Native Vegetation Clearance

Sturt Highway Overtaking Lane Project

Site 4 Data Report

Clearance under the *Native Vegetation Regulations 2017*

4 May 2022

Prepared by H. Merigot – EBS Ecology (NVC Accredited Consultant)

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Version 7

Prepared by EBS Ecology for Mott MacDonald

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Glossary and abbreviations

BAM	Bushland Assessment Method
BDBSA	Biological Database of South Australia (maintained by DEW)
DAWE	Department of Agriculture, Water and the Environment (Commonwealth)
DEW	Department for Environment and Water (South Australia)
DIT	Department of Infrastructure and Transport
EBS	Environment and Biodiversity Services Pty Ltd (trading as EBS Ecology)
EPBC Act	*Environmental Protection and Biodiversity Conservation Act 1999*
ha	Hectare(s)
IBRA	Interim Biogeographical Regionalisation of Australia
km	Kilometre(s)
NatureMaps	Initiative of DEW that provides a common access point to maps and geographic information about South Australia's natural resources in an interactive online mapping format
NPW Act	*National Parks and Wildlife Act 1972*
NV Act	*Native Vegetation Act 1991*
NVC	Native Vegetation Council
PMST	Protected Matters Search Tool (under the EPBC Act; maintained by DAWE)
Project	Sturt Highway Overtaking Lane Project Site 4
Project Area	Overtaking lane and verge widening from Maintenance Marker 178.3 to Maintenance Marker 180.5, east of Nitschke Rd, Good Hope Landing
SA	South Australia(n)
Search Area	5 km buffer of the Project Area considered in the desktop assessment database searches
SEB	Significant Environmental Benefit
sp.	Species
spp.	Species (plural)
ssp.	Sub-species
TEC	Threatened Ecological Community
var.	Variety (a taxonomic rank below that of species and subspecies, but above that of form)

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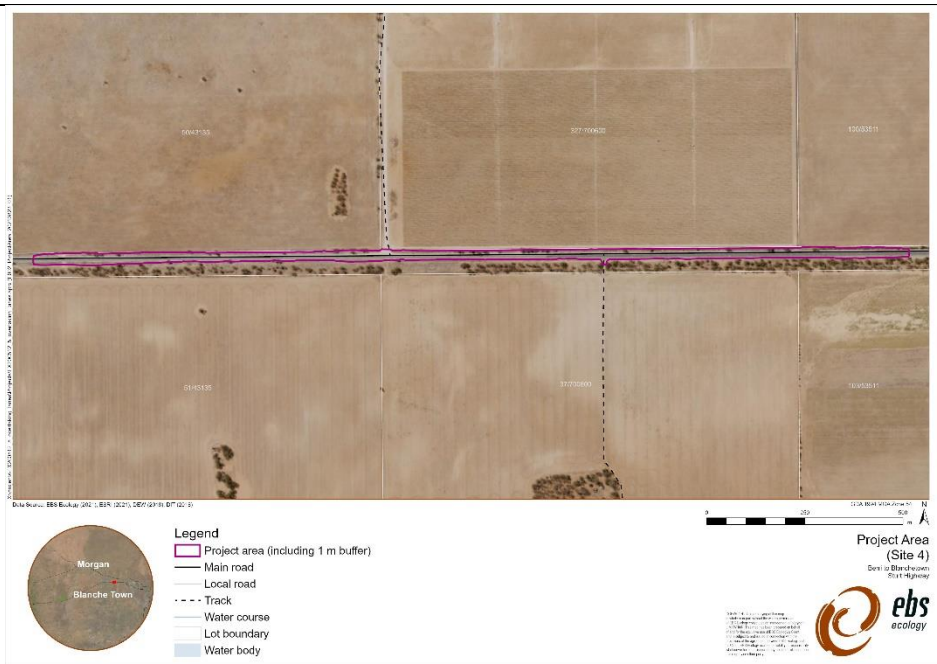
Attachment 3 - EX200512C_TEC_EPBC Self Assessment_Final_20220404 (PDF File)

1. Application information

Table 1. Application details.

Applicant:	Department for Infrastructure and Transport (DIT).		
Key contact:			
Landowner:	Department for Infrastructure and Transport		
Site Address:	Sturt Highway Site 4 – eastbound overtaking lane from Maintenance Marker (MM) 178.3 to MM 180.5, approximately 15 km east along the Sturt Highway from Waikerie.		
Local Government Area:	Mid Murray Council	**Hundred:**	Anna
Title ID:	N/A – road reserve	**Parcel ID**	N/A – road reserve

Table 2. Summary of the proposed clearance.

Purpose of clearance:	Clearance required for installation of overtaking lane for east bound traffic and clearance on both sides for verge widening.
Native Vegetation Regulation:	Regulation 12, Schedule 1: Clause 32 – Works on behalf of Commissioner of Highways
Description of the vegetation under application:	0.4539 ha of *Maireana brevifolia* and *Lepidium leptopetalum* in moderate condition and 2.145 ha of *Eucalyptus dumosa* and E*ucalyptus gracilis* mallee in good condition.
Total proposed clearance – area (ha) and/or number of trees:	A total of 2.598 ha of native vegetation is proposed to be cleared. *This area includes an offset provision for up to a 1 m Construction Activity Zone (refer to DIT Master specification) around the OTL design extent to enable construction should it be required.*
Level of clearance:	Level 4
Overlay (Planning and Design Code):	Native Vegetation Overlay
Map of proposed clearance area:	
Mitigation Hierarchy:	***Avoidance*** **-** As overtaking lanes are built immediately adjacent to the existing roads construction is required next to the existing Sturt Highway, within the existing road corridor boundary. As the land within the road corridor contains remnant native vegetation for its full extent the ability to completely avoid

	removal is not able to be achieved. As complete native vegetation avoidance is not possible and alternative alignments beyond the road corridor without vegetation are not available for overtaking lanes the project needed to focus on measures to minimise the impacts. Identifying alternate sites within a 10.5km extent and undertaking preliminary assessments during the planning phase, and steepening batter slopes during the design phase were the primary measures used to avoid native vegetation. ***Minimization -*** Mott Mac have stated the following minimisation measures have been undertaken: The project sought to initially identify and minimise vegetation impacts by: • Identifying and assessing alternative sites for the 2.2 km eastbound overtaking lane within a 9 km extent; • Undertaking a preliminary environment and heritage site assessment for a 9 km extent of the Sturt Highway which informed the location of the OTL with respect to better quality vegetation; • Engaging a Department for Transport and Infrastructure prequalified specialist consultant to confirm the initial assessment and provide an Ecological Constraints Summary for the 9 km extent; • Undertaking a defined multi-criteria assessment process for three sites that considered the maximum safety outcome and benefit, proximity to other overtaking lanes, existing road geometry, environmental and heritage assets, landholder access and services constraints; and • Consulting with the Murraylands and Riverland Landscape Board regarding environmental and declared pest plant species of concern within roadsides in the region (including Buffel grass). The northern side of the road siting, whilst having the narrowest road corridor width (12 m) appeared to be less heavily vegetated with standing vegetation (trees and shrubs) when compared with that of the southern side of the road (45m). This minimised the vegetation removal clearance required when compared with the southern side of the highway. To minimise the vegetation impact for the preferred site (between MM178.3 to MM180.5), located on the northern side of the Sturt Highway the design has: • Implemented steeper batters in area in proximity better quality vegetation; and • Minimised clearance at the batter construction extents by pruning rather than removing some of the trees identified. The Murraylands and Riverland Landscape Board confirmed limited declared pest plant species of concern to roadsides in this location, including Buffel grass are recorded within the preferred site. ***Rehabilitation or restoration -*** The overtaking lanes are permanent land clearance that is unlikely to be rehabilitated or restored. However, Declared and Environmental weed species will be controlled during in accordance with the Department for Transport and Infrastructure's Master Specification Part PC-ENV2. ***Offset –*** Any adverse impact on native vegetation or ecosystems that cannot be avoided or minimised will be offset by implementing an SEB that outweighs that impact (see Section 6).
SEB Offset proposal	Payment of $43,052.47, which includes an administration fee of $2,244.44 (including GST).

2. Purpose of clearance

2.1. Description

EBS Ecology was engaged by Mott MacDonald on behalf of the Department for Infrastructure and Transport (DIT) to assess vegetation for the duplication of four overtaking lanes (OTL) (Sites 1 to 4) on the Sturt Highway, extending from approximately 27 kilometres (km) west of Blanchetown to approximately 15 km east of Waikerie South Australia (SA) (Figure 1). Site 4 (the Project) is located approximately 15 kilometres (km) east of Waikerie, South Australia (SA). The purpose of the clearance is to make way for an eastbound overtaking lane and verge widening on both sides of the road along the Sturt Highway.

The Site 4 Project design involves the clearance of 2.598 ha of low shrublands and mallee vegetation.

Objectives

EBS Ecology were engaged to undertake a flora and fauna assessment for the proposed OTL including the following project components:

- Undertake a desktop assessment of the likelihood of occurrence and status of threatened flora and fauna protected under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and State *National Parks and Wildlife Act 1972* (NPW Act);
- Assess native vegetation within the Project Area for clearance using the Native Vegetation Council (NVC) endorsed Bushland Assessment Method (BAM); and
- Calculate the Significant Environmental Benefit (SEB) offset requirements based on the impact footprint.

This report relates to the assessment for Site 4 where an OTL is proposed for the east bound roadside. The report presents findings of the desktop assessment; in addition to results of the Bushland Assessment (BAM) required for assessing patches of vegetation proposed for clearance under the Native Vegetation Regulations.

2.2. Background

Current and surrounding land use

The Site 4 Project Area consists of roadside vegetation to the 15 kilometres (km) east of Waikerie in the District Council of Loxton and Waikerie. The Project Area is surrounded by cleared farmland. There are no protected areas within 5 km of the Project Area, with the nearest NPWSA reserve being Pooginook Conservation Park, approximately 5.7 km north, and the nearest heritage agreement being HA89, approximately 5.5 km south of the Project Area.

Administrative boundaries

The Project Area occurs within the District Council of Loxton and Waikerie, Murraylands and Riverland Landscape Management Region, Holder Hundred and Albert County.

Bioregions

The Interim Biogeographical Regionalisation of Australia (IBRA) identifies geographically distinct bioregions based on common climate, geology, landform, native vegetation and species information. The bioregions are further refined into subregions and environmental associations.

The Project Area is located in the Murray Darling Depression IBRA Bioregion, Murray Mallee IBRA Subregion and the Holder IBRA Environmental Association. Approximately 21% (444,401 ha) of the Murray Mallee IBRA Subregion is mapped as remnant vegetation, of this 17% (76,180 ha) is formerly conserved and protected. Approximately 18% (72200 ha) of the Holder IBRA Environmental Association is remnant vegetation, of this, 17% (76,180 ha) and 22% (34453 ha) is formerly conserved and protected, respectively.

2.3. General Location Map

The location of the proposed overtaking lane is displayed in Figure 1. The Project Area is approximately 15 km east of Waikerie.

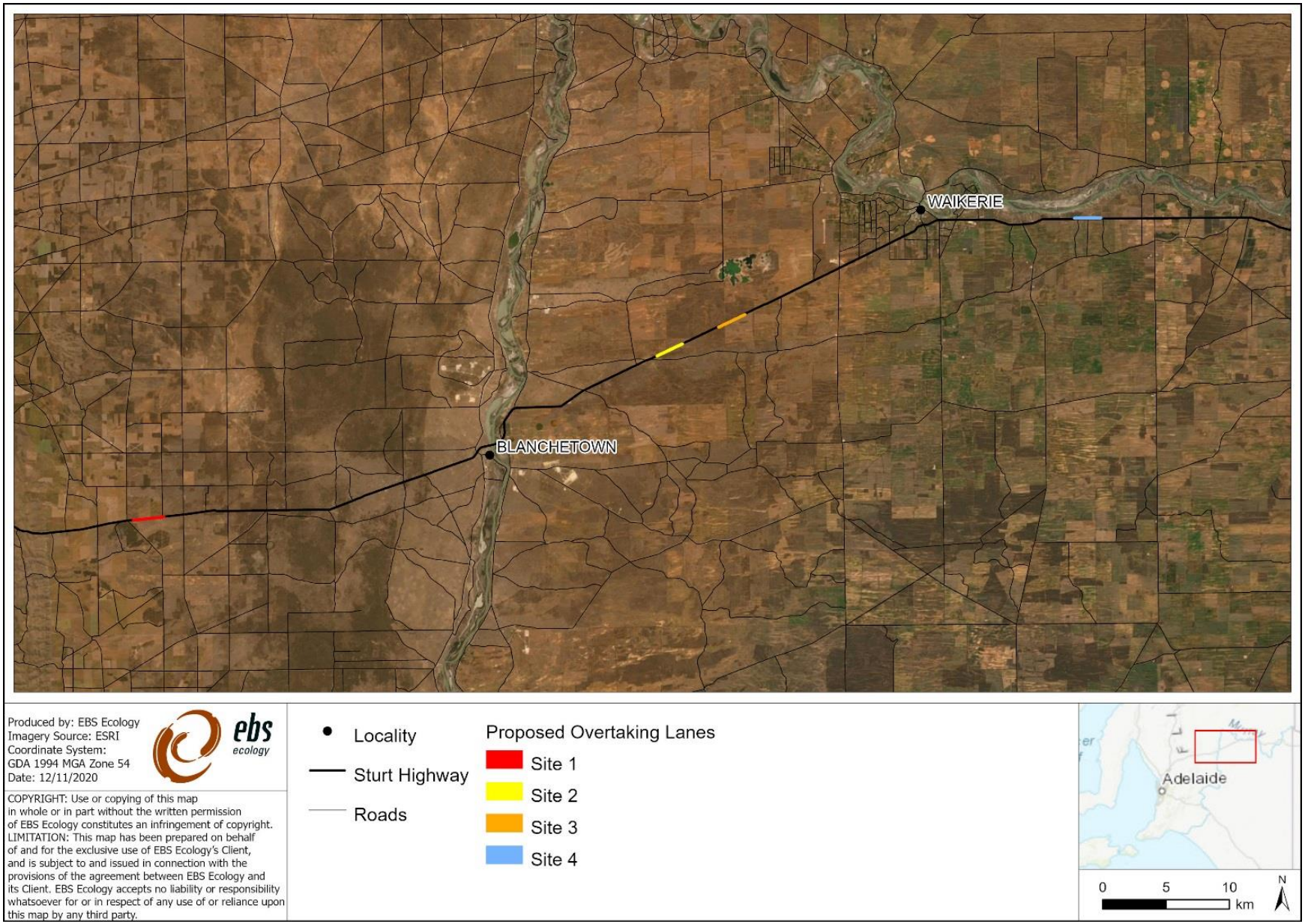


Figure 1. Sturt Highway overtaking lane Project Area. The location of the Site 4 OTL is highlighted in blue.

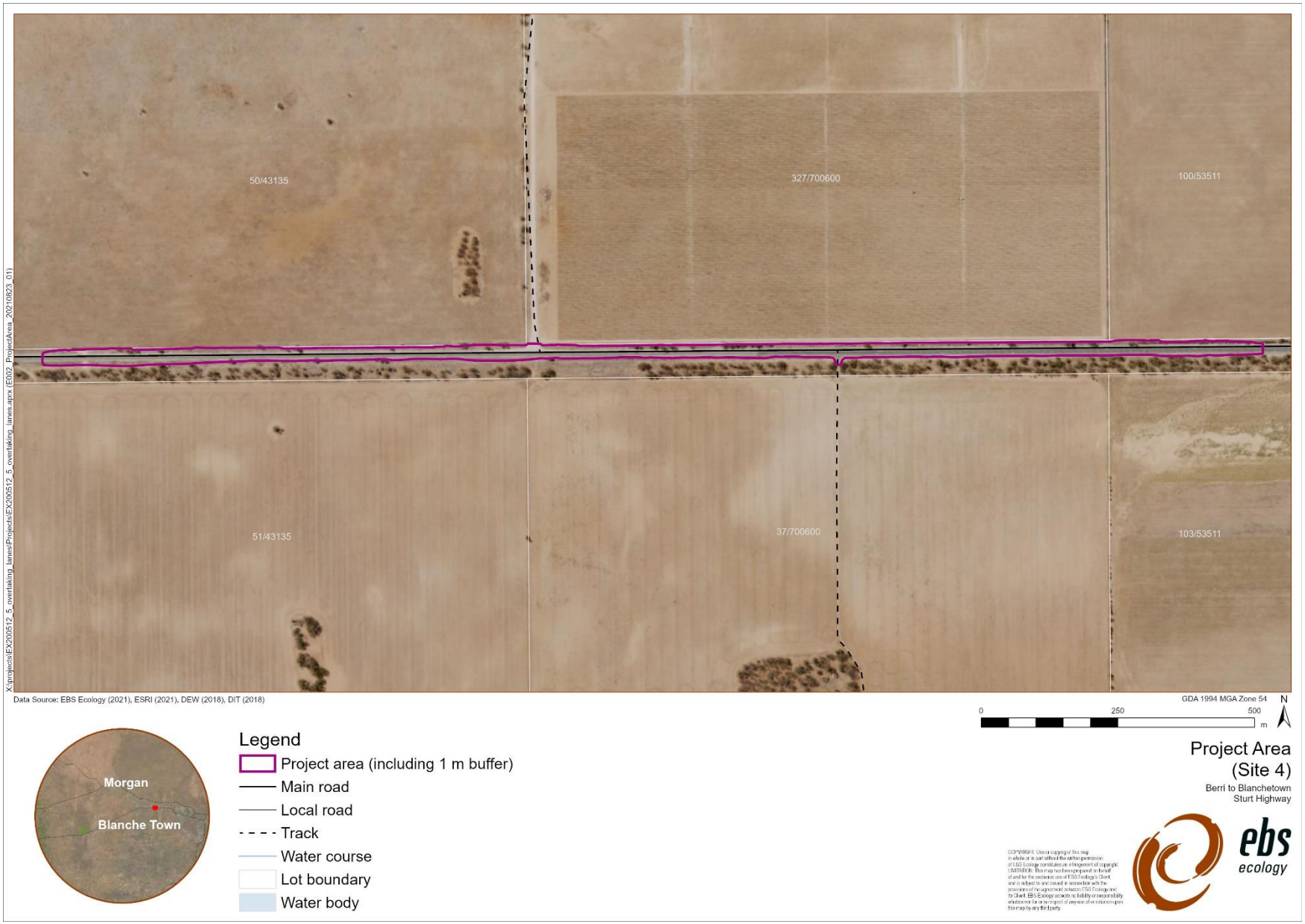


Figure 2. Site 4 Sturt Highway overtaking lane Project Area.

2.4. Details of the proposal

The Project Area overtaking lane extends approximately 2200 metres (m) along the Sturt Highway on the eastbound side, from Maintenance Marker 178.3 to Maintenance Marker 180.5, east of Nitschke Rd, Good Hope Landing (Figure 2). The Project includes widening of the verge on both sides of the road. The direct impact areas are on Road Reserve.

The proposed overtaking lane and verge widening will impact vegetation on both sides of the highway (Figure 2), with the majority of clearance taking place on the north side.

Drawings based on 100% designs as provided to EBS on 23/02/2022 can be seen in Appendix 1.

2.5. Approvals <u>required</u> *or* <u>obtained</u>

Environment Protection and Biodiversity Conservation Act 1999 - The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and the *Environment Protection and Biodiversity Conservation Regulations 2000* provide a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places – defined in the Act as 'matters of national environmental significance'. Any action that has, will have, or is likely to have a significant impact on Matters of National Environmental Significance (MNES) requires referral under the EPBC Act.

Examples of other potential approvals that may be required include:

- transport of declared weeds under the new Landscapes South Australia Act, and
- *Aboriginal Heritage Act 1988* if any sites, objects or remains are uncovered during the works.

Other legislative approvals may be required.

2.6. Native Vegetation Regulation

The Project is considered to be permitted under the following regulation:

Regulation 12(32)—Works on behalf of Commissioner of Highways

- 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).

3. Method

3.1. Desktop assessment

A desktop assessment was undertaken to determine the potential for any threatened flora and fauna species, and Threatened Ecological Communities (TECs) (both Commonwealth and State listed) to occur within the Project Area. This was achieved by undertaking database searches using a 5 km buffer of the Project Area (Search Area).

3.1.1. PMST report

A Protected Matters Search Tool (PMST) report was generated on 10 August 2020 to identify nationally threatened flora and fauna, migratory fauna and TECs under the EPBC Act relevant to the Project Area (DAWE 2020). Only species and TECs identified in the PMST report that are likely or known to occur within the Search Area were assessed for their likelihood of occurrence within the Project Area.

3.1.2. BDBSA data extract

A data extract from the Biological Database of South Australia (BDBSA) was obtained from the Department of Environment and Water (DEW) to identify flora and fauna species that have been recorded within 5 km of the Project Area (data extracted 05 August 2020; DEW 2020). The BDBSA is comprised of an integrated collection of species records from the South Australian Museum, conservation organisations, private consultancies, Birds SA, Birdlife Australia and the Australasian Wader Study Group, which meet the Department for Environment and Water's (DEW) standards for data quality, integrity and maintenance. Only species with records since 1995 and a spatial reliability of less than 1 km were assessed for their likelihood of occurrence.

3.1.3. Likelihood of occurrence

The criteria for the likelihood of occurrence of threatened species within the Project Area are described in Table 3.

Table 3. Criteria for the likelihood of occurrence of threatened species within the Project 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. 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.

3.2. Flora assessment

The flora assessment was undertaken by NVC Accredited Consultants Jesse Carpenter and Chris Gibson on 10 February 2021 in accordance with the Bushland Assessment Method (BAM) (NVC 2020a).

3.2.1. Bushland Assessment Method

The BAM is derived from the Nature Conservation Society of South Australia's Bushland Condition Monitoring methodology (Croft *et al.* 2007, 2008a, 2008b, 2009; Milne and Croft 2012; Milne and McCallum 2012). The BAM used to assess areas of native vegetation requiring clearance and calculate the SEB requirements.

Details of site selection/stratification and assessment protocols, and the biodiversity value components assessed and the factors that influence these components are outlined in the *Bushland Assessment Manual* (NVC 2020a).

The Conservation Significance Scores were calculated from direct observations of flora and direct and historical observations of fauna species of conservation significance. All fauna identified as known to occur in the PMST, and fauna with BDBSA records since 1995 and with a spatial reliability of less than 1 km, within 5 km of the Project Area, were included in the BAM scoresheets. Species determined as unlikely to occur within the Project Area will be removed by the Native Vegetation Branch if the finding is supported. Marine and/or wetland species were omitted from the scoresheets given the Project Area is terrestrial.

3.3. Fauna assessment

As mentioned above in Section 3.1.2, data extracts from the Biological Database of South Australia (BDBSA) was obtained from DEW to identify fauna species that have been recorded within 5 km of the Project Areas as required (data extracted 05 August 2020; DEW 2020).

Very limited time was available for fauna observations in-field, but an assessment was made for threatened species based on vegetation and habitat features. All native and exotic fauna species opportunistically encountered (directly observed, or tracks, scats, burrows, nests and other signs of presence) during the native vegetation clearance assessment were recorded. Potential fauna refuge sites, such as hollows, were noted as an indication of availability of suitable habitat. Particular attention was paid to identifying habitat for threatened species. For each opportunistic fauna observation, the species, number of individuals, GPS location, detection methodology (sight, sound or sign) and habitat were recorded.

4. Assessment outcomes

4.1. Vegetation assessment

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

The landform is a flat plain, on calcareous loam soils. Vegetation in surveyed areas comprised of two vegetation associations (Figure 3 & Figure 4):

- *Maireana brevifolia* and *Lepidium leptopetalum* sparse low shrubland over *Carrichtera annua* and *Austrostipa* sp. (Table 4); and
- *Eucalyptus dumosa* and *Eucalyptus gracilis* mallee over *Lepidium leptopetalum, Dissocarpus paradoxa, Austrostipa elegantissima* and *Rytidosperma* sp. (Table 5).

Over-storey vegetation of the mallee woodland is approximately 5 m in height, and the low shrubland consisted of vegetation under 1 m in height. The vegetation within each association was relatively homogenous, and ran along the road within the road corridor, surrounded on both sides by agricultural, horticultural, and grazing land. Details of the vegetation associates/scattered trees proposed to be impacted

Table 4. Summary of VA1.

Vegetation Association	VA A1; *Maireana brevifolia/Lepidium leptopetalum* sparse low shrubland over *Carrichtera annua* and *Austrostipa* sp.
	
General description	Dominant species was *Maireana brevifolia* and *Lepidium leptopetalum* with a low ratio of exotic species to native species.
Threatened species or community	Known - The Mallee Bird Community of the Murray Darling Depression Bioregion (EN); Possible - *Polytelis anthopeplus monarchoides* (Regent Parrot) (EPBC: VU, State: V) - *Corcorax melanorhamphos* (White-winged Chough) (State: R) - *Neophema Chrysostoma* (Blue-winged Parrot) (State: V) - *Hieraaetus morphnoides* (Little Eagle) (State: V) - *Leipoa ocellata* (Malleefowl) (EPBC: VU, State: V)

	- *Cinclosoma castanotum* (Chestnut-backed Quailthrush) (State: R) - *Melanodryas cucullata cucullata* (Hooded Robin) (State: R) - *Myiagra inquieta* (Restless Flycatcher) (State: R) - *Pachycephala inornata* (Gilbert's Whistler) (State: R) - *Plectorhyncha lanceolata* (Striped Honeyeater) (State: R) - *Falco peregrinus macropus* (Peregrine Falcon) (State: R) - *Falco subniger* (Black Falcon) (State: R) - *Hylacola cauta* (Shy Heathwren) (State: R) - *Falco hypoleucos* (Grey Falcon) (State: R)				
Landscape context score	1.14	**Vegetation Condition Score**	46.73	**Conservation significance score**	1.50
Unit biodiversity Score	79.91	**Area (ha)**	0.4539	**Total biodiversity Score**	36.27

Table 5. Summary of VA2.

Vegetation Association	VA A2; *Eucalyptus dumosa/Eucalyptus gracilis* mallee over *Lepidium leptopetalum, Dissocarpus paradoxa*, *Austrostipa elegantissima* and *Rytidosperma* sp.
	
General description	*Eucalyptus dumosa/Eucalyptus gracilis mallee over Lepidium leptopetalum, Dissocarpus paradoxa, Austrostipa elegantissima and Rytidosperma sp.* in moderate condition. Photo: vegetation facing east
Threatened species or community	Known - The Mallee Bird Community of the Murray Darling Depression Bioregion (EN); Likely - *Polytelis anthopeplus monarchoides* (Regent Parrot) (EPBC: VU, State: V)

	Possible - *Corcorax melanorhamphos* (White-winged Chough) (State: R) - *Neophema Chrysostoma* (Blue-winged Parrot) (State: V) - *Hieraaetus morphnoides* (Little Eagle) (State: V) - *Leipoa ocellata* (Malleefowl) (EPBC: VU, State: V) - *Cinclosoma castanotum* (Chestnut-backed Quailthrush) (State: R) - *Melanodryas cucullata cucullata* (Hooded Robin) (State: R) - *Myiagra inquieta* (Restless Flycatcher) (State: R) - *Pachycephala inornata* (Gilbert's Whistler) (State: R) - *Plectorhyncha lanceolata* (Striped Honeyeater) (State: R) - *Falco peregrinus macropus* (Peregrine Falcon) (State: R) - *Falco subniger* (Black Falcon) (State: R) - *Hylacola cauta* (Shy Heathwren) (State: R) *Falco hypoleucos* (Grey Falcon) (State: R)				
Landscape context score	1.15	**Vegetation Condition Score**	35.11	**Conservation significance score**	1.50
Unit biodiversity Score	60.57	**Area (ha)**	2.1436	**Total biodiversity Score**	129.84

4.1.2. Site map showing areas of proposed impact

Figure 3. Native Vegetation Associations present at the Site 4 Project Area on the Sturt Highway (OTL on northern side). (Map 1 of 2).

Figure 4. Native Vegetation Associations present at the Site 4 Project Area on the Sturt Highway (OTL on northern side). (Map 2 of 2).

4.2. Threatened species assessment

4.2.1. Matters of national Environmental significance

There are five matters of National Environmental Significance (MNES) relevant to the Project Area, three Listed threatened ecological communities and two Wetland of International Importance:

Threatened Ecological Communities

- Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions (Endangered).
- The Mallee Bird Community of the Murray Darling Depression Bioregion (Endangered).
- River Murray and associated wetlands, floodplains and groundwater systems, from the junction with the Darling River to the sea (Disallowed, therefore not discussed further); and
- Plains mallee box woodlands of the Murray Darling Depression, Riverina and Naracoorte Coastal Plains Bioregions (Critically Endangered).

Wetlands of International Importance

- The Coorong, and lakes Alexandrina and Albert wetland;
- Banrock Station wetland complex.

The PMST report suggests that the River Murray and associated wetlands threatened ecological community (TEC) is "likely to occur" within 5 km of the Project Area. The Project Area is located approximately 2 km from the River Murray which is outside of the floodplain area. Therefore, this Threatened Ecological Community does not occur within the Project Area.

The PMST report suggests that the Plains Mallee Box threatened ecological community (TEC) "may occur" within 5 km of the Project Area. The dominant tree species is either *Eucalyptus porosa, Eucalyptus behriana or Eucalyptus dumosa* (depending on location). Other species of *Eucalyptus* commonly co-occur. The overstorey canopy is generally sparse or open (10-15%) and the mid and understorey also tend to be sparse. A low chenopod sub-shrub layer can be a key feature in this community as well as the dominance of tussock grasses in the ground layer (although this is drought dependent). Although Eucalyptus dumosa woodland occurs within the Project Area, the understorey species and co-occurring eucalypts are not part of this TEC and, therefore, does not occur within the Project Area.

These vegetation communities and wetlands of international importance are not present in the area or adjacent to the Project Area as indicated by the SA vegetation mapping (NatureMaps 2020) and therefore, the project is unlikely to impact on these communities.

The Mallee Bird Community of the Murray Darling Depression Bioregion is present within the Project Area (see Attachment 3).

4.2.2. Threatened fauna and flora

EPBC Act

No Nationally listed Threatened plant species were assessed as potentially occurring within 5 km of the Project Area.

The PMST and NatureMaps search identified four EPBC listed threatened bird species that may potentially occur within the Project Area (Table 6):

- *Leipoa ocellata* (Malleefowl) (Vulnerable);
- *Manorina melanotis* (Black-eared Miner) (Endangered);
- *Polytelis anthopeplus* (Regent Parrot) (Vulnerable); and
- *Litoria raniformis* (Southern Bell Frog) (Vulnerable).

The Malleefowl generally occupies shrublands and low woodlands that are dominated by mallee vegetation. It also occurs in other habitat types including eucalypt or native pine Callitris woodlands, acacia shrublands, Broombush Melaleuca uncinata vegetation or coastal heathlands (DOE 2014c). Although the Project Area contains mallee, the leaf litter, shrub density and understorey plant species do not provide good habitat for this species, and therefore, clearance of the mallee habitat within the Project Area is unlikely to impact on Malleefowl.

The Black-eared Miner occurs in the Murray mallee region of South Australia, north of the Murray River. This species is restricted to small, local colonies generally occurring in mature mallee eucalypt woodland in areas that have not been burnt for at least 50 years and have not been cleared. In South Australia and NSW, all but one known colony occurs in areas of contiguous mallee larger than 100 000 ha. Given the Project Area contains fragmented mallee vegetation and is south of the river, it is unlikely that the clearance of this vegetation will impact Black-eared Miners (DAWE 2016).

Regent Parrots typically occur in wooded areas that can provide roosting and nesting habitat for Regent Parrots. Given the absence of large hollows, the area is unlikely to provide important nesting habitat, but may provide roosting habitat in the mallee vegetation association.

Southern Bell frogs typically occur amongst emergent vegetation, including *Typha sp.* (Bulrush), *Phragmites sp.* (reeds) and *Eleocharis sp.* (sedges), in or at the edges of still or slow-flowing water bodies such as lagoons, swamps, lakes, ponds and farm dams. Additionally, this species occurs in: clays or well-watered sandy soils; open grassland, open forest, and ephemeral and permanent non-saline marshes and swamps; steep-banked water edges (like ditches and drains) and gently graded edges containing fringing plants (DAWE 2020b). There is no suitable habitat of this description within the Project Area, therefore, this species is unlikely to be impacted by the proposed clearance.

NPW Act

One State listed flora species was assessed as potentially occurring within 5 km of the Project Area, *Picris squarrosa* (Squat Picris). However, there is no suitable habitat within the Project Area for this species.

Fourteen State threatened fauna species were identified by the desktop as potentially occurring within the Project Area. Of these, eleven were assessed as possibly or likely to occur within the Project Area due to the presence of suitable habitat and/or nearby records:

- *Anhinga novaehollandiae* (Australasian Darter) (Rare);
- *Cinclosoma castanotum* (Chestnut-backed Quailthrush) (Rare);
- *Corcorax melanorhamphos* (White-winged Chough) (Rare);
- *Coturnix ypsilophora australis* (Brown Quail) (Vulnerable);
- *Falco peregrinus macropus* (Peregrine Falcon) (Rare);
- *Hieraaetus morphnoides* (Little Eagle) (Vulnerable);
- *Melanodryas cucullata* (Hooded Robin) (Rare);
- *Myiagra inquieta* (Restless Flycatcher) (Rare);
- *Pachycephala inornata* (Gilberts Whistler) (Rare);
- *Plectorhyncha lanceolata* (Striped Honeyeater) (Rare); and
- *Trichosurus vulpecula* (Common Brushtail Possum) (Rare).

Table 6. Nationally (EPBC Act) or State (NPW Act) threatened species potentially occurring within Site 4.

Species (common name)	**Conservation status		*Data source	Date	***PMST classification	Species known habitat preferences	Likelihood of use for habitat - Comment
	SA	AUS					
Anhinga novaehollandiae (Australasian Darter)	R	-	1	2004	-	Habitat is lakes, rivers, swamps; rarely coastal.	Unlikely – although nearby records. Unsuitable habitat on site.
Ardea alba (Great Egret)	-	Ma	2	-	Known to occur	The Eastern Great Egret has been reported in a wide range of wetland habitats (for example inland and coastal, freshwater and saline, permanent and ephemeral, open and vegetated, large and small, natural and artificial). These include swamps and marshes; margins of rivers and lakes; damp or flooded grasslands, pastures or agricultural lands; reservoirs; sewage treatment ponds; drainage channels; salt pans and salt lakes; salt marshes; estuarine mudflats, tidal streams; mangrove swamps; coastal lagoons; and offshore reefs (Kushlan & Hancock 2005; Marchant & Higgins 1990; Martínez-Vilalta & Motis 1992 in DAWE 2020b).	Unlikely – unsuitable habitat.
Cinclosoma castanotum (Chestnut-backed Quailthrush)	R	-	1	1999	-	Throughout its distribution it occurs in a wide range of arid and semi-arid habitats; mainly in the low shrubs and undergrowth of mallee scrub, but also in *Acacia* scrubs, dry sclerophyll woodland, heath, and native pine (OEH 2020).	Possible – suitable habitat nearby.
Corcorax melanorhamphos (White-winged Chough)	R	-	1	2005	-	Dry woodland and mallee. Highly social species.	Possible – maybe suitable habitat nearby, recent records within 5km.
Coturnix ypsilophora australis (Brown Quail)	V	-	1	2004	-	Found across northern and eastern Australia. Prefers dense grasslands, often on the edges of open forests, and bracken. May sometimes be seen alongside roads (Birds in Backyards 2020).	Possible – recent records nearby.

Species (common name)	**Conservation status		*Data source	Date	***PMST classification	Species known habitat preferences	Likelihood of use for habitat - Comment
	SA	AUS					
Falco peregrinus macropus (Peregrine Falcon)	R	-	1	2004	-	Found everywhere from woodlands to open grasslands and coastal cliffs – though less frequently in desert regions (DAWE 2020b). This species prefers open habitats such as grasslands, tundra and meadows and nests on cliff faces and in crevices. It has an extremely large range and is found world-wide except for rainforests and cold, dry Arctic regions. This species has increasingly been observed inhabiting urban areas. (ADW 2002)	Possible - suitable habitat, nearby record.
Hieraaetus morphnoides (Little Eagle)	V	-	1	2004	-	The Little Eagle is seen over woodland and forested lands and open country, extending into the arid zone. It tends to avoid rainforest and heavy forest (Birds in Backyards 2020).	Possible – suitable habitat nearby.
Leipoa ocellata (Malleefowl)	V	VU	1, 2	2006	Known to occur	Inhabits semi-arid regions of southern Australia. In South Australia, the Malleefowl is distributed from the south-east, north to the Murray-Mallee region and west to Streaky Bay, south of 32°S. Occupies shrublands and low woodlands that are dominated by mallee vegetation. It also occurs in other habitat types including Eucalypt or Native pine *Callitris* woodlands, *Acacia* shrublands, Broombush *(Melaleuca uncinata)* vegetation or coastal heathlands (DAWE 2020b).	Possible – suitable habitat nearby.
Manorina melanotis (Black-eared Miner)	E	EN	2	-	Known to occur	Black-eared Miners inhabit shallow sand mallee and chenopod mallee in the Sunset Country of Victoria and the Bookmark Biosphere Reserve in South Australia (McLaughlin 1992; Muir et al. 1999 in DAWE 2020b).	Possible – although rarity, no nearby records.
Melanodryas cucullata (Hooded Robin)	R	-	1	2015	-	Hooded Robins are found in lightly timbered woodland, mainly dominated by *Acacia* and/or *Eucalypts* (Birdlife 2020).	Possible – occasional visitor from nearby Mallee.
Myiagra inquieta (Restless Flycatcher	R	-	1	2005	-	Found throughout northern and eastern mainland Australia, as well as in south-western Australia. The Restless Flycatcher is found in open forests and woodlands and is frequently seen in farmland (Birds in Backyards 2020).	Possible – occasional. Nearby recent records, suitable habitat.
Pachycephala inornata (Gilberts Whistler)	R	-	1	2004	-	Sparsely distributed over much of the arid and semi-arid zone of inland southern Australia, from the western slopes of NSW to the Western Australian wheatbelt (Environment and Heritage 2014). Habitat is shrubby woodland and mallee (Simpson and Day 1999, p. 227).	Possible – occasional. Suitable habitat nearby.
Plectorhyncha lanceolata (Striped Honeyeater)	R	-	1	2002	-	The Striped Honeyeater is found in eastern Australia, mainly inland, from the Yorke Peninsula, South Australia to the coast of New South Wales, around Toukley, and north to Charters Towers, Queensland. The Striped Honeyeater is found in forests and woodlands, often along rivers, as well as mangroves and in urban gardens (Birds in Backyards ND).	Possible – occasional. Recent record within 2km.
Polytelis anthopeplus monarchoides (Regent Parrot)	V	VU	1, 2	2012	Breeding likely to occur	The Regent Parrot (eastern) is confined to the semi-arid interior of south eastern mainland Australia. Primarily inhabits riparian or littoral River Red Gum *(Eucalyptus camaldulensis)* forests or	Possible – maybe suitable habitat nearby, recent record within 3km.

Species (common name)	**Conservation status		*Data source	Date	***PMST classification	Species known habitat preferences	Likelihood of use for habitat - Comment
	SA	AUS					
						woodlands and adjacent Black Box *(E. largiflorens)* woodlands (DAWE 2020b).	
Frogs							
Litoria raniformis (Growling Grass Frog, Southern Bell Frog, Green and Golden Frog, Warty Swamp Frog, Golden Bell Frog)	V	VU	1, 2	2004	Known to occur	This species is found mostly amongst emergent vegetation, including Typha sp. (Bulrush), Phragmites sp. (reeds) and Eleocharis sp. (sedges), in or at the edges of still or slow-flowing water bodies such as lagoons, swamps, lakes, ponds and farm dams. Additionally, this species occurs in; clays or well-watered sandy soils; open grassland, open forest, and ephemeral and permanent non-saline marshes and swamps; steep-banked water edges (like ditches and drains) and gently graded edges containing fringing plants (DAWE 2020b).	Unlikely – unsuitable habitat.
Mammal							
Trichosurus vulpecula (Common Brushtail Possum)	R	-	1	2020	-	Eucalyptus and Sheoak woodlands. Prefer to nest in tree hollows or other dark confined spaces such as hollow logs, dense vegetation or cork crevices. May cohabit built areas and den in roof spaces (Government of South Australia ND).	Possible – maybe suitable habitat nearby, recent record within 2km.
Reptile							
Chelodina expansa (Broadshelled Turtle)	V	-	1	2008	-	Found throughout the Murray-Darling River system of south-eastern Australia and in distinctive populations across central and coastal QLD. Mostly occurs in turbid water at depths of greater than three metres. Inhabits permanent streams, rivers, oxbows, ponds in floodplains, backwater, and swamps.	Unlikely – unsuitable habitat.
Emydura macquarii (Macquarie River Turtle)	V	-	1	2008	-	Prefers permanent, relatively calm water with a good supply of underwater snags.	Unlikely – unsuitable habitat.
Morelia spilota (Carpet Python)	R	-	1	2006	-	Prefers riparian vegetation groups, and dry sclerophyll forest with ground cover and logs. Lives in hollows of large River Red Gums and north-facing cliffs along the Murray River (DEH 2006).	Unlikely – unsuitable habitat.
Plant							
Brachyscome paludicola (Swamp Daisy)	R	-	1	2002	-	Found along the Murray River and in the South-east of South Australia, growing on inundated clay soils and common in seasonally wet, red gum dominated flats.	Unlikely – unsuitable habitat.
Hydrilla verticillata (Waterthyme)	R	-	1	2010	-	Grows in still or slow-flowing water to at least 3.5 m deep. In the Murray region of South Australia (eFlora 2020).	Unlikely – unsuitable habitat.
Lythrum salicaria (Purple Loosestrife)	R	-	1	1989	-	The species favours wet situations such as swampy ground and the water's edge, but will persist in dried-out land and is long lived, wild or cultivated (Director of National Parks, 2015).	Unlikely – unsuitable habitat.
Najas tenuifolia (Water Nymph)	E	-	1	2010	-	Occurs usually in fresh water. In South Australia, it is found in the Murray and Northern Lofty Flora Regions (eFlora 2020).	Unlikely – unsuitable habitat.
Picris squarrosa (Squat Picris)	R	-	1	2002	-	On coastal dunes, alluvium along rivers, and disturbed ground elsewhere. In South Australia, it is found in the Botanical Regions of Eyre Peninsula, Murray, Southern Lofty, and South Eastern (eFlora 2020).	Unlikely – unsuitable habitat

4.3. Cumulative impacts

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 direct impact of the Project is the removal of 2.598 ha of native mallee and shrubland vegetation. All works fall within the Project Area.

Potential indirect impacts of the Project include:

- Dust generation, which may impact surrounding vegetation;
- Noise generation, which may impact fauna species in the area; and

It is unlikely that the Project will alter the hydrology (e.g. raised or lowered water table, flooding, impounding water or reduced water supply) and impact of the condition or health of the native vegetation being retained in surrounding areas.

There may be potential impacts on the root zone of vegetation, depending on the level of impact to the vegetation.

This vegetation clearance is part of four OTLs proposed for construction along Sturt Highway. Each overtaking lane consists of approximately 2 km of vegetation clearance on one side of the road and verge widening on both sides. Vegetation being impacted includes chenopod shrublands, *Eucalyptus odorata* mallee over low open shrubland, *Eucalyptus socialis* mallee with *Triodia irritans* and *Dodonaea viscosa* open shrubland.

4.4. Addressing the 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

As overtaking lanes are built immediately adjacent to the existing roads construction is required next to the existing Sturt Highway, within the existing road corridor boundary. As the land within the road corridor contains remnant native vegetation for its full extent the ability to completely avoid removal is not able to be achieved. As complete native vegetation avoidance is not possible and alternative alignments beyond the road corridor without vegetation are not available for overtaking lanes the project needed to focus on measures to minimise the impacts. Identifying alternate sites within a 10.5km extent and undertaking preliminary assessments during the planning phase, and steepening batter slopes during the design phase were the primary measures used to avoid native vegetation. These are discussed further in section (b) minimisation below.

b) Minimization – 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).

Mott Mac have stated the following minimisation measures have been undertaken:

The project sought to initially identify and minimise vegetation impacts by:

- Identifying and assessing alternative sites for the 2.2 km eastbound overtaking lane within a 9 km extent;
- Undertaking a preliminary environment and heritage site assessment for a 9 km extent of the Sturt Highway which informed the location of the OTL with respect to better quality vegetation;
- Engaging a Department for Transport and Infrastructure prequalified specialist consultant to confirm the initial assessment and provide an Ecological Constraints Summary for the 9 km extent;
- Undertaking a defined multi-criteria assessment process for three sites that considered the maximum safety outcome and benefit, proximity to other overtaking lanes, existing road geometry, environmental and heritage assets, landholder access and services constraints; and
- Consulting with the Murraylands and Riverland Landscape Board regarding environmental and declared pest plant species of concern within roadsides in the region (including Buffel grass).

The northern side of the road siting, whilst having the narrowest road corridor width (12 m) appeared to be less heavily vegetated with standing vegetation (trees and shrubs) when compared with that of the southern side of the road (45m). This minimised the vegetation removal clearance required when compared with the southern side of the highway.

To minimise the vegetation impact for the preferred site (between MM178.3 to MM180.5), located on the northern side of the Sturt Highway the design has:

- Constructed steeper batters in areas of high-quality vegetation; and
- Minimised clearance at the batter construction extents by pruning rather than removing some of the trees identified.

The Murraylands and Riverland Landscape Board confirmed limited declared pest plant species of concern to roadsides in this location, including Buffel grass are recorded within the preferred site.

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 overtaking lanes are permanent land clearance that is unlikely to be rehabilitated or restored. However, Declared and Environmental weed species will be controlled during in accordance with the Department for Transport and Infrastructure's Master Specification Part PC-ENV2.

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.

Any adverse impact on native vegetation or ecosystems that cannot be avoided or minimised will be offset by implementing an SEB that outweighs that impact (see Section 6).

4.5. 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*.

Table 7. Assessment against the Principles of Clearance.

Principle of clearance	Considerations
Principle 1(a) – it comprises a high level of diversity of plant species	Relevant information Plant species numbers (native and introduced) recorded at each vegetation association: A1: 11 native and 6 introduced A2: 25 native and 5 introduced Bushland Plant Diversity Score A1: 20/30 A2: 28/30
	Assessment against the principles Seriously at Variance A2
	Moderating factors that may be considered by the NVC - Amount of clearance related to the area of remnant vegetation The IBRA association of Holder has 18% native vegetation remaining of with 22% is formerly conserved.
Principle 1(b) – significance as a habitat for wildlife	Relevant information A total of 3 native bird species were recorded using the vegetation during the current fauna assessment. No nationally or State listed threatened species were recorded during the fauna assessment. Four EPBC listed threatened species were identified as likely occurring in the Project Area: *Leipoa ocellata* (Malleefowl), *Polytelis anthopeplus monarchoides* (Regent Parrot), *Manorina melanotis* (Black-eared Miner) and *Litoria raniformis* (Southern Bell Frog). Eleven State threatened fauna species were also assessed as possibly or likely occurring within the Project Area as they had recorded observations since 1995 within 5 km of the Project Area. One of the vegetation associations have a high (>50) Unit biodiversity score. The area surrounding the majority of the Project Area is used as cropping land, little remnant vegetation occurs in this area. Therefore, the vegetation that forms the road corridor may provide a corridor for fauna movement or a habitat refuge. Threatened Fauna Score – 0.1 Unit biodiversity Score A1 – 79.91

Principle of clearance	Considerations
	A2 – 60.57
	Assessment against the principles Seriously at Variance - A1 & A2
	Moderating factors that may be considered by the NVC Impact significance Impact to EPBC listed species Malleefowl, Black-eared Miner, Southern Bell Frog and Regent Parrot have been assessed against the *Matters of National Environmental Significance - Significant Impact Guidelines 1.1.* These assessments found that due to the nature of the habitat on site, lack of evidence of important breeding structures and the small area of habitat impacted compared to available habitat total, the proposal will have no significant impact. These assessments are provided as Attachment 3. For the NPW Act listed threatened species assessed as potentially occurring within the Project Area, the proposed clearance area is small relative to the presence of similar vegetation in the surrounding areas. Many of these species prefer larger connected patches of vegetation rather than the highly fragmented strips of vegetation which make up this site. As such, the proposed clearance is unlikely to impact on important habitat for these species. Common species All species recorded in the Project Area by fauna surveys are species that are commonly found in semi-arid mallee type vegetation. This habitat is widespread throughout the surrounding landscape. The Project Area does not include any habitat features essential for maintaining local populations, such as hollow trees or wetlands, that are not widespread in the landscape. Non-essential habitat Given the small extent of habitat impacted compared to available similar habitat throughout the landscape, the proposal will have a negligible impact to populations of threatened species in the long term.
Principle 1(c) – plants of a rare, vulnerable or endangered species	Relevant information N/A
	Assessment against the principles N/A
	Moderating factors that may be considered by the NVC N/A
Principle 1(d) – the vegetation	Relevant information The Mallee Bird Community of the Murray Darling Depression Bioregion listed as endangered under the EPBC Act is present within the Project Area 2.14 ha is proposed to be cleared within this Threatened Ecological Community.

Principle of clearance	Considerations
comprises the whole or part of a plant community that is Rare, Vulnerable or endangered	Threatened Community Score – 1.4
	Assessment against the principles Seriously at Variance - A1 & A2
	Moderating factors that may be considered by the NVC Impact to EPBC listed Threatened Ecological Community Mallee Bird Community has been assessed against the *Matters of National Environmental Significance - Significant Impact Guidelines 1.1*. These assessments found that due to the small size of the potential impact relative to surrounding mallee vegetation present and the impact occurring on an already fragmented patch of mallee vegetation, the proposal will have no significant impact. These assessments are provided as Attachment 3.
Principle 1(e) – it is significant as a remnant of vegetation in an area which has been extensively cleared	Relevant information Holder IBRA Association remnant – 18% The vegetation within each association was relatively homogenous, and ran along the road within the road corridor, surrounded on both sides by agricultural, horticultural, and grazing land. Total Biodiversity Score – 166.14
	Assessment against the principles At Variance -A1 & A2
	Moderating factors that may be considered by the NVC - Impact on trees or a vegetation community that has been selectively removed within the IBRA Association or IBRA Subregion and are therefore underrepresented in the vegetation that remains. - Impact on a remnant in relatively good condition, particularly if the vegetation within the IBRA Association or IBRA Subregion where vegetation has largely been degraded.
Principle 1(f) – it is growing in, or in association with, a wetland environment	Relevant information The vegetation is not associated with a wetland environment.
	Assessment against the principles N/A
	Moderating factors that may be considered by the NVC N/A
Principle 1(g) – it contributes significantly to the amenity of the area in which it is	Relevant information As the vegetation is located alongside or within close proximity to a busy highway, the area is frequented by the public. The intact woodland vegetation is likely to be considered aesthetically pleasing by the public and therefore, considered to have amenity value. However, given the surrounding vegetation and other roadsides also have intact vegetation, the removal of vegetation for an OTL is unlikely to adversely impact the amenity of the area. No cultural or historical values of the areas have been identified.
	N/A

Principle of clearance	Considerations
growing or is situated	Moderating factors that may be considered by the NVC N/A

4.6. Risk assessment

The level of risk associated with the application

Table 8. Summary of the level of risk associated with the application.

Total clearance	No. of trees	-
	Area (ha)	2.598
	Total biodiversity Score	166.141
Seriously at variance with principle 1(b), 1(c) or 1 (d)		1(b), 1(d)
Risk assessment outcome		Level 4

5. Clearance summary

Clearance Area(s) Summary table

Block	Site	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	1	20	1.4	0	0.1	79.91	0.454	36.28	1			38.09	8,910.97	490.10
A	2	28	1.4	0	0.1	60.57	2.144	129.86	1			136.36	31,897.05	1,754.34
						Total	**2.598**	**166.141**				**174.45**	**$40,808.03**	**$2,244.44**

Totals summary table

	Total Biodiversity score	Total SEB points required	SEB Payment	Admin Fee	Total Payment
Application	166.142	174.45	$40,808.03	$2,244.44	$43,052.47

Economies of Scale Factor	0.35
Rainfall (mm)	257

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.

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.

☐ Use SEB Credit that the proponent has established.

☐ Apply to have SEB Credit assigned from another person or body.

☐ Apply to have an SEB to be delivered by a Third Party.

☒ Pay into the Native Vegetation Fund.

PAYMENT SEB

If a proponent proposes to achieve the SEB by paying into the Native Vegetation Fund, summary information must be provided on the amount required to be paid and the manner of payment:

Mott MacDonald proposes to achieve the SEB by paying into the Native Vegetation Fund. The total SEB payment required for the clearance of 2.598 ha of native vegetation is $40,808.03, which includes an administration fee of $2,244.44.

This SEB payment amount has been calculated using Rev B plans, issued for Final Design 100% 6/8/2021. The payment amount includes offset provision for up to a 1 m Construction Activity Zone (refer to the DIT Master Specification) around the overtaking lane design extent to enable construction to occur should it be required.

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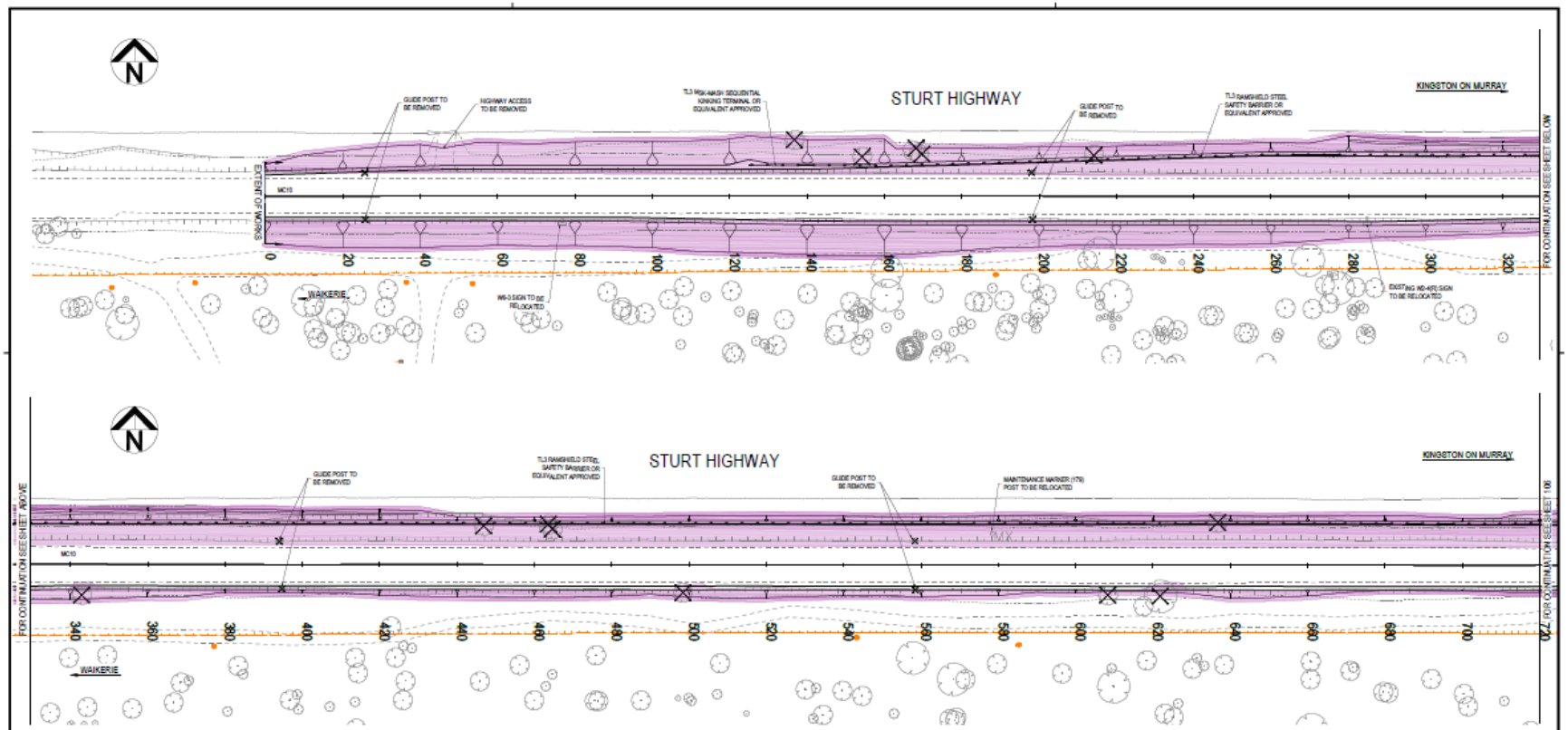
8. Appendices

Appendix 1. Drawings based on 100% designs as provided to EBS on 23/02/2022



GENERAL NOTES:

1. ALL DIMENSIONS ARE IN METERS (m) UNLESS NOTED OTHERWISE. DIMENSION NOT TO BE SCALED FROM DRAWINGS.
2. WHERE ANY REFERENCE IS MADE TO PARTS OF THE DIT MASTER SPECIFICATIONS VERSIONS AS OF CONTRACT AWARD (11 DECEMBER 2020) SHALL BE USED.
3. WHERE A CONNECTION IS TO BE MADE TO EXISTING CONSTRUCTION, THE CONTRACTOR SHALL CONFIRM THE LOCATION AND LEVEL OF THIS CONSTRUCTION PRIOR TO COMMENCING WORK.

UTILITY NOTES:

1. THE SERVICES INFORMATION INDICATED ON THIS DRAWING IS BASED ON FIELD OBSERVATIONS AND DETAILS PROVIDED BY SERVICE AUTHORITIES. DIT, ITS SERVANTS OR AGENTS SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE CAUSED BY THE USE OF THIS SERVICES INFORMATION.
2. UNDERGROUND SERVICES ARE LOCATED BY VARYING MEANS, EACH WITH VARYING LEVELS OF ACCURACY. EACH SERVICE WILL BE CLASSIFIED INTO ONE OF THE FOLLOWING GROUPS BASED ON HOW THE INFORMATION WAS OBTAINED:

GROUP	LEVEL OF ACCURACY	ANNOTATION
- DIRECT	(HIGHEST LEVEL OF ACCURACY)	(SD)
- ACTIVE	(2nd HIGHEST LEVEL OF ACCURACY)	(SA)
- PASSIVE	(3rd HIGHEST LEVEL OF ACCURACY)	(SP)
- UNVERIFIED	(LOWEST LEVEL OF ACCURACY)	(SU)

FOR MORE INFORMATION ON SERVICE ACCURACIES SEE THE DPTI DOCUMENT "ENGINEERING SURVEY STANDARD SPECIFICATIONS - SUR-CT003"

3. THIS DESIGN MAY INCLUDE THE POSSIBILITY OF SERVICE CONFLICT AND / OR ENCROACHMENT WITHIN SAFETY CLEARANCES REQUIRING ASSESSMENT AND APPROVAL BY THE OFFICE OF TECHNICAL REGULATOR AND SERVICES AUTHORITIES. IF DURING CONSTRUCTION IT IS DETERMINED THAT THE CLEARANCES AS DETERMINED BY THE OFFICE OF THE TECHNICAL REGULATORS CANNOT BE MET, WORK MUST IMMEDIATELY CEASE AND THE DESIGN & PROJECT MANAGER NOTIFIED.

VEGETATION TO BE REMOVED:

1. REFER TO VEGETATION SURVEY DATA SHEET APPENDED TO THE EHIAR REPORT FOR INFORMATION ON EXISTING TREES.
2. REFER TO DIT MASTER SPECIFICATION PART 15 FOR THE ENVIRONMENTAL REQUIREMENTS
3. VEGETATION AREA TYPES TO BE CLEARED

A1 MAIREANA BREVIFOLIA AND LEPIDIUM LEPTOPETALUM SPARSE LOW SHRUBLAND OVER CARRICHTERA ANNUA AND AUSTROSTIPA SP.

A2 EUCALYPTUS DUMOSA AND EUCALYPTUS GRACILIS MALLEE OVER LEPIDIUM LEPTOPETALUM DISSOCARPUS PARADOXUS AUSTROSTIPA ELEGANTISSIMA AND RYTIDOSPERMA SP.

LEGEND:

SYMBOL	DESCRIPTION
ATLM	ENHANCED EDGE LINE 150mm WIDE WITH AUDIO-TACTILE LINEMARKING
	UNDERGROUND COMMUNICATIONS SERVICE
	JUNCTION BOX
	SIGN - SINGLE POST
	SIGN - DOUBLE POST
	EXISTING TREE
	TREE TO BE REMOVED
	TREE REMOVAL TO BE ASSESSED ON SITE
	EXISTING WIRE ROPE SAFETY BARRIER

PROJECT DOCUMENT REFERENCE 419526-004-ENG-DRG-005

FOR CONSTRUCTION

No.	AMENDMENT DESCRIPTION	BY	CHECK	ACCEPTANCE	DATE
0	ISSUED FOR CONSTRUCTION	PF	GP	SC	14/01/2022

INDEX SHEET REFERENCE 7117 SHEET 100

STURT HIGHWAY

UNCONTROLLED COPY WHEN PRINTED | 100 MILLIMETRES ON ORIGINAL DRAWING | ALL DIMENSIONS ARE IN METRES UNLESS SHOWN OTHERWISE

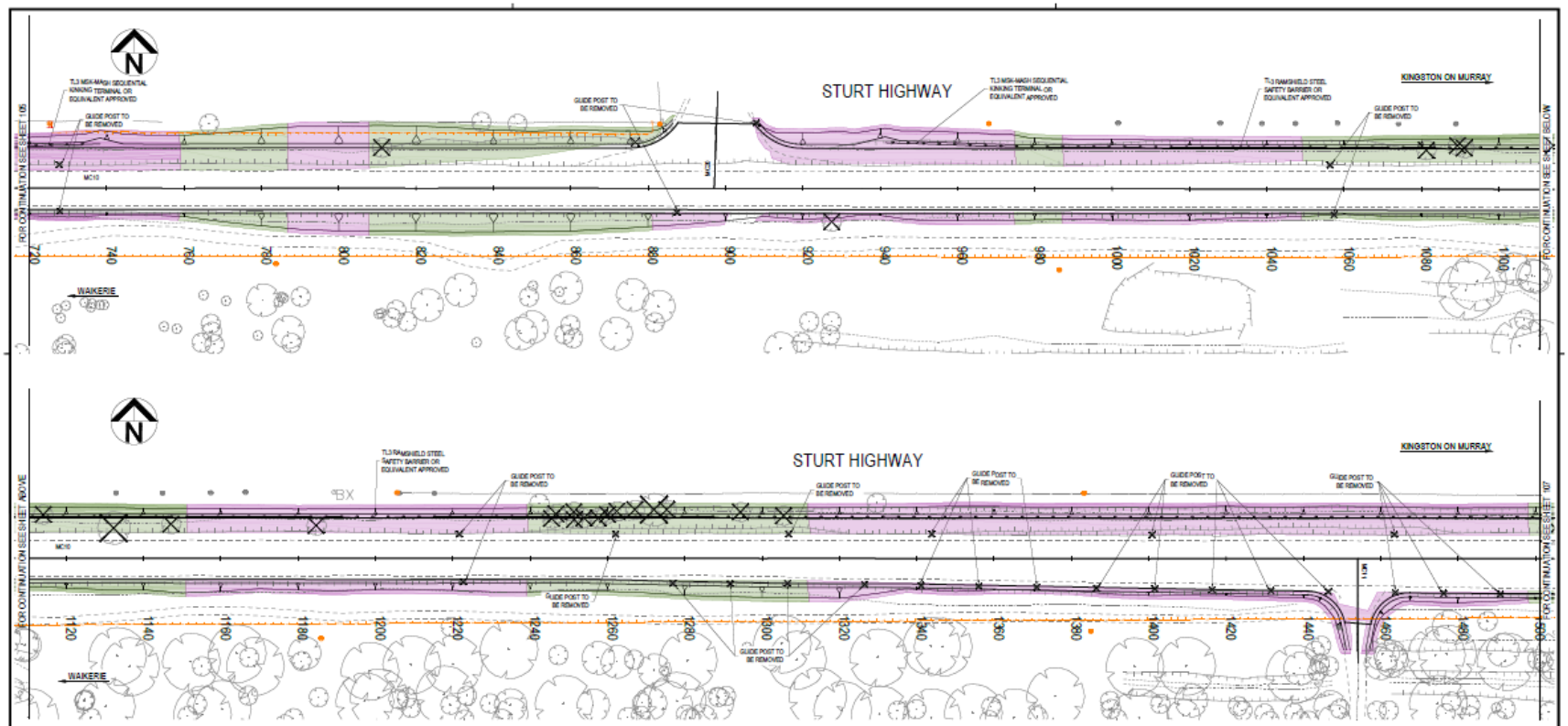
DESIGNED PETER FISHER (QUALIFICATION: NER, CPEng) DATE 7/12/2021
REVIEWED GORDON PEEBLES (QUALIFICATION: NER, CPEng) DATE 7/12/2021
PROFESSIONAL RESPONSIBLE (CERTIFIED IF REQUIRED) DANIEL AHRENS (QUALIFICATION: NER, CPEng) DATE 20/12/2021

Government of South Australia
Department for Infrastructure and Transport

PROJECT No. 11221481
FILE No. 2020/09437
DESIGN No. 202000505
SURVEY No. 202000505
PROJECT START ROAD NUMBER DETAILED RRD 178.241
PROJECT END ROAD NUMBER DETAILED RRD 180.479
SCALES

ROAD No. 7200
STURT HIGHWAY
EASTBOUND OVERTAKING LANE - SITE 4 (MM178.5 - MM180.7)
MC10; CH. 0 - CH. 720
GENERAL CONSTRUCTON - SHEET 1

DESIGNED PF | DRAFTED LD | ACCEPTED FOR DIT STEPHEN CHAN DATE 22/12/2021 | ACCEPTANCE PANEL No. 16418507 | DRAWING No. 7117 | SHEET No. 105 | REV No. 0
ACCEPTANCE WITHOUT PREJUDICE | SHEET LATITUDE -34.16859 | SHEET LONGITUDE 140.14582



GENERAL NOTES:

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UTILITY NOTES:

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GROUP	LEVEL OF ACCURACY	ANNOTATION
DIRECT	(HIGHEST LEVEL OF ACCURACY)	(SD)
ACTIVE	(2nd HIGHEST LEVEL OF ACCURACY)	(SA)
PASSIVE	(3rd HIGHEST LEVEL OF ACCURACY)	(SP)
UNVERIFIED	(LOWEST LEVEL OF ACCURACY)	(SU)

FOR MORE INFORMATION ON SERVICE ACCURACIES SEE THE DPTI DOCUMENT "ENGINEERING SURVEY STANDARD SPECIFICATIONS - SUR-CT003"

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VEGETATION TO BE REMOVED:

1. REFER TO VEGETATION SURVEY DATA SHEET APPENDED TO THE EHIAR REPORT FOR INFORMATION ON EXISTING TREES.
2. REFER TO DIT MASTER SPECIFICATION PART 15 FOR THE ENVIRONMENTAL REQUIREMENTS
3. VEGETATION AREA TYPES TO BE CLEARED

A1 MAIREANA BREVIFOLIA AND LEPIDIUM LEPTOPETALUM SPARSE LOW SHRUBLAND OVER CARRICHTERA ANNUA AND AUSTROSTIPA SP.

A2 EUCALYPTUS DUMOSA AND EUCALYPTUS GRACILIS MALLEE OVER LEPIDIUM LEPTOPETALUM DISSOCARPUS PARADOXUS AUSTROSTIPA ELEGANTISSIMA AND RYTIDOSPERMA SP.

LEGEND:

SYMBOL	DESCRIPTION
ATLM	ENHANCED EDGE LINE 150mm WIDE WITH AUDIO-TACTILE LINEMARKING
	UNDERGROUND COMMUNICATIONS SERVICE
	JUNCTION BOX
	SIGN - SINGLE POST
	SIGN - DOUBLE POST
	EXISTING TREE
	TREE TO BE REMOVED
?	TREE REMOVAL TO BE ASSESSED ON SITE
	EXISTING WIRE ROPE SAFETY BARRIER

PROJECT DRAWING REFERENCE 419526-804-ENG-DRG-006

FOR CONSTRUCTION

No.	AMENDMENT DESCRIPTION	BY	CHECK	ACCEPTANCE	DATE
0	ISSUED FOR CONSTRUCTION	PF	GP	SC	14/01/2022

INDEX SHEET REFERENCE 7117 SHEET 100

STURT HIGHWAY

DESIGNED PETER FISHER (QUALIFICATION) NER, CPEng DATE 7/12/2021
REVIEWED GORDON PEEBLES (QUALIFICATION) NER, CPEng DATE 7/12/2021
INDEPENDENT DESIGN CERTIFIER IF REQUIRED DANIEL AHRENS (QUALIFICATION) NER, CPEng DATE 20/11/2021

Government of South Australia
Department for Infrastructure and Transport

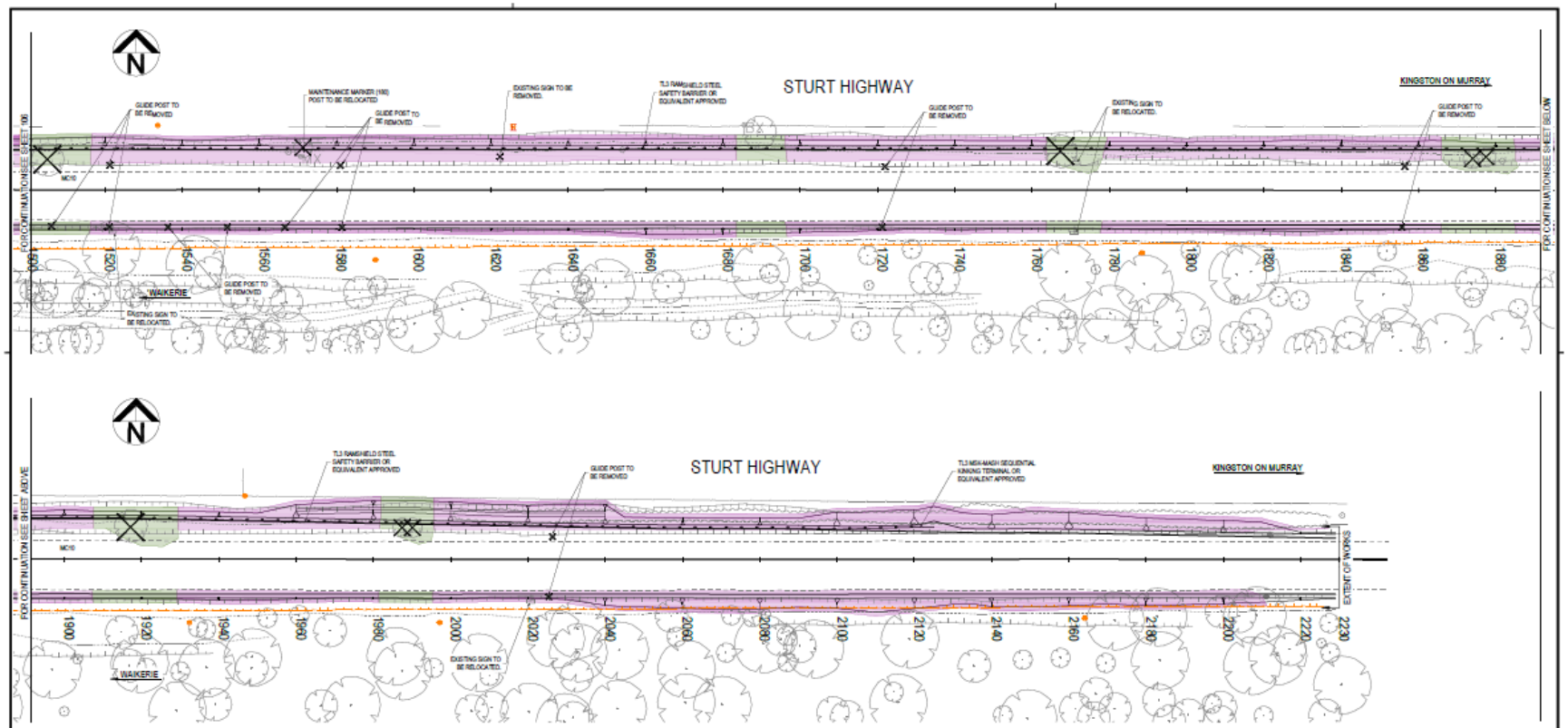
PROJECT No. 11221481
FILE No. 2020/09437
DESIGN No. 202000505
SURVEY No. 202000505
PROJECT START AND FINISH DISTANCE RRD 178.241
PROJECT DESIGN START AND FINISH DISTANCE RRD 180.479
SCALE: 0 5 10 15 20

ROAD No. 7200
STURT HIGHWAY
EASTBOUND OVERTAKING LANE - SITE 4 (MM178.5 - MM180.7)
MC10; CH. 720 - CH. 1501
GENERAL CONSTRUCTON - SHEET 2

DESIGNED	DRAFTED	ACCEPTED FOR DIT	ACCEPTANCE SHEET No.	DRAWING No.	SHEET No.	REV No.
PF	LD	STEPHEN CHAN	16418507	7117	106	0

TITLE PROJECT MANAGER DATE 22/12/2021
IN ACCORDANCE WITH DPTI
SHEET LATITUDE -34.18859 SHEET LONGITUDE 140.15429

UNCONTROLLED COPY WHEN PRINTED | 100 MILLIMETRES ON ORIGINAL DRAWING | ALL DIMENSIONS ARE IN METRES UNLESS SHOWN OTHERWISE



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	EXISTING WIRE ROPE SAFETY BARRIER

PROJECT DRAWING REFERENCE 419208-804-ENG-DRG-007

FOR CONSTRUCTION

No.	AMENDMENT DESCRIPTION	BY	CHECK	ACCEPTANCE	DATE
0	ISSUED FOR CONSTRUCTION	PF	GP	SC	14/01/2022

INDEX SHEET REFERENCE 7117 SHEET 100

STURT HIGHWAY

DESIGNED PETER FISHER CHECKED GORDON PEEBLES DRAWN DANIEL AHRENS

Government of South Australia
Department for Infrastructure and Transport

PROJECT No. 11221481 FILE No. 2020/09437
DESIGN No. 202000505 SURVEY No. 202000505
PROJECT START ROAD NUMBER RRD 178.241
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SCALES

ROAD No. 7200
STURT HIGHWAY
EASTBOUND OVERTAKING LANE - SITE 4 (MM178.5 - MM180.7)
MC10; CH. 1501 - CH. 2230
GENERAL CONSTRUCTON - SHEET 3

DESIGNED PF DRAFTED LD ACCEPTED FOR PLOTTING STEPHEN CHAN TITLE PROJECT MANAGER DATE 22/12/2021
ACCEPTANCE SHEET No. 16418507 DRAWING No. 7117 SHEET No. 107 REV No. 0
ALL DIMENSIONS ARE IN METRES UNLESS SHOWN OTHERWISE
UNCONTROLLED COPY WHEN PRINTED 100 MILLIMETRES ON ORIGINAL DRAWING
SHEET LATITUDE -34.18859 SHEET LONGITUDE 140.18277

Appendix 2. Fauna Species List

Species Name	Common name
Corvus coronoides	Australian Raven
Manorina flavigula flavigula	Yellow-throated Miner
Eolophus roseicapilla	Galah

Appendix 3. Bushland Assessment Scoresheet associated with the proposed clearance (See Attachments 1 & 2)

Appendix 4. Flora Species List

Plant Species Recorded (Native and Introduced)	
*Asphodelus fistulosus**	Onion Weed*
Atriplex sp.	Saltbush
Atriplex stipitata	Bitter Saltbush
Austrostipa elegantissima	Feather Spear-grass
Austrostipa scabra group	Falcate-awn Spear-grass
Austrostipa sp.	Spear-grass
*Avena barbata/fatua**	Wild Oat*
*Carrichtera annua**	Ward's Weed*
Convolvulus remotus	Grassy Bindweed
*Conyza sp.**	Fleabane*
Dissocarpus paradoxus	Ball Bindyi
Dissocarpus sp.	
Enchylaena tomentosa var.	Ruby Saltbush
Enneapogon nigricans	Black-head Grass
Eremophila scoparia	Broom Emubush
Eucalyptus dumosa	White Mallee
Eucalyptus gracilis	Yorrell
Eucalyptus leptophylla	Narrow-leaf Red Mallee
Lepidium leptopetalum	Shrubby Peppercress
Maireana brevifolia	Short-leaf Bluebush
Maireana georgei	Satiny Bluebush
Maireana pentatropis	Erect Mallee Bluebush
*Marrubium vulgare**	Horehound*
Rhagodia sp.	Saltbush
Rytidosperma sp.	Wallaby-grass
Salsola australis	Buckbush
Sclerolaena diacantha	Grey Bindyi
Senna artemisioides ssp. petiolaris	
Sida intricata	Twiggy Sida
*Sisymbrium officinale**	Hedge Mustard*
Triodia sp.	Spinifex
Zygophyllaceae sp.	Twinleaf Family

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