

Native Vegetation Clearance

Sturt Highway Overtaking Lane Project

Site 2 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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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)
EBS	Environment and Biodiversity Services Pty Ltd (trading as EBS Ecology)
EPBC Act	<i>Environmental Protection and Biodiversity Conservation Act 1999</i>
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	<i>National Parks and Wildlife Act 1972</i>
NV Act	<i>Native Vegetation Act 1991</i>
NVC	Native Vegetation Council
MM	Maintenance Marker
PMST	Protected Matters Search Tool (under the EPBC Act; maintained by DAWE)
Project	Sturt Highway Site 2 Overtaking Lane
Project Area	Overtaking lane and verge widening from Maintenance Marker 140.5 to MM 142.5, between Blanchetown and Waikerie.
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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Attachments


- Attachment 1 - BAM A1 Scoresheet - EX200512_Site 2_BAM_A1_Final_20220503 (Excel file)
- Attachment 2 - BAM A2 Scoresheet - EX200512_Site 2_BAM_A2_Final_20220503 (Excel file)
- Attachment 3 - BAM A3 Scoresheet - EX200512_Site 2_BAM_A3_Final_20220503 (Excel file)
- Attachment 4 - BAM A4 Scoresheet - EX200512_Site 2_BAM_A4_Final_20220503 (Excel file)
- Attachment 5 - 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 2 – North-east bound overtaking lane from Maintenance Marker 140.5 to MM 142.5, between Blanchetown and Waikerie.		
Local Government Area:	District Council of Loxton Waikerie	Hundred:	Murbko
Title ID:	N/A	Parcel ID	DIT Road Reserve

Table 2. Summary of the proposed clearance.

Purpose of clearance:	Clearance required for installation of an overtaking lane for north-east bound traffic and verge widening on both sides of the road.
Native Vegetation Regulation:	Regulation 12, Schedule 1: Clause 32 – Works on behalf of Commissioner of Highways
Description of the vegetation under application:	<p>Survey Area: 2.99 ha</p> <p>A1: 0.400 ha of low shrubland in good condition.</p> <p>A2: 1.064 ha of Mallee vegetation in excellent condition.</p> <p>A3: 1.135 ha of <i>Eucalyptus socialis</i> over <i>Triodia irritans</i> mallee vegetation in good condition.</p> <p>A4: 0.389 ha of <i>Triodia irritans</i> and <i>Austrostipa nitida</i> grassland</p>
Total proposed clearance – area (ha) and/or number of trees:	<p>A total of 2.99 ha native vegetation is proposed to be cleared.</p> <p>This area includes an offset provision for up to a 1 m Construction Activity Zone (refer to DIT Master Specification) around the overtaking lane design extent to enable construction should it be required.</p>
Level of clearance:	Level 4 clearance (escalated from Level 3)
Overlay (Planning and Design Code):	Native Vegetation Overlay
Map of proposed clearance area:	 <p>Produced by: EBS Ecology Imagery Source: ESRI Coordinate System: GDA 1994 MGA Zone 54 Date: 12/11/2020</p> <p>Copyright: Use or copying of this map in whole or in part without the written permission of EBS Ecology constitutes an infringement of copyright. This map has been prepared on behalf of and for the exclusive use of EBS Ecology's Client, and is subject to and issued in connection with the provisions of the agreement between EBS Ecology and its Client. EBS Ecology accepts no liability or responsibility whatsoever for or in respect of any use of or reliance upon this map by any third party.</p> <p>Legend:</p> <ul style="list-style-type: none"> ○ Maintenance Marker — Roads — Sturt Highway Vegetation Association 2A: <i>Senna artemisioides</i> low open shrubland 2B: <i>Eucalyptus brachycalyx</i> and <i>Eucalyptus dumosa</i> mallee over chenopod low shrubland 2C: <i>Eucalyptus socialis</i> mallee over <i>Triodia irritans</i> <p>Scale: 0 100 200 m</p>

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 2.1 km north-east bound overtaking lane within a 11 km extent;
- Undertaking a preliminary environment and heritage site assessment for a 11 km extent of the Sturt Highway which informed the location of the OTL with respect to important vegetation;
- Engaging a Department for Transport and Infrastructure prequalified specialist consultant to confirm the initial assessment and provide an Ecological Constraints Summary for the 11 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 chosen location of the overtaking lane does include one Roadside Significant Sites (RSS) 185. Within the 11 km area from which the location of the overtaking lane was selected, there were four RSS sites (including the 720m length of RSS 186 on the southern side in the same location). The multi-criteria analysis had a range of factors to consider when selecting the location and so complete avoidance of RSS's was not ultimately possible.

To minimise the vegetation impact for the preferred site (between MM140.5 and MM142.5), located on the northern side of the Sturt Highway the design has:

- Constructed steeper batters in area of high quality vegetation that is marked as one of the Department's roadside significant sites (RSS 185);
- Minimised clearance at the batter construction extents by pruning rather than removing some of the trees identified within the Project Area.

The Murraylands and Riverland Landscape Board confirmed limited declared pest plant species of concern to roadsides in this location, with no Buffel grass 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 (e.g. Olive, Gazania sp.) will be controlled during in accordance with the Department for Transport and Infrastructure's Master Specification Part PC-ENV2.
SEB Offset proposal	Payment of \$68,288.33, which includes an administration fee of \$3,560.06 (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). The Site 2 Project Area consists of roadside vegetation to the east of Blanchetown and approximately 21 km west of Waikerie (the Project).

The Site 2 Project involves the clearance of 2.99 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 2 where an OTL is proposed for the north-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 2 Project Area consists of roadside vegetation to the east of Blanchetown and approximately 21 km west of Waikerie. The Project Area is surrounded by cleared farmland. The nearest conservation park is Brookfield Conservation Park situated 19 km west of the Project Area.

Administrative boundaries

The Project Area occurs within the District Council of Loxton and Waikerie, Murraylands and Riverland Landscape Management Region, Murbko Hundreds 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 Blanchetown and Holder IBRA Environmental Associations.

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 67% (156356 ha) of the Blanchetown IBRA Environmental Association and 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 located approximately 21 km west of Waikerie.

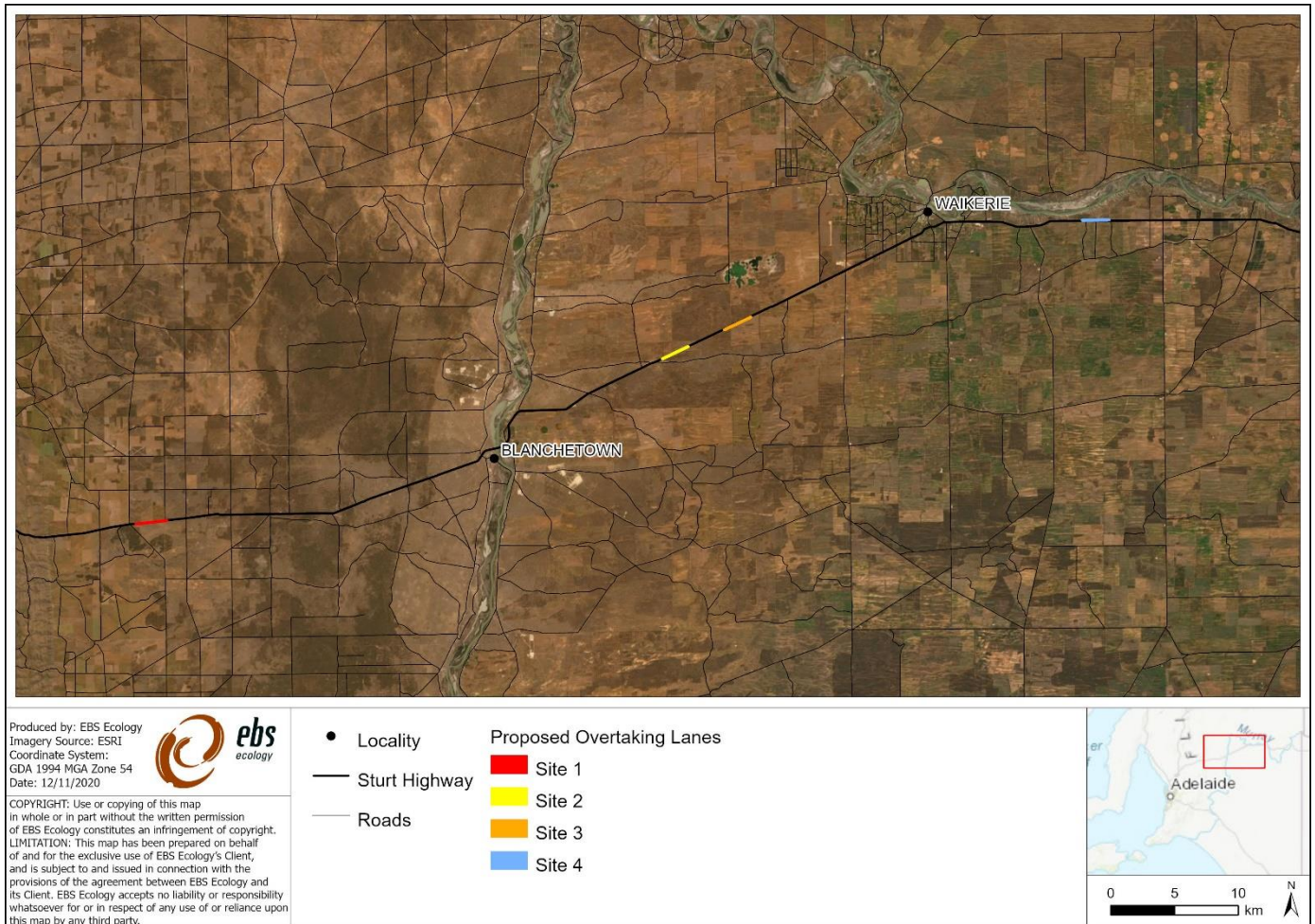


Figure 1 Proposed clearance areas for four overtaking lanes (Project Areas) along Sturt Highway between Annadale and Cobdogla, South Australia. Site 2 is highlighted in yellow.

2.4. Details of the proposal

The proposed clearance area for the Overtaking lanes include 2 km of roadside vegetation on the north-east bound roadside from Maintenance Marker (MM) 140.5 to MM 142.5. The layout of the proposed overtaking lane is illustrated in Figure 1.

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

2.5. Approvals required or obtained

Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) - 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.

National Parks and Wildlife Act 1972 (NPW Act) - Native plants and animals in South Australia are protected under the NPW Act. It is an offence to take a native plant or protected animal without approval. Threatened plant and animal species are listed in Schedules 7 (Endangered species), 8 (Vulnerable species) and 9 (Rare species) of the Act. Persons must not:

- Take a native plant on a reserve, wilderness protection area, wilderness protection zone, land reserved for public purposes, a forest reserve or any other Crown land;
- Take a native plant of a prescribed species on private land;
- Take a native plant on private land without the consent of the owner (such plants may also be protected by the NV Act);
- Take a protected animal or the eggs of a protected animal without approval;
- Keep protected animals unless authorised to do so; and
- Use poison to kill a protected animal without approval.

Conservation rated flora and fauna species listed on Schedules 7, 8, or 9 of the NPW Act may occur within the Project Area. Persons must comply with the conditions imposed upon permits and approvals.

Examples of other potential approvals include:

- transport of declared weeds under the new *Landscapes South Australia Act 2019*, and
- *Aboriginal heritage Act 1998* 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 10/8/2020 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 NatureMaps to identify flora and fauna species that have been recorded within 5 km of the Project Area (data extracted 10/8/2020; 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 Consultant Sue Kenny with EBS Ecologist Hayley Merigot on 27-30 October 2020 and 29 April 2021 in accordance with the Bushland Assessment Method (BAM) (NVC, 2020a). The survey included a vegetation assessment and passive fauna assessment.

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 is 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

Fauna surveys were conducted in conjunction with the flora assessments along the site. All native and exotic fauna species opportunistically encountered (directly observed, or tracks, scats, burrows, nests and other signs of presence) during the native vegetation 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. Weather conditions during the survey were favourable, with mild daytime temperatures, light winds and occasional light showers.

4. Assessment outcomes

4.1. Vegetation assessment

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

Site 2 was assessed as having four vegetation associations (Figure 2 and Figure 3):


- *Senna artemisioides* low shrub land (1-2 m) (Table 4);
- *Eucalyptus brachycalyx* and *Eucalyptus dumosa* mallee over chenopod low shrub land (Table 5);
- *Eucalyptus socialis* mallee over *Triodia irritans* (Table 6); and
- *Triodia irritans* and *Austrostipa nitida* grassland with emergent *Eucalyptus phenax* ± *Dodonaea viscosa* (Table 7).

These four vegetation associations were in good to very good condition with minimal weed incursion at one site and low weed cover and species at the other two sites. The most common weed types encountered were *Carrichtera annua* (Ward's Weed) and *Sisymbrium erysimoides* (Smooth Mustard), and there were no declared weeds. Along the site, the gravel shoulder extends to 50 centimetres from the edge of the road starting from the western site, widening to 2m towards the western end. Part of the site to the north consists of remnant mallee vegetation. Two fauna species declared as Rare under the NPW Act were observed at the site, *Hieraaetus morphnoides* (Little Eagle) and *Corcorax melanorhamphos* (White-winged Chough).

There are no matters of national environmental significance in the Project Area.

4.1.2. Details of the vegetation associates/scattered trees proposed to be impacted

Table 4. Summary of vegetation association A1.

Vegetation Association	A1: <i>Senna artemisioides</i> low shrub land (1-2 m)		
	General description	The dominant species is <i>Senna artemisioides</i> ssp. with a high presence of the weed species <i>Carrichtera annua</i> . The vegetation condition is good with a high proportion of native species compared to weeds and several native species are regenerating.	
	Location	-34.2833, 139.7588 SW corner looking East	

Threatened species or community	Known				
	<ul style="list-style-type: none">- The Mallee Bird Community of the Murray Darling Depression Bioregion (EN);- <i>Hieraaetus morphnoides</i> (Little Eagle) (State: V)- <i>Corcorax melanorhamphos</i> (White-winged Chough) (State: R)				
	Likely				
	<ul style="list-style-type: none">- <i>Leipoa ocellata</i> (Malleefowl) (EPBC: VU, State: V)- <i>Polytelis anthopeplus monarchoides</i> (Regent Parrot) (EPBC: VU, State: V)- <i>Melanodryas cucullata cucullata</i> (Hooded Robin) (State: R)- <i>Myiagra inquieta</i> (Restless Flycatcher) (State: R)- <i>Pachycephala inornata</i> (Gilbert’s Whistler) (State: R)- <i>Plectorhyncha lanceolata</i> (Striped Honeyeater) (State: R)- <i>Cinclosoma castanotum</i> (Chestnut-backed Quailthrush) (State: Rare)				
	Possible				
	<ul style="list-style-type: none">- <i>Burhinus grallarius</i> (Bush Stone Curlew) (State: R)- <i>Neophema Chrysostoma</i> (Blue-winged Parrot) (State: V)- <i>Falco peregrinus macropus</i> (Peregrine Falcon) (State: R)- <i>Falco subniger</i> (Black Falcon) (State: R)				
Landscape context score	1.07	Vegetation Condition Score	34.21	Conservation significance score	1.50
Unit biodiversity Score	54.91	Area (ha)	0.400	Total biodiversity Score	21.97

Table 5. Summary of vegetation association A2.


Vegetation Association	A2: <i>Eucalyptus brachycalyx</i> and <i>Eucalyptus dumosa</i> mallee over chenopod low shrub land				
	General description		This site is in excellent condition with few weed species. The dominant overstorey species are <i>Eucalyptus brachycalyx</i> and <i>Eucalyptus dumosa</i> and the mid storey consists of <i>Senna artemisioides</i> ssp., <i>Maireana pentatropis</i> and <i>Atriplex vesicaria</i> .		
	Location		-34.2826, 139.7607 SW corner looking East		
Threatened species or community	Known <ul style="list-style-type: none">- The Mallee Bird Community of the Murray Darling Depression Bioregion (EN);- <i>Hieraaetus morphnoides</i> (Little Eagle) (State: V)- <i>Corcorax melanorhamphos</i> (White-winged Chough) (State: R)				
	Likely <ul style="list-style-type: none">- <i>Leipoa ocellata</i> (Malleefowl) (EPBC: VU, State: V)- <i>Polytelis anthopeplus monarchoides</i> (Regent Parrot) (EPBC: VU, State: V)- <i>Melanodryas cucullata cucullata</i> (Hooded Robin) (State: R)- <i>Myiagra inquieta</i> (Restless Flycatcher) (State: R)- <i>Pachycephala inornata</i> (Gilbert's Whistler) (State: R)- <i>Plectorhyncha lanceolata</i> (Striped Honeyeater) (State: R)- <i>Cinclosoma castanotum</i> (Chestnut-backed Quailthrush) (State: Rare)				
	Possible <ul style="list-style-type: none">- <i>Burhinus grallarius</i> (Bush Stone Curlew) (State: R)- <i>Neophema Chrysostoma</i> (Blue-winged Parrot) (State: V)- <i>Falco peregrinus macropus</i> (Peregrine Falcon) (State: R)- <i>Falco subniger</i> (Black Falcon) (State: R)				
Landscape context score	1.07	Vegetation Condition Score	58.71	Conservation significance score	1.50
Unit biodiversity Score	94.23	Area (ha)	1.064	Total biodiversity Score	100.22

Table 6. Summary of vegetation association A3.



Vegetation Association	A3: <i>Eucalyptus socialis</i> mallee over <i>Triodia irritans</i>				
			General description	The dominant species in this association are <i>Eucalyptus socialis</i> , <i>Triodia irritans</i> and <i>Acacia oswaldii</i> . A high proportion of the biomass is native and a regenerating species.	
			Location	-34.2765, 139.7687 SW corner looking East	
Threatened species or community	<div>Known</div> <ul style="list-style-type: none">- The Mallee Bird Community of the Murray Darling Depression Bioregion (EN);- <i>Hieraaetus morphnoides</i> (Little Eagle) (State: V)- <i>Corcorax melanorhamphos</i> (White-winged Chough) (State: R) <div>Likely</div> <ul style="list-style-type: none">- <i>Leipoa ocellata</i> (Malleefowl) (EPBC: VU, State: V)- <i>Polytelis anthopeplus monarchoides</i> (Regent Parrot) (EPBC: VU, State: V)- <i>Melanodryas cucullata cucullata</i> (Hooded Robin) (State: R)- <i>Myiagra inquieta</i> (Restless Flycatcher) (State: R)- <i>Pachycephala inornata</i> (Gilbert's Whistler) (State: R)- <i>Plectorhyncha lanceolata</i> (Striped Honeyeater) (State: R)- <i>Cinclosoma castanotum</i> (Chestnut-backed Quailthrush) (State: Rare) <div>Possible</div> <ul style="list-style-type: none">- <i>Burhinus grallarius</i> (Bush Stone Curlew) (State: R)- <i>Neophema Chrysostoma</i> (Blue-winged Parrot) (State: V)- <i>Falco peregrinus macropus</i> (Peregrine Falcon) (State: R)- <i>Falco subniger</i> (Black Falcon) (State: R)				
Landscape context score	1.11	Vegetation Condition Score	55.73	Conservation significance score	1.50
Unit biodiversity Score	92.80	Area (ha)	1.135	Total biodiversity Score	105.32

Table 7. Summary of vegetation association A4.

Vegetation Association	A4: <i>Triodia irritans</i> and <i>Austrostipa nitida</i> grassland with emergent <i>Eucalyptus phenax</i> ± <i>Dodonaea viscosa</i> .				
	General description		The dominant species in this association are <i>Triodia irritans</i> and <i>Austrostipa nitida</i> . A high proportion of the biomass is native. This area is unlikely to have been naturally treeless.		
	Location		Easting: 389939 Northing: 6206248 Looking West		
Threatened species or community	Known				
	<ul style="list-style-type: none">- The Mallee Bird Community of the Murray Darling Depression Bioregion (EN);- <i>Hieraetus morphnoides</i> (Little Eagle) (State: V)- <i>Corcorax melanorhamphos</i> (White-winged Chough) (State: R)				
	Likely				
	<ul style="list-style-type: none">- <i>Leipoa ocellata</i> (Malleefowl) (EPBC: VU, State: V)- <i>Polytelis anthopeplus monarchoides</i> (Regent Parrot) (EPBC: VU, State: V)- <i>Melanodryas cucullata cucullata</i> (Hooded Robin) (State: R)- <i>Myiagra inquieta</i> (Restless Flycatcher) (State: R)- <i>Pachycephala inornata</i> (Gilbert's Whistler) (State: R)- <i>Plectorhyncha lanceolata</i> (Striped Honeyeater) (State: R)- <i>Cinclosoma castanotum</i> (Chestnut-backed Quailthrush) (State: Rare)				
	Possible				
	<ul style="list-style-type: none">- <i>Burhinus grallarius</i> (Bush Stone Curlew) (State: R)- <i>Neophema Chrysostoma</i> (Blue-winged Parrot) (State: V)- <i>Falco peregrinus macropus</i> (Peregrine Falcon) (State: R)- <i>Falco subniger</i> (Black Falcon) (State: R)				
Landscape context score	1.10	Vegetation Condition Score	35.08	Conservation significance score	1.50
Unit biodiversity Score	57.87	Area (ha)	0.389	Total biodiversity Score	22.49

4.1.3. Site map showing areas of proposed impact

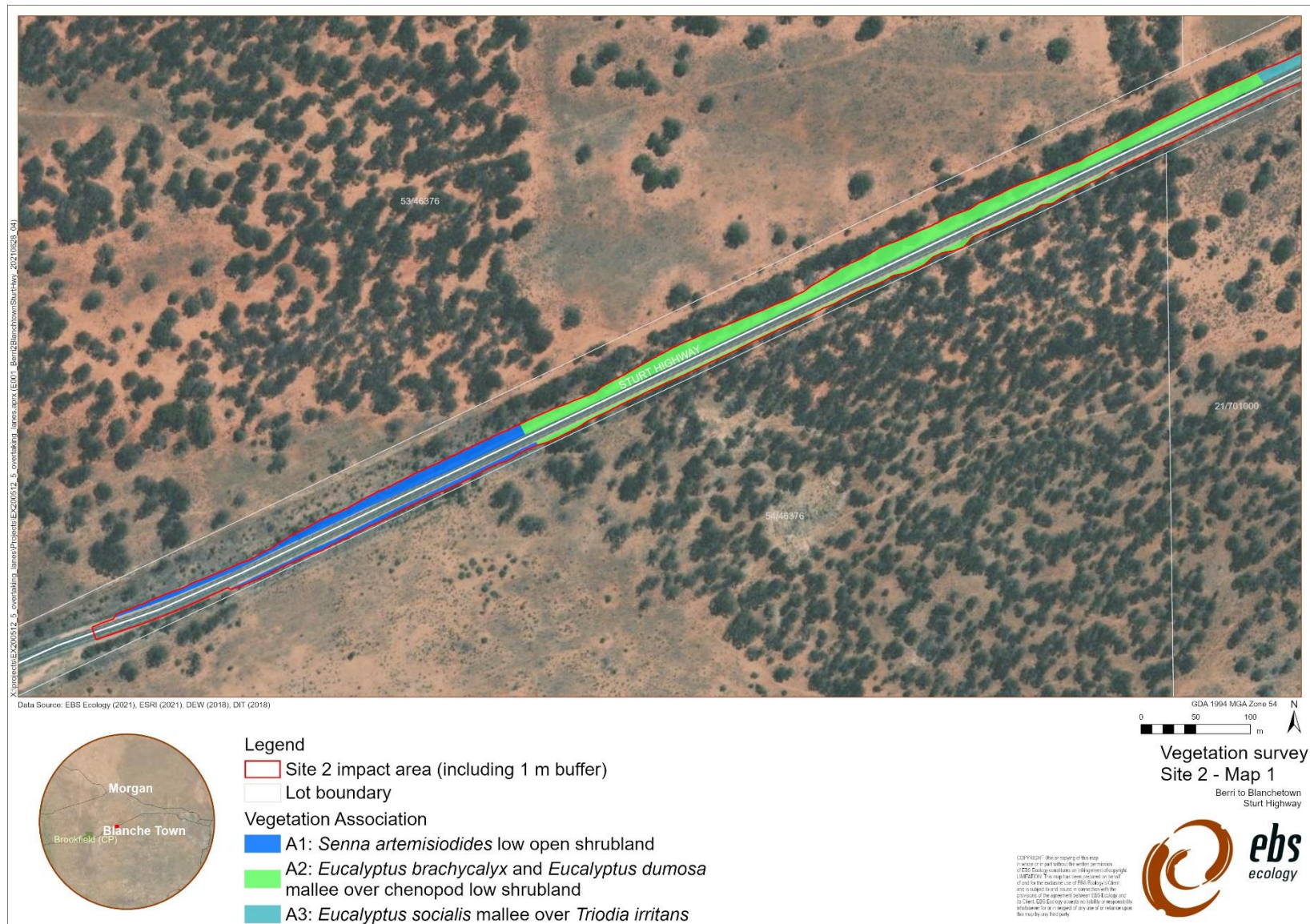


Figure 2. Native Vegetation Associations on the Sturt Highway of the Site 2 Project Area (Map 1 of 2).

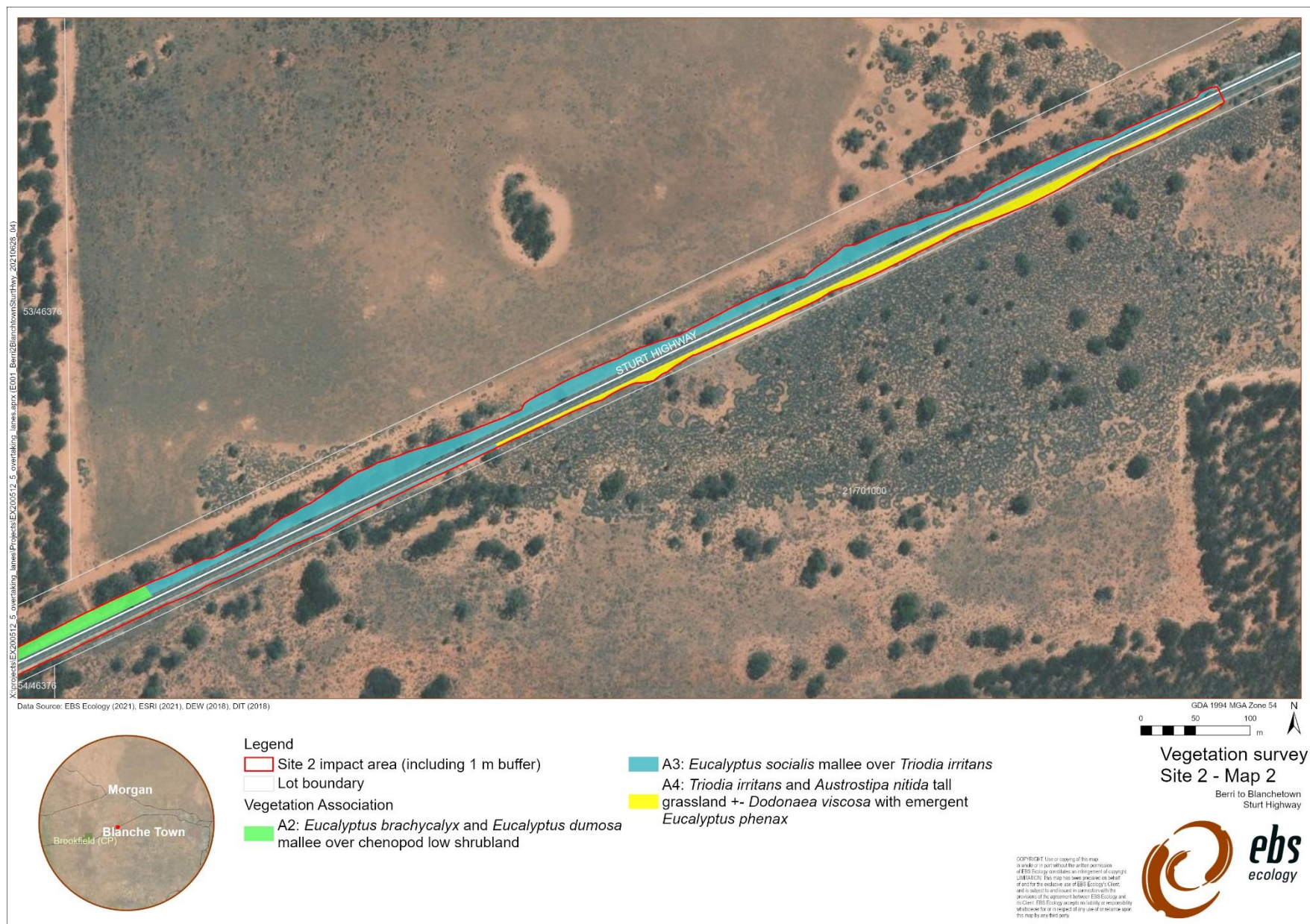


Figure 3. Native Vegetation Associations on the Sturt Highway of the Site 2 Project Area (Map 2 of 2).

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 Wetlands of International Importance:

Threatened Ecological Communities

- Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions (Endangered).
- Peppermint Box (*Eucalyptus odorata*) Grassy Woodland (PBGW) of South Australia (Critically 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.

Wetlands of International Importance

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

The Mallee Bird Community of the Murray Darling Depression Bioregion is present within the Project Area (see Attachment 5).

The remaining vegetation communities and wetlands of international importance are not present in areas adjacent to the Project Areas as indicated by the SA vegetation mapping (NatureMaps 2020) and therefore, the project is unlikely to impact on this community.

4.2.2. Threatened Fauna and Flora

EPBC Act

The PMST and NatureMaps search identified no EPBC listed flora species are potentially occurring within the Project Area.

The desktop identified two EPBC listed threatened bird species that may potentially occur within the Project Area (Table 8):

- *Leipoa ocellata* (Malleefowl) (Vulnerable); and
- *Polytelis anthopeplus monarchoides* (Regent Parrot) (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.

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.

NPW Act

The NatureMaps search identified two State listed Threatened flora species within 5 km of the Project Areas, *Eremophila gibbifolia* (Coccid Emubush) and *Maireana rohrlachii* (Rohrlach's Bluebush) were assessed as possibly occurring in the Project Area (Table 8), but was not observed during the field survey.

Eleven State threatened fauna species were also observed since 1995 within 5 km of the Project Area:

- *Burhinus grallarius* (Bush Stone Curlew) (Rare);
- *Cinclosoma castanotum* (Chestnut-backed Quailthrush) (Rare);
- *Corcorax melanorhamphos* (White-winged Chough) (Rare);
- *Falco peregrinus macropus* (Peregrine Falcon) (Rare);
- *Falco subniger* (Black Falcon) (Rare);
- *Hieraaetus morphnoides* (Little Eagle) (Vulnerable);
- *Melanodryas cucullata* (Hooded Robin) (Rare);
- *Myiagra inquieta* (Restless Flycatcher) (Rare);
- *Neophema chrysostoma* (Blue-winged Parrot) (Vulnerable);
- *Pachycephala inornata* (Gilberts Whistler) (Rare); and
- *Plectorhyncha lanceolata* (Striped Honeyeater) (Rare).

Migratory, Marine or wetland

Four species listed as migratory or marine were identified as potentially occurring within 5 km of the Project Area based on the PMST report (Table 8). An additional 6 state listed threatened species known to occupy wetlands or adjacent to waterbodies were identified by the NatureMaps search as potentially occurring within 5 km of the Project Area. All of these species were assessed as unlikely to occur due to unsuitable habitat within the Project Area.

Table 8. Nationally (EPBC Act) or State (NPW Act) threatened species potentially occurring within Site 2.

Species	**Conservation status		*Data source	Date	***PMST classification	Species known habitat preferences	Likelihood of use for habitat - Comment
	SA	AUS					
<i>Actitis hypoleucos</i> (Common Sandpiper)	R	Mi, Ma	1,2	2001	May occur	Banks of permanent freshwater or saline wetlands with tall, dense vegetation, such as <i>Typha</i> sp. and <i>Eleocharis</i> sp.	Unlikely – possible flyover. Unsuitable habitat on site.
<i>Anhinga novaehollandiae</i> (Australasian Darter)	R	-	1	2001	-	Habitat is lakes, rivers, swamps; rarely coastal.	Unlikely – possible flyover. Unsuitable habitat on site.
<i>Arenaria interpres interpres</i> (Ruddy Turnstone)	R	-	1	2003	-	Widespread within Australia during its non-breeding period of the year, including from Tasmania in the south to Darwin in the north and many coastal areas in between. It is found in most coastal regions, with occasional records of inland populations. It strongly prefers rocky shores or beaches where there are large deposits of rotting seaweed.	Unlikely – possible flyover. Unsuitable habitat on site.
<i>Biziura lobata menziesi</i> (Musk Duck)	R	-	1	2008	-	Endemic to Australia. Occurs in deep freshwater lagoons, with dense reed beds. They are normally seen singly or in pairs, but may form medium to large groups in the winter.	Unlikely – possible flyover. Unsuitable habitat on site.
<i>Burhinus grallarius</i> (Bush Stone Curlew)	R	-	1	1995	-	The range of this species in south-eastern Australia is now largely confined to grassy woodlands and farmland. While this species occurs in all mainland states, its range has declined drastically in south eastern Australia.	Possible – in open areas, but old record nearby and scattered records.
<i>Calidris acuminata</i> (Sharp-tailed Sandpiper)	-	Mi, Ma	2	-	Known to occur	Migratory, non-breeding in Australia. In years of inland floods, birds often travel to grassy banks of inland floodplains. Prefers grassy edges of shallow inland freshwater wetlands, also sewage farms, flooded fields, mudflats, mangroves, rocky shores and beaches.	Unlikely – possible flyover. Unsuitable habitat on site.
<i>Calidris ferruginea</i> (Curlew Sandpiper)	E	CR, Mi, Ma	1, 2	2003	Known to occur	Wetlands. In SA, occur in widespread coastal and subcoastal areas east of Streaky Bay. Occasionally they occur in inland areas south of the Murray River and elsewhere.	Unlikely – possible flyover. Unsuitable habitat on site.
<i>Cincoloma castanotum</i> (Chestnut-backed Quailthrush)	R	-	1	2017	-	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 <i>Acacia</i> scrubs, dry sclerophyll woodland, heath, and native pine (OEH 2020).	Likely – suitable habitat and nearby records.
<i>Cladorhynchus leucocephalus</i> (Banded Stilt)	V	-	1	2008	-	Endemic to Australia, mainly in the south and inland. Found mainly in saline and hypersaline (very salty) waters of the inland and coast, typically large, open and shallow.	Unlikely – possible flyover. Unsuitable habitat on site.
<i>Corcorax melanorhamphos</i> (White-winged Chough)	R	-	1	2015	-	Dry woodland and mallee. Highly social species.	Known - nearby records/suitable habitat, observed
<i>Falco peregrinus macropus</i> (Peregrine Falcon)	R	-	1	2002	-	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	Possible – nearby records. Known to be widespread.

Species	**Conservation status		*Data source	Date	***PMST classification	Species known habitat preferences	Likelihood of use for habitat - Comment
	SA	AUS					
						except for rainforests and cold, dry Arctic regions. This species has increasingly been observed inhabiting urban areas. (ADW 2002)	
<i>Falco subniger</i> (Black Falcon)	R	-	1	1999	-	The black falcon's habitat is usually in the arid and semi-arid zones. It is usually found near watercourses or utilizing patches of isolated trees. It hunts over open wooded grasslands, saltbush plains, bluebush plains and other low vegetation (Morcombe 2002).	Possible – open areas, nearby record
<i>Haliaeetus leucogaster</i> (White-bellied Sea-Eagle)	E	Ma	1, 2	2001	Known to occur	This species is distributed along the coastline (including offshore islands) of mainland Australia and Tasmania. Distribution also extends inland along some of the larger waterways, especially in eastern Australia. The inland limits of the species are most restricted in south-central and south-western Australia, where it is confined to a narrow band along the coast. Found in coastal habitats (especially those close to the sea-shore) and around terrestrial wetlands in tropical and temperate regions of mainland Australia and its offshore islands.	Unlikely – possible flyover. Unsuitable habitat on site.
<i>Hieraaetus morphnoides</i> (Little Eagle)	V	-	1	2009	-	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).	Known – suitable habitat, records near site.
<i>Leipoa ocellata</i> (Malleefowl)	V	VU	1, 2	2015	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 <i>Callitris</i> woodlands, <i>Acacia</i> shrublands, Broombush (<i>Melaleuca uncinata</i>) vegetation or coastal heathlands (DAWE 2020b).	Likely – Suitable habitat and record within 100 m.
<i>Manorina melanotis</i> (Black-eared Miner)	E	EN	1,2	1999	Likely 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).	Unlikely – rarity and no nearby records.
<i>Melanodryas cucullata</i> (Hooded Robin)	R	-	1	2015	-	Hooded Robins are found in lightly timbered woodland, mainly dominated by <i>Acacia</i> and/or <i>Eucalypts</i> (Birdlife 2020).	Likely - suitable habitat, recent records.
<i>Myiagra inquieta</i> (Restless Flycatcher)	R	-	1	2013	-	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).	Likely – recent records within 1km.
<i>Neophema chrysostoma</i> (Blue-winged Parrot)	V	-	3	2013	-	This species mainly occurs in Tasmania and Victoria, particularly in southern Victoria and the midlands and eastern areas of Tasmania however sparser populations are also found in western New South Wales and eastern South Australia, extending to south-west	Possible - suitable habitat. Recent records within 10km from ALA.

Species	**Conservation status		*Data source	Date	***PMST classification	Species known habitat preferences	Likelihood of use for habitat - Comment
	SA	AUS					
						Queensland and occasionally into the Northern Territory. Prefers grasslands and grassy woodlands but will inhabit a range of habitats from coastal, sub-coastal and inland areas, right through to semi-arid zones (Birdlife Australia ND).	
<i>Oxyura australis</i> (Blue-billed Duck)	R	-	1	2008		Endemic to south-eastern and south-western Australia. Habitat is permanent swamps with dense vegetation. Large open lakes, tidal inlets and bays (Simpson and Day 1999, p. 60).	Unlikely – possible flyover. Unsuitable habitat on site.
<i>Pachycephala inornata</i> (Gilberts Whistler)	R		1	2011	-	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).	Likely – nearby records, suitable habitat.
<i>Plectorhyncha lanceolata</i> (Striped Honeyeater)	R	-	1	2015	-	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).	Likely – nearby records, suitable habitat.
<i>Polytelis anthopeplus monarchoides</i> (Regent Parrot)	V	VU	1, 2	2012	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 (<i>Eucalyptus camaldulensis</i>) forests or woodlands and adjacent Black Box (<i>E. largiflorens</i>) woodlands (DAWE 2020b).	Known – record on road.
<i>Spatula rhynchotis</i> (Australian Shoveler)	R	-	1	2008	-	The Australasian Shoveler is found in all kinds of wetlands, preferring large undisturbed heavily vegetated freshwater swamps. It is also found on open waters and occasionally along the coast (Birds in Backyards 2020).	Unlikely – flyover. Nearby records. Unsuitable habitat on site.
<i>Tringa Glareola</i> (Wood Sandpiper)	R	-	1	1998		The Wood Sandpiper has its largest numbers recorded in north-west Australia, with all areas of national importance located in Western-Australia. In South Australia most records occur east of the line from south Eyre Peninsula through Old Nilpinna to Purnu Bore, with most occurring south of 33° S on the Yorke Peninsula, Adelaide Plains, Murray Mallee and south-east regions.	Unlikely – possible flyover. Nearby records. Unsuitable habitat on site.
Plant							
<i>Eremophila gibbifolia</i>	R	-	1	2002		Occurs on sandy loams usually under Eucalyptus (eFlora 2020).	Possible – nearby records and suitable habitat
<i>Maireana rohrlachii</i> (Rohrlach's Bluebush)	R		1	2015	-	Bushy shrub to 50 cm high found in heavy seasonally waterlogged soil. Records in low lying areas nearby.	Possible – nearby recent records

*Source: 1 = DEW 2020a, 2 = Protected Matters Search Tool (DAWE 2020a), 3 = ALA 2020

**NPW Act; E = Endangered, V = Vulnerable, R = Rare. EPBC Act; Ex = Extinct, CR = Critically endangered, EN = Endangered; VU = Vulnerable; Mi = Migratory.

***Species or species habitat 'known to occur', 'likely to occur' or 'may occur' (PMST Search).

4.2.3. Roadside/Railside Significant Sites and SEB Areas

A NatureMaps search of the spatial layers 'Road/Railside Significant Sites' and 'Significant Environment Benefit Areas' (DEW 2020b) indicates that this site contains two Roadside Significant Sites (RSS):

- RSS 186: Native Vegetation *Eucalyptus gracilis* / *Eucalyptus oleosa* Open mallee over sparse *Eremophila*, *Acacia* Tall Shrubs over mid dense *Atriplex*, *Maireana* Low shrubs over sparse Grass *Austrostipa*, *Rytidosperma*, *Enneapogon*. From MM 140.48 to MM141.20.
- RSS 185: Native Vegetation *Eucalyptus gracilis* / *Eucalyptus oleosa* Open mallee over sparse *Alectryon* Tall Shrubs over mid dense Low shrubs *Atriplex*, *Maireana* over sparse grasses *Austrostipa*, *Enneapogon*. From MM 140.48 to MM 141.20.

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 2.99 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.

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 dumosa* and *Eucalyptus gracilis* mallee vegetation over grassland, *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

As overtaking lanes are built immediately adjacent to the existing roads, construction is required next to the existing Sturt Highway and 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

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 2.1 km north-east bound overtaking lane within a 11 km extent;
- Undertaking a preliminary environment and heritage site assessment for a 11 km extent of the Sturt Highway which informed the location of the OTL with respect to important vegetation;
- Engaging a Department for Transport and Infrastructure prequalified specialist consultant to confirm the initial assessment and provide an Ecological Constraints Summary for the 11 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 chosen location of the overtaking lane does include one Roadside Significant Sites (RSS) 185. Within the 11 km area from which the location of the overtaking lane was selected, there were four RSS sites (including the 720m length of RSS 186 on the southern side in the same location). The multi-criteria analysis had a range of factors to consider when selecting the location and so complete avoidance of RSS's was not ultimately possible.

To minimise the vegetation impact for the preferred site (between MM140.5 and MM142.5), located on the northern side of the Sturt Highway the design has:

- Constructed steeper batters in area of high quality vegetation that is marked as one of the Department's roadside significant sites (RSS 185);
- Minimised clearance at the at the batter construction extents by pruning rather than removing some of the trees identified within the Project Area.

The Murraylands and Riverland Landscape Board confirmed limited declared pest plant species of concern to roadsides in this location, with no Buffel grass recorded within the preferred site.

c) Rehabilitation or restoration

The overtaking lanes are permanent land clearance that is unlikely to be rehabilitated or restored. However, Declared and Environmental weed species (e.g. Olive, Gazania sp.) 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 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 9. Assessment against the Principles of Clearance.

Principle of clearance	Considerations
Principle 1(a) – it comprises a high level of diversity of plant species	<u>Relevant information</u> Plant species numbers (native and introduced) recorded at each vegetation association: A1: 22 native and 10 introduced A2: 30 native and 4 introduced A3: 28 native and 11 introduced A4: 22 native and 9 introduced Bushland Plant Diversity Score A1: 27/30 A2: 30/30 A3: 30/30 A4: 24/30
	<u>Assessment against the principles</u> <u>Seriously at Variance</u> A1, A2, A3 & A4
	<u>Moderating factors that may be considered by the NVC</u> - Amount of clearance related to the area of remnant vegetation 67% of the Blanchetown IBRA Environmental Association and 18% of the Holder IBRA Environmental Association is remnant vegetation. Of this, 17% and 22% is formerly conserved and protected, respectively.
Principle 1(b) – significance as a habitat for wildlife	<u>Relevant information</u> A total of 19 native bird species and one mammal species were recorded using the vegetation during the current fauna assessment (Appendix 2). Of those, two were introduced species. No nationally listed threatened species were recorded during the fauna assessment. Two State listed threatened species, Little Eagle (<i>Hieraaetus morphnoides</i>) and White-winged Chough (<i>Corcorax melanorhamphos</i>), were observed using the area during the field assessment. Two EPBC listed threatened species were identified as likely occurring in the Project Area: <i>Leipoa ocellata</i> (Malleefowl) and <i>Polytelis anthopeplus monarchoides</i> (Regent Parrot). Six State threatened bird 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. Two of the vegetation associations have high (>60) Unit biodiversity scores and are mallee vegetation in good condition. The area surrounding some of the Project Area is used as cropping

Principle of clearance	Considerations
	<p>land, the remainder and wider landscape consists of remnant native vegetation. As a result of the connectivity of the surrounding vegetation, this area is unlikely to provide a corridor for fauna movement or a habitat refuge.</p> <p>Threatened Fauna Score – 0.1 Unit biodiversity Score A1 – 54.91 A2 – 94.23 A3 – 92.80 A4 – 57.87</p> <hr/> <p><u>Assessment against the principles</u></p> <p>Seriously at Variance - A1, A2, A3, A4</p> <hr/> <p><u>Moderating factors that may be considered by the NVC</u> <u>Impact significance</u> Impact to EPBC listed species Malleefowl and Regent Parrot have been assessed against the <i>Matters of National Environmental Significance - Significant Impact Guidelines 1.1</i>. 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 5.</p> <p>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 vegetation on the edge of patches or thin strips of vegetation which the majority of the proposed clearance is occurring within. As such, the proposed clearance is unlikely to impact on important habitat for these species.</p> <p><u>Common species</u> 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.</p> <p><u>Non-essential habitat</u> 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.</p>
Principle 1(c) – plants of a rare, vulnerable or endangered species	<p><u>Relevant information</u> No threatened species were recorded for the site or may have been present but undetectable at the time of assessment.</p> <p>Threatened Flora Score – 0</p> <hr/> <p><u>Assessment against the principles</u></p> <p>At Variance Not at Variance</p>

Principle of clearance	Considerations
	<p><u>Moderating factors that may be considered by the NVC</u> N/A</p>
Principle 1(d) – the vegetation comprises the whole or part of a plant community that is Rare, Vulnerable or endangered	<p><u>Relevant information</u> The Mallee Bird Community of the Murray Darling Depression Bioregion listed as endangered under the EPBC Act is present within the Project Area. 0.035 ha is proposed to be cleared within this Threatened Ecological Community.</p>
	<p>Threatened Community Score – 1.4</p>
	<p><u>Assessment against the principles</u> <u>Seriously at Variance</u> A1, A2, A3 & A4</p>
	<p><u>Moderating factors that may be considered by the NVC</u> Impact to EPBC listed Threatened Ecological Community Mallee Bird Community has been assessed against the <i>Matters of National Environmental Significance - Significant Impact Guidelines 1.1</i>. 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 5.</p>
Principle 1(e) – it is significant as a remnant of vegetation in an area which has been extensively cleared	<p><u>Relevant information</u> Blanchetown IBRA Association remnant – 67% Holder IBRA Association remnant – 18%</p> <p>These four vegetation associations were in good to very good condition with minimal weed incursion at one site and low weed cover and species at the other two sites. The most common weed types encountered were <i>Carrichtera annua</i> (Ward's Weed) and <i>Sisymbrium erysimoides</i> (Smooth Mustard), and there were no declared weeds.</p>
	<p>Total Biodiversity Score – 249.91</p>
	<p><u>Assessment against the principles</u> <u>At Variance</u> -A1, A2, A3 & A4</p>
	<p><u>Moderating factors that may be considered by the NVC</u></p> <ul style="list-style-type: none"> - 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	<p><u>Relevant information</u> The vegetation is not associated with a wetland environment.</p>
	<p><u>Assessment against the principles</u> N/A</p>
	<p><u>Moderating factors that may be considered by the NVC</u> N/A</p>

Principle of clearance	Considerations
Principle 1(g) – it contributes significantly to the amenity of the area in which it is growing or is situated	<u>Relevant information</u> 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
	<u>Moderating factors that may be considered by the NVC</u> N/A

4.6. Risk assessment

The level of risk associated with the application

The level of risk associated with the application is Level 4 (Table 10). The risk assessment outcome of clearing 2.99 ha of native vegetation with a Total Biodiversity Score of 249.91 is Level 4 as the clearance is seriously at variance with principle 1(b) of the Principles of Clearance (wildlife habitat). Moderating factors that the NVC may consider in order to update the outcome of the assessment against the principles are outlined in Table 9. Any further clearance applications associated with the development will consider the level of risk of this application and the determining factors.

Table 10. Summary of the level of risk associated with the application.

Total clearance	No. of trees	-
	Area (ha)	2.99
	Total biodiversity Score	249.91
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	27	1.4	0	0.1	54.91	0.400	21.96	1			23.06	5,688.74	312.88
A	2	30	1.4	0	0.1	94.23	1.064	100.26	1			105.27	25,967.80	1,428.23
A	3	30	1.4	0	0.1	92.8	1.135	105.24	1			110.50	27,256.21	1,499.09
A	4	24	1.4	0	0.1	57.87	0.389	22.45	1			23.58	5,815.53	319.85
						Total	2.99	249.91				262.41	\$64,728.28	\$3,560.06

Totals summary table

	Total Biodiversity score	Total SEB points required	SEB Payment	Admin Fee	Total Payment
Application	249.91	262.41	\$64,728.28	\$3,560.06	\$68,288.33

Economies of Scale Factor	0.35
Rainfall (mm)	271

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. Details provided below.

PAYMENT SEB

Mott MacDonald proposes to achieve the SEB by paying into the Native Vegetation Fund. The total SEB payment required for the clearance of 2.99 ha of native vegetation with a Total Biodiversity Score of 249.91 is **\$68,288.33**, which includes an administration fee of \$3,560.06.

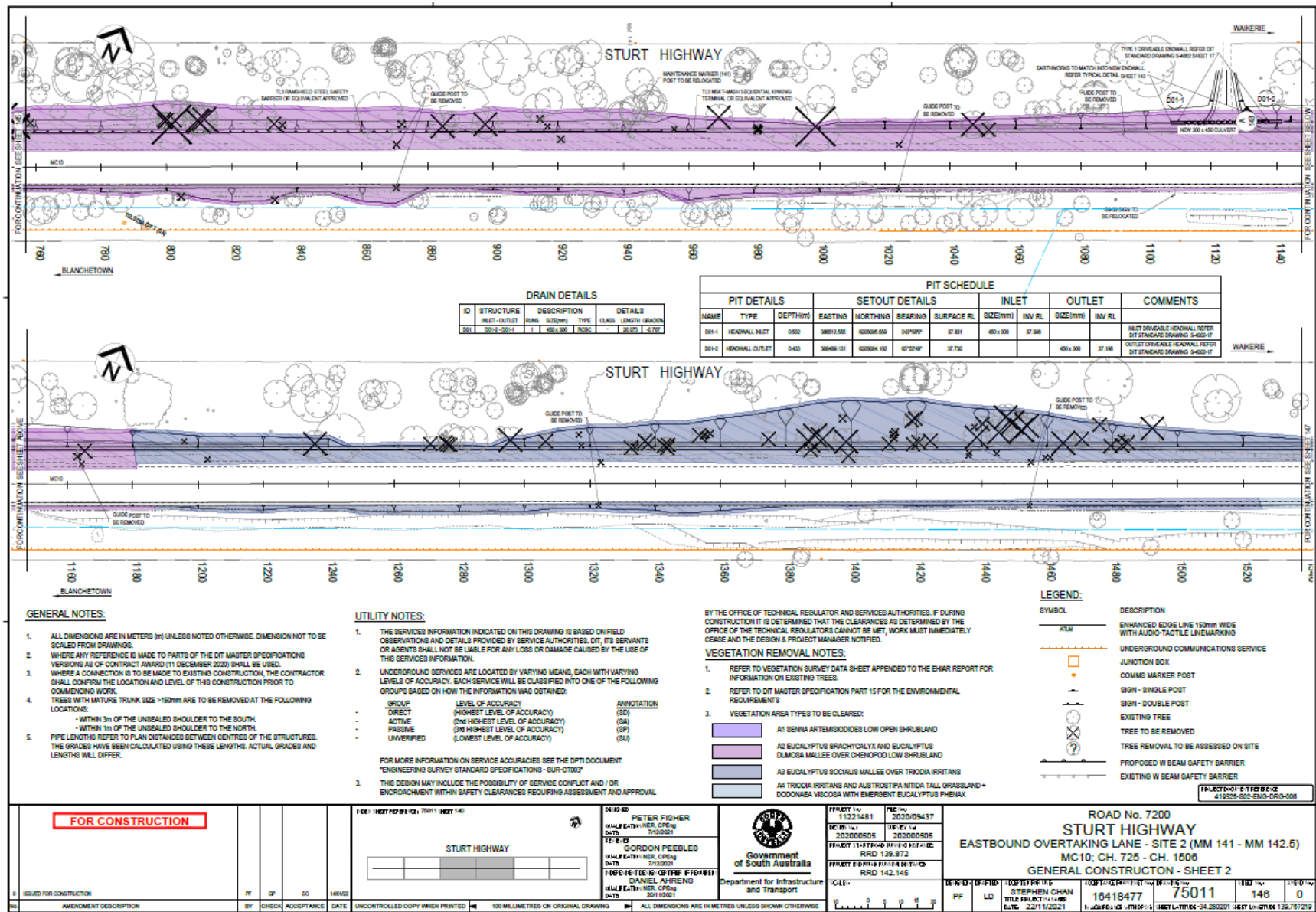
This SEB payment amount has been calculated using Rev B plans issued for Final Design 100% 6/8/2021. The payment amount includes offset provision for up to a 1 m Construction Activity Zone (refer to the DIT Master Specification) around the OTL design extent to enable construction to occur should it be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

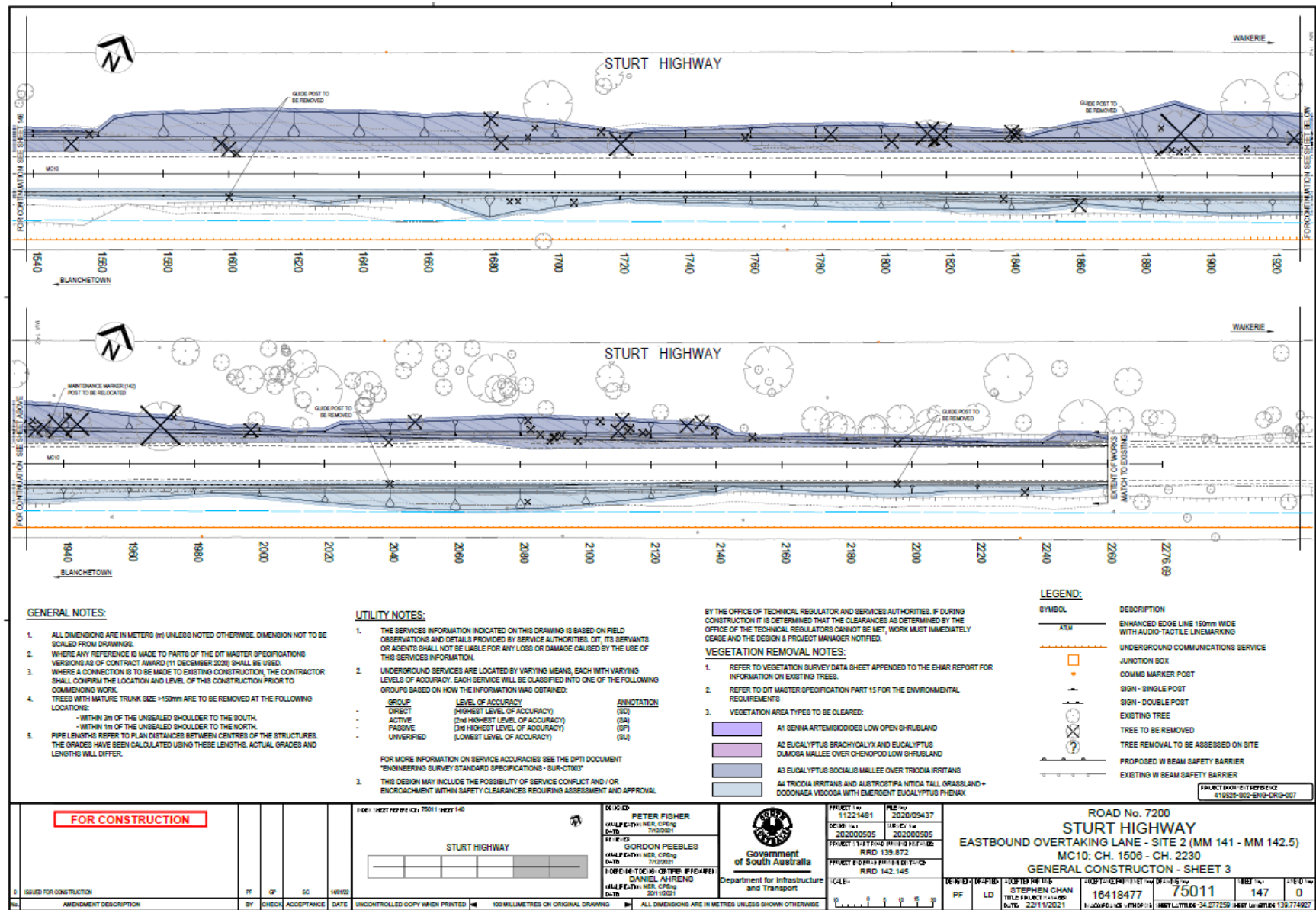
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8. Appendices

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





Appendix 2. Fauna species recorded in the Project Area.

Species Name	Common name
<i>Acanthagenys rufogularis</i>	Spiny-cheeked Honeyeater
<i>Acanthiza chrysorrhoa</i>	Yellow-rumped Thornbill
<i>Anthus australis</i>	Australian Pipit
<i>Artamus personatus</i>	Masked Woodswallow
<i>Barnardius zonarius</i>	Australian Ringneck
<i>Colluricincla harmonica</i>	Grey Shrike-thrush
<i>Corcorax melanorhamphos</i>	White-winged Chough
<i>Corvus coronoides</i>	Australian Raven
<i>Eolophus roseicapilla</i>	Galah
<i>Gymnorhina tibicen</i>	Australian Magpie
<i>Haliastur sphenurus</i>	Whistling Kite
<i>Hieraaetus morphnoides</i>	Little Eagle
<i>Ocyphaps lophotes</i>	Crested Pigeon
<i>Oryctolagus cuniculus</i> *	Rabbit (European Rabbit) *
<i>Pachycephala rufiventris</i>	Rufous Whistler
<i>Pardalotus striatus</i>	Striated pardalote
<i>Phaps chalcoptera</i>	Common Bronzewing
<i>Rhipidura leucophrys</i>	Willie Wagtail
<i>Smicronis brevirostris</i>	Weebill
<i>Turdus merula</i> *	Common Blackbird*

*Denotes exotic species

Appendix 3. Bushland Vegetation Assessment Scoresheets associated with the proposed clearance (Attachments 1-4)

Appendix 4. Flora Species List

Plant Species Recorded (Native and Introduced)	
Species	Common Name
<i>Acacia ligulata</i>	Umbrella Bush
<i>Acacia nyssophylla</i>	Spine Bush
<i>Acacia oswaldii</i>	Umbrella Wattle
<i>Asphodelus fistulosus</i> *	Onion Weed
<i>Atriplex stipitata</i>	Bitter Saltbush
<i>Atriplex vesicaria</i>	Bladder Saltbush
<i>Austrostipa acroclita</i>	Graceful Spear-grass
<i>Austrostipa elegantissima</i>	Feather Spear-grass
<i>Austrostipa nitida</i>	Balcarra Spear-grass
<i>Austrostipa trichophylla</i>	
<i>Avena barbata</i> *	Bearded Oat
<i>Brassica tournefortii</i> *	Wild Turnip
<i>Bromus rubens</i> *	Red Brome
<i>Calandrinia eremaea</i>	Dryland Purslane
<i>Carrichtera annua</i> *	Ward's Weed

<i>Centaurea melitensis</i> *	Malta Thistle
<i>Chenopodium curvispicatum</i>	Cottony Goosefoot
<i>Chenopodium nitriaceum</i>	Nitre Goosefoot
<i>Convolvulus remotus</i>	Grassy Bindweed
<i>Dodonaea viscosa</i> ssp.	Sticky Hop-bush
<i>Einadia nutans</i> ssp.	Climbing Saltbush
<i>Enchylaena tomentosa</i> var.	Ruby Saltbush
<i>Enneapogon nigricans</i>	Black-head Grass
<i>Eremophila oppositifolia</i> ssp.	Opposite-leaved Emubush
<i>Eriochiton sclerolaenoides</i>	Woolly-fruit Bluebush
<i>Eucalyptus brachycalyx</i>	Gilja
<i>Eucalyptus dumosa</i>	White Mallee
<i>Eucalyptus gracilis</i>	Yorrell
<i>Eucalyptus incrassata</i>	Ridge-fruited Mallee
<i>Eucalyptus oleosa</i> ssp.	
<i>Eucalyptus socialis</i> ssp.	Beaked Red Mallee
<i>Hordeum leporinum</i> *	Wall Barley-grass
<i>Leiocarpa tomentosa</i>	Woolly Plover-daisy
<i>Lomandra effusa</i>	Scented Mat-rush
<i>Maireana appressa</i>	Pale-fruit Bluebush
<i>Maireana brevifolia</i>	Short-leaf Bluebush
<i>Maireana georgei</i>	Satiny Bluebush
<i>Maireana pentatropis</i>	Erect Mallee Bluebush
<i>Maireana radiata</i>	Radiate Bluebush
<i>Maireana sedifolia</i>	Bluebush
<i>Maireana turbinata</i>	Top-fruit Bluebush
<i>Marrubium vulgare</i> *	Horehound
<i>Medicago polymorpha</i> *	Burr-medic
<i>Myoporum platycarpum</i> ssp.	False Sandalwood
<i>Pittosporum angustifolium</i>	Native Apricot
<i>Reichardia tingitana</i> *	False Sowthistle
<i>Rhagodia preissii</i> ssp. <i>preissii</i>	Mallee Saltbush
<i>Rhagodia spinescens</i>	Spiny Saltbush
<i>Roepera apiculata</i>	Pointed Twinleaf
<i>Roepera aurantiaca</i> ssp. <i>aurantiaca</i>	Shrubby Twinleaf
<i>Roepera ovata</i>	Dwarf Twinleaf
<i>Rytidosperma caespitosum</i>	Common Wallaby-grass
<i>Salsola australis</i> *	Buckbush
<i>Salvia verbenaca</i> var.*	Wild Sage
<i>Scaevola spinescens</i>	Spiny Fanflower
<i>Sclerolaena diacantha</i>	Grey Bindyi
<i>Sclerolaena patentiuspis</i>	Spear-fruit Bindyi
<i>Senna artemisioides</i> ssp.	Desert Senna
<i>Senna artemisioides</i> ssp. <i>petiolaris</i>	
<i>Silene nocturna</i> *	Mediterranean Catchfly
<i>Sisymbrium erysimoides</i> *	Smooth Mustard

<i>Sisymbrium sp.*</i>	Wild Mustard
<i>Sonchus oleraceus*</i>	Common Sow-thistle
<i>Triodia irritans</i>	Spinifex
<i>Vittadinia cuneata var.</i>	Fuzzy New Holland Daisy
<i>Vittadinia gracilis</i>	Woolly New Holland Daisy



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