoastal eucalypt forest and woodland. The species can also be seen in altered environments such as airfields, golf-courses and paddocks. Pairs or small parties of Blue-winged Parrots forage mainly near or on the ground for seeds of a wide range of native and introduced grasses, herbs and shrubs (Higgins 1999 in DCCEEW 2023). The species utilises scattered trees for perching and nesting hollows (NVC 2023c) One BDBSA record from 1997. Observed in HA 858. Record observed in eucalyptus mid-open woodland/Acacia shrub/ *Astroloma* spp. (mixed) shrub (Naturemaps SA 2025). Three Birdlife records 2021 x 2 and 2024 at Cockatoo Lake.	road adjacent paddocks (pers. comm. G. Carpenter).	
Ninox connivens (Barking Owl)	-	R	6	None	Less common in the south-west and southeast of Australia, this species is typically found in open country with stands of trees, along tree-line watercourses and in paperbark swamps. Closest record is from Big Heath CP west of the Study and Project Area. Whilst River Red Gums may provide suitable perching habitat, core nesting and feeding habitat is not within the Project Area. Species not observed or heard during survey (noting nocturnal surveys were not undertaken).	**Possible** Core habitat not present, but may use River Red Gums (not included in BAM scoresheets). Included for BAM C1 but this patch is not impacted.	**No**
Oxyura australis (Blue-billed Duck)	-	R	2	2017	Temperate wetlands. The Blue-billed Duck is almost wholly aquatic, and is seldom seen on land. Non-breeding flocks, often with several hundred individuals, congregate on large, deep open freshwater dams and lakes in autumn. The daylight hours are spent alone in small, concealed bays within vegetation or communally in large, exposed rafts far from the shore (Australian Museum 2025b). Two Birdlife records at Cockatoo Dam from 2017.	**Unlikely** Habitat not suitable Included in BAM C1 but this patch is not impacted.	**No**
Rostratula australis (Australian Painted Snipe)	EN	E	5	None	Classified as likely to occur in PMST search. The Australian Painted Snipe generally inhabits shallow terrestrial freshwater (DCCEEW 2023). No records nearby. Nearest records at Fairview CP, Bool Lagoon, Hacks Lagoon (Naturemaps 2025).	**Unlikely** Wetland species, very rare Not included in BAM	**No**
Plegadis falcinellus (Glossy Ibis)	-	R	2	2006	The Glossy Ibis' preferred habitat for foraging and breeding are fresh water marshes at the edges of lakes and rivers, lagoons, flood-plains, wet meadows, swamps, reservoirs, sewage ponds, rice-fields and cultivated areas under irrigation (DCCEEW 2023). Two records, both from 2006, both near Cockatoo Lake.	**Unlikely** Wetland species, habitat not suitable	**No**
Spatula rhynchotis (Australian Shoveler)	-	R	2	2014	Wetland species. Three records 2 x 2014, 1 x 2017 all near Cockatoo Lake	**Unlikely** Wetland species, habitat not suitable	**No**

Species (common name)	EPBC Act	NP&W Act	Data source	Date of last record within 5km	Species known habitat preferences	Likelihood of use for habitat – Comments	Included in Scattered Tree Scoresheet
Staggonopleura guttata (Diamond Firetail)	VU	R	3	None	PMST suggests species is known to occur Diamond Firetail occurs in grassy eucalypt woodlands, 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 (DCCEEW 2023b). Listed as utilising scattered trees for perching and nesting. Diamond Firetails usually nest within 4.5m of the ground, although some nests have been recorded at heights above 20m (Cooney et al. 2005). No records within 5km. Two recent Birdlife records within 6.3 (2001) and 7.1 km (2015) north east of the Project Area occurring on the same drainage line that flows through the north of the Project Area in mixed *E. camaldulensis / E. leucoxylon* Woodlands in littoral zone. However this drainage line has been avoided. In addition, one BDBSA record 20 km (2015) to the east in large patch described as *Eucalyptus arenacea/baxteri* mid woodland over *Leptospermum myrsinoides, Banksia marginata, Xanthorrhoea caespitosa* shrubs over *Pteridium esculentum, Astroloma conostephioides* ferns (Naturemaps SA 2025) adjacent Geegeela CP.	**Unlikely** Not likely to use scattered roadside vegetation a main road adjacent paddocks (pers. comm. G. Carpenter).	**No**
Stictonetta naevosa (Freckled Duck)	-	V	2	2023	Prefer permanent freshwater swamps and creeks with heavy growth of Cumbungi, Lignum or Tea-tree. Three Birdlife records 2023, 2014 and unknown. All near Cockatoo Lake. Records also at Fairview CP and Bool Lagoon.	**Unlikely** Wetland species, habitat not suitable. Included for BAM C1 which is not impacted based on the current design.	**No**
Tringa nebularia (Common Greenshank)	Mi W, EN7	-	1, 3	None	PMST suggests may occur Common Greenshank, a migratory shorebird, occurs in intertidal mudflats, fresh and saltwater wetlands along the coast or inland (Geering et al. 2007). Also occupies artificial habitats. Has a widespread distribution throughout Australia, in summer (Geering et al. 2007, ALA 2024). In Australia from Aug (northern areas) to Oct / Nov (Menkhorst et al. 2019); does not breed in Australia. No records within 5km. Two historical records (1972) 13.5 km west between Fairview CP and Clay Lagoon (BDBSA).	**Unlikely** Wetland species unlikely to occur, very rare	**No**
Tyto novaehollandiae novaehollandiae (Australian Masked Owl)	-	E	6	No	Roosts and nests in heavy forest, hunts over open woodland and farmland (Menkhorst et al, 2017). Whilst River Red Gums may provide suitable perching habitat, core nesting and feeding habitat is not within the project area. Species not observed or heard during survey (noting nocturnal surveys were not undertaken). Only a couple of records in the Limestone Coast LMR near Mount Gambier and Naracoorte.	**Unlikely** No recent records and core habitat not present, but may use River Red Gums. Not included in BAM	**No**

Species (common name)	EPBC Act	NP&W Act	Data source	Date of last record within 5km	Species known habitat preferences	Likelihood of use for habitat – Comments	Included in Scattered Tree Scoresheet
Zanda funerea whiteae (Yellow-tailed Black Cockatoo)	-	V	1, 2, 4, 6	2014	Feeds on seeds of native (and pine) trees and shrubs including *Eucalypts, Banksias, Hakeas and Xanthorrhea* (Menkhorst et al, 2017). Whilst River Red Gums may provide suitable perching habitat, core nesting and feeding habitat is not within the project area. Three Birdlife records 2010-2014, all near Cockatoo Lake. One BDBSA record from 1993. Also heard during the 2023 survey and in 2020.	**Known** Flew over during survey. May use taller trees or planted Hakeas in BAM C1. Possible to Likely for BAM C1 which is not impacted based on the current design.	**Yes** Trees 10m or taller
Amphibians							
Litoria raniformis (Growling Grass Frog)	VU	V	1	2005	PMST suggests known to occur. Inhabits areas within or on the edges of permanent water, such as slow-flowing streams, swamps, lagoons and lakes (Clemann & Gillespie, 2012), but also farm dams, irrigation channels, irrigated rice crops and disused quarries. Waterbodies nearby (Hacks Lagoon, Bool's Lagoon) would provide core habitat for this species. There is no suitable habitat present within the project footprint. Species not observed (or heard) during survey. Four records, three since 1995 all near Cockatoo Lake. Two recent records 2003 and 2005 in addition to one record from 1995.	**Unlikely** No habitat present in the project footprint. Possible habitat in BAM C1 which is not impacted.	**No**
Mammals							
Miniopterus orianae bassanii (Southern Bent-wing Bat)	CE	E	1, 6	None	PMST suggests likely to occur. Species roosts in limestone caves. Forages above the tree line for flying insects, mainly moths. Species unlikely to use roadside trees as roosting habitat. Core habitat is located in Naracoorte Caves National Park (2km north-east of the northern edge of the NOTL). Three records in 2014, 19 km south-east of Project Area in large native patches (BDBSA) including Mullinger Swamp CP 30+ km. Multiple records near the Naracoorte Caves (Naturemaps 2025).	**Unlikely** No suitable habitat in the project footprint. Not included in BAM	**No**
Isoodon obesulus (Southern Brown Bandicoot)	EN	V	1	None	PMST suggests may occur. The Southern Brown Bandicoot lives in dense scrubby habitats or areas with dense, low ground cover. No records	**Unlikely** No suitable habitat in Project Area and no records.	**No**
Pteropus poliocephalus (Grey-headed Flying Fox)	VU	-	1	None	PMST suggests may occur. The Grey-headed Flying-fox has historically occupied forests and woodlands in the coastal lowlands, tablelands and slopes of eastern Australia, from Bundaberg in Queensland to Geelong in Victoria, with some isolated camps and rare sightings outside this range (DAWE 2021). No records	**Unlikely**	**No**

Species (common name)	EPBC Act	NP&W Act	Data source	Date of last record within 5km	Species known habitat preferences	Likelihood of use for habitat – Comments	Included in Scattered Tree Scoresheet
Trichosurus vulpecula (Common Brushtail Possum)	-	R	1	1997	Species rests in tree hollows, which were not found in the Project Area. Very limited, suitable, but isolated habitat present in the Project Area for this species. The habitat is unlikely to present core breeding and feeding habitat required to support this species. Species not observed during survey (noting nocturnal surveys were not undertaken). One BDBSA record from 1997 in HA 858 within 3.6km. Scattered records within 18km to the south-east in large patches of scrub.	**Possible** Core habitat not present, but may utilise River Red Gums. Considered possible for BAM C1 which is not impacted based on the current design.	**Yes** 5m or taller
Vombatus ursinus (Common Wombat)	-	R	7	None	Known to use roadsides as corridors, but less frequently observed along major highways. More commonly recorded from established warrens in the softer dirt batters along constructed drainage channels in the Upper South East of SA. Wombat warrens were not observed in the project area during the survey. No recent records within 5km. Historic (latest > 20 yr). However, records scattered throughout LC LMR. Historical record (1982) at 4km on the drainage line that dissects the north of the Project Area (not impacted). Multiple records at Naracoorte and between Project Area and the coast.	**Unlikely** May use pasture with scattered trees present, if food resources nearby, but not core habitat. Less likely to utilise highway. Not included in BAM	**No**
Reptiles							
Delma impar (Striped Legless Lizard)	VU	E	3	None	PMST suggests known to occur. Mainly found in native grassland dominated by Kangaroo Grass (*Themeda triandra*) or Spear Grass (*Austrostipa* spp.) but also recorded in grasslands with a high exotic component (Hadden 1995). Species has also been noted to use, but is not restricted to, areas of cracking clay soil which were found in the southern section. The known larger populations in the Naracoorte vicinity are at Lake Ormerod and Hack's Lagoon and are protected habitat, which serve to sustain the genetic integrity of this lineage of the species. Refer to the SIA associated with this report for further information (Jacobs 2025a). There were no records of this species within 5km of the Project Area, but there are 13 records of the species to the south within 20km all recorded between 2005 and 2007 between 5.9 and 8.5km to the south along the Riddoch Highway.	**Unlikely** Not likely to use roadside vegetation on a main road adjacent paddocks (pers. Comm. G. Carpenter). Would require increased native grass (pers. Comm. G. Carpenter).	**No**
Plants (only likely or known to occur included for PMST							
Caladenia colorata (coloured Spider-orchid)	EN		6	None	Classified as likely to occur in PMST search In South Australia the Coloured Spider-orchid grows in sandy, fertile soils but also in rock outcrops and in mallee/broombush associations (Bates 2009 in TSSC 2019). This species grows in woodland dominated by Eucalyptus leucoxylon (South Australian Blue Gum), E. fasciculosa (Pink Gum), Caladenia colorata (Coloured Spider-orchid) Conservation Advice Page 3 of 8 E. porosa (Black Mallee Box), Allocasuarina verticillata (Drooping Sheoak) and Callitris gracilis (Southern Cypress Pine) (Bates 2011; DENR 2011; Jones 1991b in TSSC 2019). No records, very rare, unlikely to occur.	**Unlikely**	NA

Species (common name)	EPBC Act	NP&W Act	Data source	Date of last record within 5km	Species known habitat preferences	Likelihood of use for habitat – Comments	Included in Scattered Tree Scoresheet
Caladenia tensa (Greencomb Spider-orchid)	EN		6	None	Classified as likely to occur in PMST search. Found in the upper South-east in SA, growing in dry woodland and mallee on sandy loams. Also found in Victoria with four old records from the central west of New South Wales. No records, very rare, unlikely to occur.	**Unlikely**	NA
Eragrostis infecunda (Baren Cane-grass)	-	R	1	1994	Grows on cracking clays, alluvial sandy loams,roadsides, and in seasonally flooded habitats (ALA 2025). No suitable habitat within Project Area. One record within 4.6 km near Cockatoo Lake.	**Unlikely**	NA
Eucalyptus fasciculosa (Pink Gum)	-	R	1	1991	Mainly found in South Australia, on Kangaroo Island, southern Mount Lofty Ranges and the South-east, growing on well-drained sandy soils of low fertility (Seeds of SA 2025). Two historic records. However noted as occurring within nearby vegetation patches. Not observed in the Project Area	**Unlikely** (suitable habitat but large species was not observed)	NA
Glycine latrobeana (Clover Glycine)	EN		5	None	Classified as likely to occur in PMST search The Clover Glycine occurs mainly in grassland and grassy woodland habitats, less often in dry forests, and only rarely in heathland (Carter and Sutter 2010). No records, very rare, unlikely to occur.	**Unlikely**	NA
Podolepis jaceoides (Showy Copper-wire Daisy)	-	R	1	2024	Heavier soils and sand. Grows in woodland and grassland on heavy clay floodplains or sandhills (Plant Net NSW), One record 4.3 km south of Project Area on roadside.	**Unlikely** Habitat unsuitable, not observed	NA
Pterostylis arenicola (Sandhill Greenhood Orchid)	VU	V	5	None	Classified as likely to occur in PMST search This species generally occurs on sloping or undulating sites on sand and sandy loam (DCCEEW 2008). No records, very rare, unlikely to occur.	**Unlikely**	NA

Source; 1- BDBSA, 2 – Birdlife Australia, 3 - PMST (may or likely to occur) was 5), 4 - Observed/recorded in the field, 5 – ALA, 6 – Naturemaps, 7 - others (e.g. Scattered Tree Assessment Manual)
NP&W Act; E= Endangered, V = Vulnerable, R= Rare
EPBC Act; Ex = Extinct, CR = Critically endangered, EN = Endangered; VU = Vulnerable
Includes all species recorded within 5km across all years in addition to those identified as likely or known to occur in the PMST search with the exception of wetland and marine species such as Greenshank, Sandpiper, Curlew, White-bellied Sea-eagle, Egret,

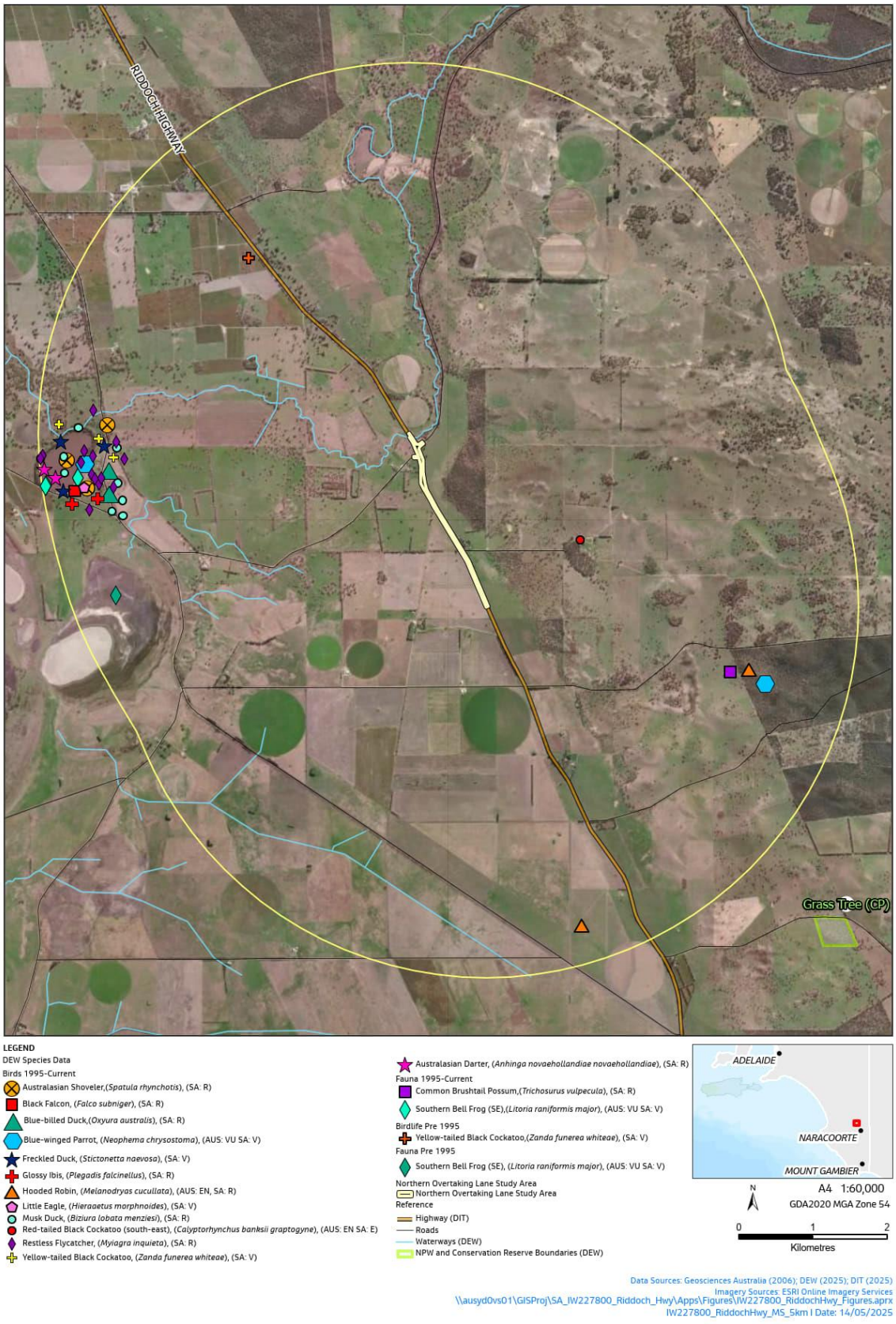

Figure 10. Threatened species observed within 5km of the Project Area

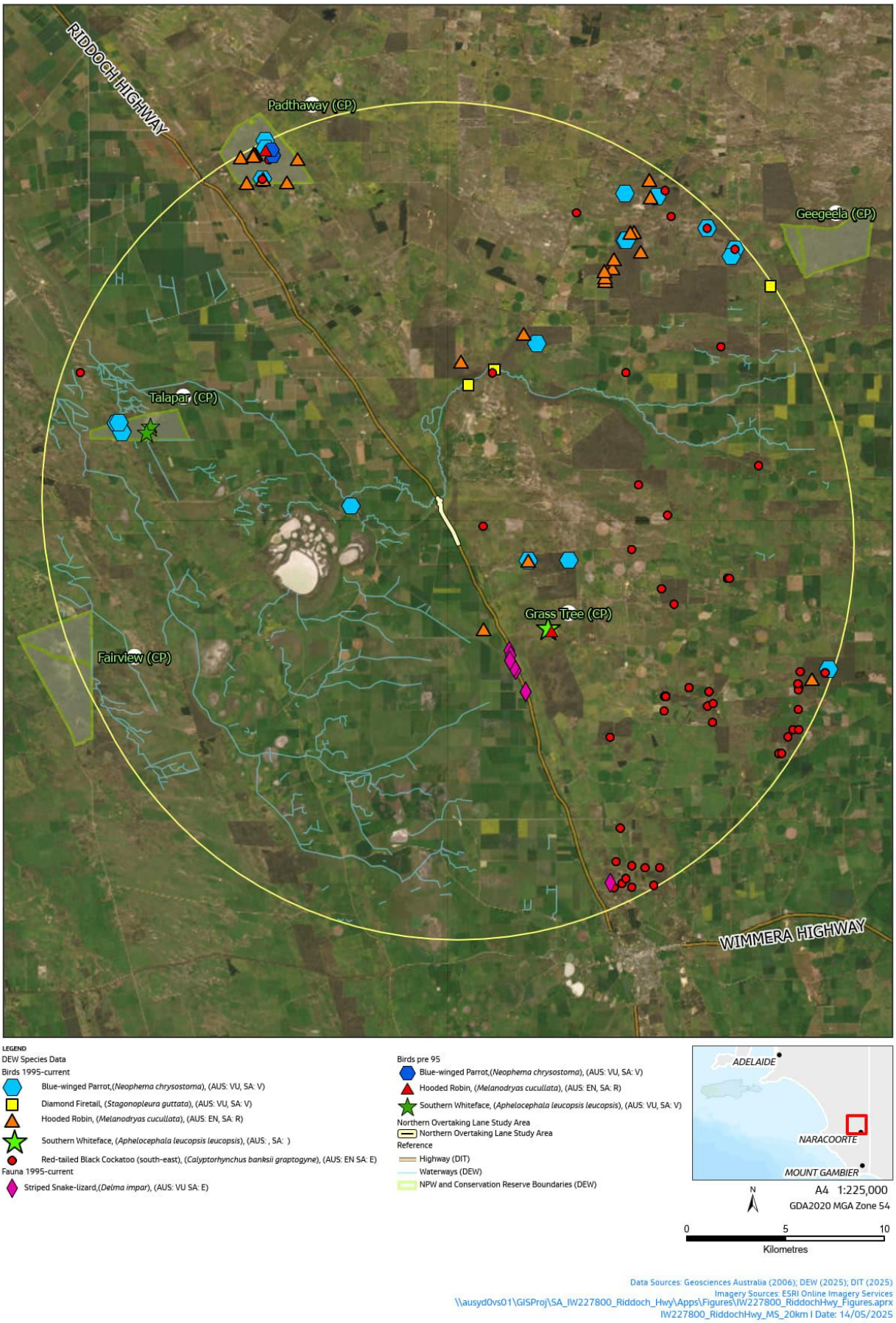

Figure 11. Records for key threatened fauna within 20km of the Project Area

4.3 Cumulative impact

4.3.1 Overall impact

When exercising a power or making a decision under Division 5 of the Native Vegetation Regulations 2017, the NVC must consider the potential cumulative impact, both direct and indirect, that is reasonably likely to result from a proposed clearance activity.

The current design results in the potential clearance of the following vegetation subject to the NV Act (TBS 25.21):

- 32 native trees including ten River Red Gum and 22 Blackwood.
- 0.110 ha of shrubland or grassland in BAM patches.

In addition, eight amenity patches comprising 1.268 ha of planted vegetation not subject to the NV Act are also impacted (included in maps but described in the DIT Amenity Vegetation report).

The majority of vegetation impacted comprises small to medium trees including 21 trees that are 0.5m to 4m tall, three trees 5-9m tall and eight trees 10m or taller including three very large trees 18-20m tall which cannot be avoided based on the current design. A number of large to very large trees occur in isolated patches along the alignment on both sides of the Riddoch Hwy, in addition to clusters of higher value trees and vegetation adjacent the northeast corner of the Naracoorte Rd Junction. All scattered trees on the western side of the highway have been avoided including large specimens, whilst on the eastern side all vegetation is expected to be removed south of the Riddoch Hwy/Naracoorte Rd Junction including three large trees (tree 2 (20m tall with one hollow and Clump A - two trees 18 m tall). Consideration was given to try and avoid these trees as the western side of the road is devoid of native vegetation, but it was not considered feasible as it would require realigning the entire road corridor which was not realistic. This would also affect the alignment further north which may result in the clearance of additional large trees west of the road.

The majority of vegetation being retained occurs on the western side of the road away from the road shoulder. South of Dickensons Road on the western side trees 17 to 33 and Clumps D and E are set back from the road and are unlikely to be subject of direct or indirect impacts (Figure 1). Around Dickensons Rd there are two very large trees (tree 35 and 36). Tree 35 occurs on the side road and is not impacted. Tree 36 is a very large River Red Gum situated within metres of the road. However, batters have been redesigned to avoid impact to the specimen which contains a large hollow suitable for a South-eastern Red-tailed Black Cockatoo. Further north on the western side trees 37 to 43 occur behind the guard rail and are not currently subject to clearance or expected to be impacted. Amenity patches 7 and 8 opposite the road intersection will be cleared but there are not expected to be any off target impacts beyond the described. All vegetation north-east of the Naracoorte Rd intersection is being avoided (Figure 1).

The hydrology of the area will not be significantly altered from its current state, with culverts installed / replaced to enable movement of water across the landscape. Morambro Creek is at the northern extent of the Project Area but is not affected by direct or indirect impacts (ensuring appropriate construction phase management). Other general construction risks will be appropriately managed and mitigated with a Construction Environmental Management Plan (CEMP) to be developed for the project; sedimentation, dust, potential off target damage to tree root zones of trees not being removed, the use of clean, locally sourced fill, control of weeds and pests, fauna clearances prior to removal of habitat etc. Construction laydown areas will be restricted to cleared areas, potentially north of Clump E in an existing flat clear area.

This project is the northern of three overtaking lanes being considered for the Riddoch Highway in this region (noting all three have been determined as necessary to improve safety in their own right, and not that this is one of three alternative options). Each project is separated by more than 10 km, and as such, they have been treated as separate, independent project clearance approvals as advised by DIT.

Refer EHIAR (Jacobs 2025) and Engineering Design Reports (Jacobs 2021) for further detail.

4.3.2 Impacts to fauna

Trees of medium to large size (10m to 20m) occur in isolated patches along the alignment on both sides of the Riddoch Highway, one of which supports hollows of suitable size for EPBC Act listed Red-tailed Black Cockatoo nesting. Impact to this tree has been avoided through batter redesign.

Increased value habitat was also noted in a group of large, scattered trees west of the highway and a large patch of mixed native and planted vegetation adjacent a creekline at the northern extent of the site both patches of which have been avoided.

However, several large 'scattered trees' (one 20m high with one small hollow (tree 2), and two trees 18m high (Clump A)) will require removal based on the current design. Avoidance of these trees was not considered feasible given design constraints, road design features and safety considerations. Striped Legless Lizard was not included in the BAM and STAM scoresheets given that it is considered unlikely to occur in roadside grassland in the region similar to that occurring in the Project Area. The LoO assessment considered this species to be unlikely to occur given the grasslands are highly degraded and connected to cropping and grazing land with little opportunity for dispersal. In addition, this species was included in a SIA undertaken for the project, with the Project considered to not pose a significant impact to the Striped Legless Lizard (see Appendix D).

The SIA included a further five threatened species under the EPBC Act - SE Red-tailed Black Cockatoo, Blue-winged Parrot, Diamond Firetail, Hooded Robin and Southern White-face which were all highlighted by the PMST search and had records either within the Study Area or in the regional vicinity of the Project Area (within 20km or numerous in the LC LMR). The SIA suggests the Project will not have a significant impact on any of these species.

As indicated in the LoO assessment (Table 9) NPW Act species that may possibly utilise higher value vegetation include Black-chinned Honeyeater, Yellow-tailed Black Cockatoo (also heard during the survey), Black Falcon and Common Brush-tailed Possum (refer tiered approach in Section 3 and Sections 4.1.2, 4.1.3). Two additional species species Blue-faced Honeyeater *(Entomyzon cyanotis cyanotis*, SA:R*)* was identified as utilising scattered trees (ALA 2025, STAM manual NVC 2023c, pers. comm. G. Carpenter) and Barking Owl *(Ninox connivens*, SA:R*)* was identified as occasionally utilising vegetation in the Project Area, particularly near Morambo Creek (although most vegetation in this area has been avoided). These species have been included in STAM scoresheets for some tree height classes as agreed with G. Carpenter.

Overall impacts, as a result of the project, on local fauna species and populations are considered minor to negligible.

4.3 Mitigation Hierarchy

When exercising a power or making a decision under Division 5 of the Native Vegetation Regulations 2017, the NVC must have regard to the mitigation hierarchy. The NVC will also consider, with the aim to minimize, impacts on biological diversity, soil, water and other natural resources, threatened species or ecological communities under the EPBC Act or listed species under the NP&W Act.

a) Avoidance – outline measures taken to avoid clearance of native vegetation

The current alignment has been positioned following feasibility studies and community consultation. An initial engineering survey and aerial imagery survey identified trees and other constraints in the region. This information was used to identify broad study areas. Desktop and field assessments were undertaken to inform engineering design, including recommendations to avoid any potential Striped Legless Lizard habitat, large River Red Gums with hollows that may provide habitat for Red-tailed Black Cockatoo and vegetation in or adjacent the creek which may provide habitat for Growling Grass Ffrog, Diamond Firetail and other threatened species associated with creeks and adjacent vegetation. As a result, the alignment was previously positioned just south of the northern extent of the current alignment. However, some members of the community expressed concern regarding both the proximity of the overtaking lane to the Range Rd / Ricketts Lane intersection, and the extent of land acquisition and vegetation removal required. In response to the concerns, DIT commissioned several additional studies to assess alternative locations for the NOTL and has determined a new preferred location commencing from Naracoorte Rd and ending near the Naracoorte Rd / Riddoch Hwy intersection between MM83.84 and MM86.12.

The new location has resulted in an increased amount of vegetation requiring removal, but the majority of trees are small to medium specimens noting that the three largest trees under application (tree 2 and Clump A) would have required removal for both the previous and current NOTL alignments. Higher value vegetation was identified as warranting avoidance or mitigation as possible with potential impacts and opportunities for mitigation being an integral component of planning. There were no food trees for EPBC listed Red-tailed Black Cockatoo or trees of preferred roosting height (>26m) observed in the Project Area, but larger trees are considered (anecdotally) to provide occasional roosting habitat (above 10m in the scattered tree scoresheet).

Based on the new alignment, efforts have been made to completely avoid some very high value vegetation including:

- Design to avoid clearance of all vegetation north-east of the Naracoorte Hwy Junction. This area provides high habitat value given its proximity to a creek and denser vegetation; in addition to providing amenity value and community use values.
- Design to avoid clearance of seven large trees on the western side of the Riddoch Hwy (works have been terminated just south of tree 37 and include only amenity patches AP_7 and AP_8 in this location).

- Avoid clearance for laydown areas (including avoidance of trees 17 to 33 and native clumps E and D by considering laydown areas in existing clear zones).
- Batter re-design to specifically avoid impacts to tree 36 which occurs adjacent the road and contains a large hollow suitable for a Red-tailed Black Cockatoo.
- Avoidance of any works on side road to avoid clearance of very large tree 35.

The final footprint has been refined to conform to updated road standards and avoid vegetation impacts (specifically scattered remnant trees), where possible.

b) Minimisation – if clearance cannot be avoided, outline measures taken to minimize the extent, duration and intensity of impacts of the clearance on biodiversity to the fullest possible extent (whether the impact is direct, indirect or cumulative).

DIT provided an initial preferred development envelope for the NOTL, which represented a compromise between all factors considered, including minimising impact to scattered native trees. It should be noted again that the overtaking lane was moved north from the original position to attempt to minimise clearance of trees of value to the local community.

The NOTL design has been developed to retain the existing horizontal road alignment as much as possible, thereby minimising the disturbance footprint and associated impacted to native vegetation. Minor adjustments have been made only, and include curve widening for all curves and increasing nearside shoulder widths to 2.0m, enabling the road to cater for the new PBS level 3 design vehicles and to accommodate a 1.4m wide centre line treatment. Both upgrades are in line with current road design standards implemented to enhance road safety and reduce the likelihood of head-on collisions.

To further minimise impact to native vegetation within or near the road corridor, 1 (vertical) to 3 (horizontal) batter slopes with safety barrier protection have been implemented where possible (i.e. where sight visibility requirements are not impacted), reducing the overall disturbance footprint. Where not possible, batter slopes have been designed as 1 (vertical) to 6 (horizontal) slopes to provide an acceptable balance between motorist safety, cost of construction and potential impact to native flora and fauna.

In the northern half of the alignment, the majority of high value vegetation is on the western side of the road, whilst in the southern half some high value vegetation exists east of the road (south of Elmor Rd). It was not possible to align the NOTL to the west to avoid this vegetation (tree 2, Clump A) as this would require altering the road corridor which was not considered feasible and may also result in increased clearance further north. The proposed table drain has also encroached into tree trunks on the eastern side where vegetation requires removal to accommodate appropriate design requirements. Clearance will be mitigated wherever possible during micro-sighting and earthworks.

Construction envelopes will be minimised in and around scattered trees to the extent where construction can still occur safely. The tree root zones of scattered native trees not being removed by the development will be protected to prevent any potential off-target damage.

Additional significant reductions in the number of trees to be removed and or pruned have been made between 70% and 100% design, with a determined effort to minimise overall project footprint. Refer EHIAR (Jacobs 2021a) and Engineering Design Reports (Jacobs 2021b) for further detail.

Other mitigation strategies:

- Construction contractors to prepare and comply with a CEMP which demonstrates management of potential impacts associated with:
    - Terrestrial fauna
    - Accidental spills and discharges
    - Waste management
- Fuel and waste oil facilities designed to meet relevant Australian Standards.
- Contractors to provide and comply with a Contractor's Safety Management Plan.
- Site compound / laydown area is established on cleared and preferably sealed areas, such as car parking.
- Plant and machinery will be turned off when not in use.

The ecology and design teams continue to discuss avenues to avoid impacting large, healthy trees, and where impacts cannot be avoided, investigate measures to minimise impacts.

c) Rehabilitation or restoration – outline measures taken to rehabilitate ecosystems that have been degraded, and to restore ecosystems that have been degraded, or destroyed by the impact of clearance that cannot be avoided or further minimized, such as allowing for the re-establishment of the vegetation.

The disturbance proposed by this project is largely permanent including a new overtaking land, batters, culverts and standard road furniture.

Non-permanent features (e.g. a laydown yard) will be located in existing cleared areas to minimise any further disturbance to vegetation. Construction envelopes have been minimised as discussed above and will be managed for weeds, and rehabilitated with low cover in immediate proximity to the road as per safety requirements. Further detail would be provided in the project Construction Environmental Management Plan.

Refer to the EHIAR (Jacobs 2025) and Engineering Design Reports (Jacobs 2021b) for further detail.

d) Offset – any adverse impact on native vegetation that cannot be avoided or further minimized should be offset by the achievement of a significant environmental benefit that outweighs that impact.

The NVC will only consider an offset once avoidance, minimization and restoration have been documented and fulfilled. The SEB Policy explains the biodiversity offsetting principles that must be met.

All vegetation subject to the NV Act will be offset via payment into the Native Vegetation Fund.

All vegetation (including amenity vegetation) will be offset as per DIT's Vegetation Removal Policy and Standard Operating Procedure as endorsed by the NVC (DPTI, 2020).

Refer to the EHIAR (Jacobs 2021a) and Engineering Design Reports (Jacobs 2021b) for further detail.

4.3 Principles of Clearance (Schedule 1, *Native Vegetation Act 1991*)

The Native Vegetation Council will consider Principles 1(b), 1(c) and 1(d) when assigning a level of Risk under Regulation 16 of the Native Vegetation Regulations. The Native Vegetation Council will consider all the Principles of clearance of the Act as relevant, when considering an application referred under the *Planning, Development and Infrastructure Act 2016*.

Principle of clearance	Relevant information	Assessment against the principles	Moderating factors that may be considered by the NVC
Principle 1b - significance as a habitat for wildlife	BAM Threatened species recorded within 5km since 1995 and with a reliability 1km OR described as known to occur by the PMST have been excluded for all BAM sites except BAM C1 which is not impacted. This approach has been approved by the NVB (DEW) and includes removal of Striped Legless Lizard from all BAM sheets. STAM A tiered approach based on height was applied for use of scattered trees by threatened species including height classes of 0-4m, 5-9m and 10+m. The STAM threatened species list was approved by Adam Schutz in 2020 based on the previous NOTL design and species listings at that time then subsequently approved by Graham	BAM All BAM (except BAM C1) which is not impacted had a threatened fauna score of 0 and as such clearance is considered Not at Variance to Principal 1(b). STAM Trees 0-4m have a threatened fauna score of 0.6 and as such clearance is considered At Variance to Principal 1(b). This includes trees 3, 6, 8, 9, 10, 11, 12, 14 and clumps B and C.	BAM Not Applicable STAM The majority of trees are smaller to medium specimens and are not considered optimal fauna habitat. However, some larger specimens do occur. The vegetation does not support a high diversity of animal species, and is exposed, highly disturbed roadside

Principle of clearance	Relevant information	Assessment against the principles	Moderating factors that may be considered by the NVC
	Carpenter in 2025 based on the updated NOTL alignment and current species listings. For trees 0-4 m, one NPW Act uncommon species Long-billed Corella was included. This resulted in a fauna score of 0.6 classifying trees in this category as At Variance For trees 5-9m, one uncommon (Long-billed Corella) and two NPW Act Rare species were included Common Brush-tailed Possum and Blue-faced Honeyeater (Section 4.1). This resulted in a threatened fauna score of 1 classifying trees in this category as Seriously at Variance. For trees 10m or greater one uncommon species (Long-billed Corella), three Rare species (Blue-faced Honeyeater, Black Falcon and Common Brush-tailed Possum) and two NPW Act Vulnerable species Yellow-tailed Black Cockatoo and Black-chinned Honeyeater were included (refer Section 4.1).	Trees 5-9m have a threatened fauna score of 1 and as such their clearance is considered At Variance to Principal 1(b). This includes trees 4 and, 5. Trees 10m or greater had a threatened fauna score of 1.4 deeming their clearance Seriously at Variance to Principal 1(b). This includes trees 2, 7,13, 15, 16, 37, 38 and Clump A.	vegetation (adjacent major highway with frequent traffic movements). Vegetation could provide a corridor for fauna movement between other areas of native vegetation but the vegetation is not a habitat refuge, and is in a heavily cleared area with an understorey dominated by exotic species. TBS of impacted vegetation is only 25.21 points, the majority of trees under application include small specimens of Blackwood, only nine of the 32 tree specimens under application are taller than 5m.
Principle 1c - plants of a rare, vulnerable or endangered species	There were no threatened flora species observed in the Project Area. The threatened flora score of all trees and BAM patches was "0".	Not at Variance to principal 1c	NA
***Principle 1d - the vegetation comprises the whole or part of a plant community that is Rare, Vulnerable or endangered*:**	There were no threatened communities observed in the Project Area. The threatened flora score of all BAM patches was "1".	Not at Variance to principal 1d	NA

Principles of Clearance (h-m) will be considered by comments provided by the local NRM Board or relevant Minister. The Data Report should contain information on these principles where relevant and where sufficient information or expertise is available.

4.6 Risk Assessment

Native vegetation clearance is currently classified as Level 4 given the proposal requires clearance of more than 20 trees with clearance of some classified as Seriously at Variance to Principal 1(b) as they may provide habitat for a range of NPW listed fauna for some scattered trees, escalating the proposal from Level 3 to Level 4. Clearance also involves removal of small patches of native vegetation expected to comprise approximately 0.110 ha, all of which may provide habitat for Striped Legless Lizard (even if unlikely). The clearance level could potentially be moderated down to Level 3 if deemed appropriate by the NVAP (or Delegate) given that TBS of impacted vegetation is only 25.21 points, the majority of trees under application include small specimens of Blackwood, only nine of the 32 tree specimens under application are taller than 5m; and the vegetation under application provides limited habitat for threatened fauna but is not considered core or significant habitat as described in Section 4.2 Threatened Species Assessment) and Section 4.3 Principles of Clearance.

Determine the level of risk associated with the application

Total clearance	No. of trees	Removal of 32 trees including ten *Eucalyptus camaldulensis* ssp. *camaldulensis* and 22 *Acacia melanoxylon*.
	Area (ha)	0.110 ha
	Total biodiversity Score	25.21 (Table 13)
Seriously at variance with principle 1(b), 1(c) or 1 (d)		1(b), but moderating factors could reduce to 'At Variance'
Risk assessment outcome		Level 4 (Level 3 with TBS less than 250 and escalating factors increasing to Level 4). If moderated could be reduced to level 3 at the discretion of the Native Vegetation Council (or Delegate)).

4.7 NVC Guidelines

Provide any other information that demonstrates that the clearance complies with any relevant NVC guidelines related to the activity.

N/A

5. Clearance summary

BAM site clearance summary table

Five BAM patches were described for the Project Area. Of these, 0.11 ha is proposed for clearance (no impact in BAM C1) (Table 11). The BAM scoresheets for the five sites are provided as Appendix 1.5.1 to 1.5.5 whilst they are summarised in the clearance impact summary (Appendix 1.4.3). A summary of SEB requirements for BAM patches is provided in Table 11.

Table 11. Summary of BAM patches described during the survey and the resulting offset requirement (note BAM C1 is not impacted but previously comprised 0.678 ha).

Block	Site	Native species diversity score	Threatened Ecological community Score	Threatened plant score	Threatened fauna score	UBS	Area (ha)	Total Biodiversity score	Loss Factor	Loadings	Reductions	SEB Points required	SEB payment	Admin Fee
A	A1	6	1	0	0	7.11	0.0118	0.08				0.09	$78.60	$4.32
A	A2	6	1	0	0	3.72	0.0615	0.23				0.25	$218.34	$12.01
B	B1	6	1	0	0	7.82	0.0167	0.13				0.14	$122.27	$6.72
C	C1	10	1	0	0.08	23.28	0	0.00				0.00	$0.00	$0.00
D	D1	6	1	0	0	7.54	0.0197	0.15				0.17	$148.47	$8.17
						Total	**0.1097**	**0.59**				0.65	$567.68	$31.22

Scattered trees Summary table

A total of 84 trees were surveyed in the Project Area. Of these, 32 are under application including ten River Red Gum and 22 Blackwood. The scattered tree data sheet for all trees is provided in Appendix 1.4.1, whilst a scattered tree datasheet for those being impacted is provided in Appendix 1.4.2. The summary of trees is also provided in the clearance impact summary (Appendix 1.4.3). The list of trees impacted and their required SEB is provided in Table 12.

Table 12. Summary of Scattered Trees impacted and the resulting offset requirement

Tree or Cluster ID	Number of trees	Fauna Habitat score	Threatened flora score	Biodiversity score	Loss factor	SEB Points required	SEB Payment	Admin Fee
2	1	1.4	0	5.95	1	6.55	$5,720.40	$314.62
Clump A	2	1.4	0	2.59	1	5.70	$4,978.06	$273.79
Clump B	8	0.6	0	0.2	1	1.76	$1,537.08	$84.54
Clump C	5	0.6	0	0.17	1	0.94	$820.94	$45.15
3	1	0.6	0	0.26	1	0.29	$253.27	$13.93
4	1	1	0	0.39	1	0.43	$375.54	$20.65
5	1	1	0	0.32	1	0.35	$305.67	$16.81
6	1	0.6	0	0.12	1	0.13	$113.53	$6.24
7	1	1.4	0	1.38	1	1.52	$1,327.48	$73.01
8	1	0.6	0	0.13	1	0.14	$122.27	$6.72
9	1	0.6	0	0.05	1	0.06	$52.40	$2.88
10	1	0.6	0	0.02	1	0.02	$17.47	$0.96
11	1	0.6	0	0.03	1	0.03	$26.20	$1.44
12	1	0.6	0	0.09	1	0.10	$87.33	$4.80
13	1	1.4	0	2.18	1	2.40	$2,096.02	$115.28
14	1	0.6	0	0.26	1	0.29	$253.27	$13.93

Tree or Cluster ID	Number of trees	Fauna Habitat score	Threatened flora score	Biodiversity score	Loss factor	SEB Points required	SEB Payment	Admin Fee
15	1	1.4	0	3.74	1	4.11	$3,589.44	$197.42
16	1	1.4	0	4.22	1	4.64	$4,052.31	$222.88
37	1	1.4	0	2.4	1	2.64	$2,305.63	$126.81
38	1	1	0	0.12	1	0.13	$113.53	$6.24
Total	**32**			**24.62**		**32.23**	**$28,147.84**	**$1,548.10**

Totals summary table

A summary of the Total Biodiversity Score and resulting offset is provided in Table 13 and in the Impact Summary (Appendix 1.4.3). The Economy of scale and rainfall figures used are provided in Table 14.

Table 13. Summary of SEB requirements for Scattered Trees and Bushland Assessment Methodology sites.

	Total Biodiversity Score	Total SEB points required (impacted vegetation)	SEB Payment	Admin Fee	Total Payment
	Impacted vegetation				
BAM	0.59	0.65	$567.68	$31.22	$598.90
STAM	24.62	32.23	$28,147.84	$1,548.10	$24,840.39
Total	25.21	32.88	28715.52	1579.32	$30,294.84

Table 14. Economies of scale and rainfall figures used in SEB calculations

Economies of Scale Factor	0.5
Rainfall (mm)	529

6. Significant Environmental Benefit

A Significant Environmental Benefit (SEB) is required for approval to clear under Division 5 of the *Native Vegetation Regulations 2017*. The NVC must be satisfied that as a result of the loss of vegetation from the clearance that an SEB will result in a positive impact on the environment that is over and above the negative impact of the clearance.

The Data Report must propose how the SEB will be achieved in accordance with the SEB Policy and Guide, by providing the following information.

ACHIEVING AN SEB

Indicate how the SEB will be achieved by ticking the appropriate box and providing the associated information:

☐ Establish a new SEB Area on land owned by the proponent. Provide information below.
☐ Use SEB Credit that the proponent has established. Provide the SEB Credit Ref. No. _____
☐ Apply to have SEB Credit assigned from another person or body. The application form needs to be submitted with this Data Report.
☐ Apply to have an SEB to be delivered by a Third Party. The application form needs to be submitted with this Data Report.
☒ Pay into the Native Vegetation Fund.

PAYMENT SEB

The proponent requests to achieve the Significant Environmental Benefit (offset) via payment into the Native Vegetation Fund.

As per the scattered tree assessment scoresheet (Appendix 4), the loss of 0.11 ha and 32 scattered trees will require a payment of $30,294.84 (ex GST) (SEB payment + Admin fee) to offset 32.88 SEB points.

	Total Biodiversity Score	Total SEB points required (impacted vegetation)	SEB Payment	Admin Fee	Total Payment
	Impacted vegetation				
BAM	0.59	0.65	$567.68	$31.22	$598.90
STAM	24.62	32.23	$28,147.84	$1,548.10	$24,840.39
Total	25.21	32.88	28715.52	1579.32	$30,294.84

Amenity plantings (not considered by this application) will also be offset at a ratio of 2:1 either by payment or direct on ground within the region as per DIT's Vegetation Removal Policy and Standard Operating Procedure (DPTI, 2020).

Payment will be made in full and upfront prior to commencement of works.

7. References

Atlas of Living Australia (2024, 2025). Retrieved from https://www.ala.org.au/

Australian Museum (2025). Black-chinned Honeyeater (Melithreptus gularis). Retrieved from:

https://australian.museum/learn/animals/birds/black-chinned-honeyeater/

Australian Museum (2025b). Blue-billed Duck (Oxyura australis). Retrieved from https://australian.museum/learn/animals/birds/blue-billed-duck/

Biological Database of South Australia (BDBSA) (1999-2007) Targeted surveys for Delma impar (Striped Legless Lizard) and Pseudemoia rawlinsona (Rawlinson's window-eyed skink). South Australian Herpetology Group. Project metadata available at: http://apps.environment.sa.gov.au/emap/envmaps-query.do;jsessionid=d815a70ba8e0d51a863aabe5192b?key=201&cmd=su.SurveySummaryDetailList

Birdlife (2023, 2025). Birdlife database searches purchased from the Department for Environment and Water.

Birds Australia 2025. Birds on Farms. Jacky Winter. Birds Australia. Retrivede from:

chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.basscoastlandcare.org.au/uploads/8/9/8/3/89835233/4.pdf

Birds in Backyards (2025). Birdlife Australia. Retrieved from: https://www.birdsinbackyards.net/

Carter, O and Sutter, G. (2010). National Recovery Plan for Clover Glycine *(Glycine latrobeana).* Department of Sustainability and Environment, Melbourne.

Clemann N and Gillespie GR (2012) National Recovery Plan for the Southern Bell Frog *Litoria hrygia*. Department of Sustainability and Environment, Melbourne. Available from: http://www.environment.gov.au/biodiversity/threatened/recovery-plans/national-recovery-plan-southern-bell-frog-litoria-raniformis

Cooney, S.J.N. and Watson, D.M. (2005) Diamond Firetails (Stagonopleura guttata) preferentially nest in mistletoe. Emu, Vol.105, pp.317-322.

Commonwealth of Australia (2006) Background and Implementation Information on for the South-eastern Red-tailed Black-Cockatoo, Calyptorhynchus banksii graptogyne Recovery Plan. Department of the Environment and Water Resources, Canberra.

DAWE 2022 – Conservation advice for Callocephalonn fimbriatum (Gang-gang Cockatoo). Australian Government

Department for Environment and Water (DEW) (2019) Biological Databases of South Australia- Overview. Information Sheet – March 2019.

Department for Infrastructure and Transport (DIT) (2021) Environment and Heritage Technical Manual Attachment 4A – Vegetation Survey Guidelines and Attachment 4B – Vegetation Impact Assessment Guideline. Retrieved from:

https://www.dit.sa.gov.au/standards/manuals

Department for Infrastructure and Transport (DIT) (2021) Vegetation Removal Policy. https://www.DIT.sa.gov.au/__data/assets/pdf_file/0008/35657/DOCS_AND_FILES-1965602-v36B-Environment_-_Technical_Standards_-_Vegetation_-_Vegetation_Removal_Policy.pdf. Accessed 14/4/2020.

Department for Infrastructure and Transport (DIT) (2020b) (2017) Environmental Weed Species List (August 2017). Accessed online at: https://DIT.sa.gov.au/standards/environment

Department of Sustainability and Environment (DSE) (2006) Action Statement. Flora and Fauna Guarantee Act 1988. No. 27. https://www.environment.vic.gov.au/__data/assets/pdf_file/0024/32883/Red-tailed_Black-Cockatoo_Calyptorhynchus_banksii-graptogyne.pdf

Department of the Environment (DotE) (2013) Matters of National Environmental Significance Significant Impact Guidelines 1.1 Environment Protection and Biodiversity Conservation Act 1999.

Department of Climate Change Energy and the Environment and Water (DCCEEW) (2025). Swift Parrot Fact Page. Retrieved from https://www.dcceew.gov.au/environment/biodiversity/threatened/action-plan/priority-birds/swift-parrot#:~:text=Swift%20Parrots%20occur%20in%20eucalypt,lerps)%2C%20seeds%20and%20flowers.

Department of Climate Change Energy and the Environment and Water (DCCEEW) (2024a). EPBC Protected Matters Search Tool. Government of Australia

Department of Climate Change Energy and the Environment and Water (DCCEEW) (2024b). Conservation Advice for *Gallinago hardwickii* (Lathams Snipe). Government of Australia

Department of Climate Change Energy and the Environment and Water (DCCEEW) 2025. Swift Parrot Fact Page. Retrieved from https://www.dcceew.gov.au/environment/biodiversity/threatened/action-plan/priority-birds/swift-parrot#:~:text=Swift%20Parrots%20occur%20in%20eucalypt,lerps)%2C%20seeds%20and%20flowers.

Department of Climate Change Energy and the Environment and Water (DCCEEW) (2023a) Approved Conservation Advice for *Aphelocephala leucopsis* (Southern Whiteface). Government of Australia

Department of Climate Change Energy and the Environment and Water (DCCEEW) (2023b) Approved Conservation Advice for *Stagonopleura guttata* (Diamond Firetail). Government of Australia

Department of Climate Change Energy and the Environment and Water (DCCEEW) (2023c). Approved Conservation Advice for *Melanodryas cucullata cucullata* (Hooded Robin) (south-eastern)). Government of Australia

Department of Climate Change Energy and the Environment and Water (DCCEEW) (2021). Approved Conservation Advice for Neophema chrysostoma (Blue-winged Parrot). Government of Australia

Department of Climate Change Energy and the Environment and Water (DCCEEW) (2008) Approved Conservation Advice for *Pterostylis arenicola* (sandhill Greenhood Orchid). Department of Climate Change, Energy, the Environment and Water, Australian Government, Canberra. This species generally occurs on sloping or undulating sites on sand and sandy loam.

Department of Infrastructure and Transport (2021) Attachment 4A – Vegetation Survey Guidelines and Attachment 4B – Vegetation Impact Assessment Guideline of the DIT Environmental and Heritage Technical Manual.

DEW (2020). Biological Database of South Australia. Database extract as of February 2020.

Geering, A., Agnew, L., & Harding, S. (2007) Shorebirds of Australia. CSIRO Publishing. Collingwood, Australia.

Hadden S (1995) Distribution, population habitat estimates and habitat requirements for the striped legless lizard Delma impar (Kluge). Report to the Australian Nature Conservation Agency. Melbourne: Department of Conservation and Natural Resources.

Hill R and Burnard T (2001) A Draft Habitat Management Plan for the South-eastern Red-tailed Black-Cockatoo. Unpublished report to the Red-tailed Black-Cockatoo Recovery Team. https://www.environment.sa.gov.au/topics/Science/Information_data/Biological_databases_of_South_Australia. Accessed 14/4/20

Jacobs (2020a) Technical Memo: Shortlist Options Identification and Assessment towards Preferred Options. Report written for DIT. 29 November 2019. Contract 19C762.

Jacobs (2025) Riddoch Highway Northern Overtaking Lane MM128-130 EHIAR (Environment and Heritage Impact Assessment Report).

Jacobs (2021) Riddoch Highway Overtaking Lane Engineering Design Reports and Drawings; IW227800-0000-CR-0002.

Jacobs (2025a) Riddoch Highway Environment Heritage Impact Assessment Report (EHIAR) Appendix D Significant Impact Assessment (SIA) Report

Joseph, L., Emison, W.B. and Bren, W.M. (1991). Critical assessment of the conservation status of the Red-tailed Black-Cockatoo in south-eastern Australia with special reference to nesting requirements. Emu 91: 46-50.

Koch P (2003) Factors influencing food availability for the endangered south-eastern Red-tailed Black-Cockatoo Calyptorhynchus banksii graptogyne in remnant stringybark woodland, and implications for management. PhD thesis, University of Adelaide, Adelaide.

Menkhorst P, Rogers D, Clarke R, Davis J, Marsack P, Franklin K (2017) The Australian Bird Guide. CSIRO Publishing, Clayton South.

Milne TI and Croft T (2012) Bushland Condition Monitoring Manual – Benchmark Communities of the South East. Nature Conservation Society of South Australia.

NatureMaps (2025, 2023) Environ Data SA. SA Government. Accessed online at: https://data.environment.sa.gov.au/NatureMaps/Pages/default.aspx.

New South Wales Office of Environment and Heritage (2025). Retrieved from https://threatenedspecies.bionet.nsw.gov.au/profile?id=20131

Native Vegetation Council (NVC) (2020a) Native Vegetation Council Bushland Assessment Manual. Native Vegetation Council, South Australia.

NVC (2020b). Guide for calculating a Significant Environmental Benefit. Native Vegetation Council, South Australia.

NVC (2020c) Native Vegetation Council Scattered Tree Assessment Manual. Native Vegetation Council, South Australia.

NVC (2017) Guide to the Native Vegetation Regulations. Native Vegetation Council, South Australia.

Office of Environment and Heritage (NSW). (2023). Black-chinned Honeyeater (eastern sub-species profile)

https://threatenedspecies.bionet.nsw.gov.au/profile?id=10523

Pizzey G and Knight F (2012) The Field Guide to the Birds of Australia. Harper Collins Australia, Sydney.

PlantNET NSW (2025). Fact Sheet for Podolepis jaceoides. Retrieved from: https://plantnet.rbgsyd.nsw.gov.au/cgi-bin/NSWfl.pl?page=nswfl&lvl=sp&name=Podolepis~jaceoides

Royal Automobile Association of SA (RAA), 2019, Trucking family highlights rural road risks; Riddoch Highway and Dukes Highway in the spotlight, RAA, Article available online from https://samotor.raa.com.au/trucking-family-highlights-rural-road-risks/#:~:text=The%20Riddoch%20Hwy%2C%20which%20has,deaths%20between%202013%20and%202017.&text=RAA%20wants%20to%20see%20the,and%20invest%20in%20critical%20upgrades

Simpson and Day 2010. Field guide to the Birds of Australia. Viking.

Thackway R and Cresswell I (1995) An Interim Biogeographic Regionalisation for Australia: a framework for setting priorities in the National Reserves System Cooperative Program Version 4, Australian Nature Conservation Agency, Canberra.

Threatened Species Scientific Committee (TSSC) (2019) Conservation Advice for *Hirundapas caudacutus* (White-throated Needletail). TSSC established under the Environment Protection and Biodiversity Conservation Act 1999. Government of Australia.

TSSC (2019b) Conservation Advice for Caladenia colorata. TSSC established under the Environment Protection and Biodiversity Conservation Act 1999. Government of Australia

8. Appendices

Appendix A - Listed as Appendices to the EHIAR

Appendix A

- *Appendix A.1 Native Vegetation Clearance report (current report – Appendix A 1.1 to the EHIAR)*
- Appendix A.2 Amenity vegetation report (DIT)
- Appendix A.3 Photo file – native vegetation
- Appendix A.4 Photo file – amenity vegetation
- Appendix A.5 Scattered Tree Assessment (STAM) Datasheet (all trees)
- Appendix A.6 Scattered Tree assessment (STAM) datasheet (impacted trees)
- Appendix A.7 Clearance Impact Summary (STAM and BAM)
- Appendix A.8 BAM patch scoresheet A1 Kangaroo Thorn Shrubland
- Appendix A.9 BAM patch scoresheet A2 Native Grassland
- Appendix A.10 BAM patch scoresheet B1 Native Grassland
- Appendix A.11 BAM patch scoresheet C1 River Red Gum Woodland (not impacted)
- Appendix A.12 BAM patch scoresheet D1 Native Grassland
- Appendix A. 13 DIT Amenity Vegetation data sheet
- Appendix A.14 Vegetation Survey Maps

Appendix B. EPBC Act PMST Output
Appendix C. BDBSA Search Output
Appendix D. EPBC Act Significant Impact Assessment
Appendix E. Construction Drawings