

Native Vegetation Clearance Data Report

Augusta Highway Duplication: Port Wakefield to Lochiel – Option B

Clearance under the *Native Vegetation Regulations 2017*

April 2022

Prepared by Jeremy Tiller



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1. Application information

Application Details

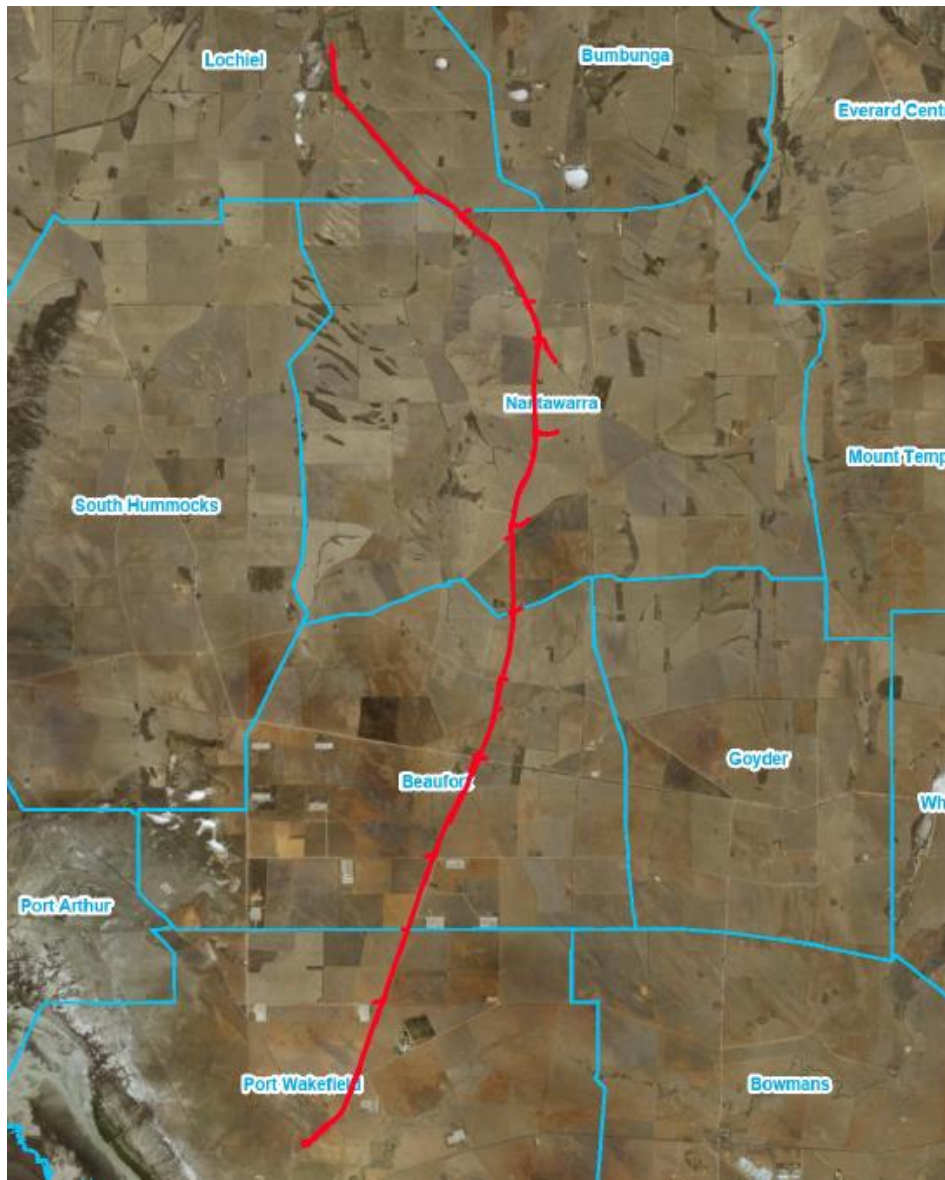
Applicant:	CPB Contractors CPB Contractors is the Head Contractor and member of the Port Wakefield to Port Augusta Alliance, which is contracted by the Commissioner of Highways for the construction of the Augusta Highway Duplication from Port Wakefield to Lochiel.		
Key contact:			
Landowner:	The Commissioner of Highways.		
Site Address:	The project footprint impacts the road corridor of Augusta Highway and several side roads off the highway between Port Wakefield and Lochiel. Multiple properties adjacent to these roads will also be impacted during the project.		
Local Government Area:	Wakefield Regional Council	Hundred:	Goyder and Cameron
Title ID:	Clearance proposed within numerous Cadastral Titles, in addition to the road reserves along Augusta Highway and several side roads off the highway between Port Wakefield and Lochiel. Refer to the maps included in Section 4 below for location of proposed vegetation clearance and impacted Title ID's.		

Summary of proposed clearance

Purpose of clearance	Clearance required for the duplication of the Augusta Highway between Port Wakefield and Lochiel, stormwater and other service infrastructure, fencing, laydown & material storage areas and site office compounds.
Native Vegetation Regulation	<i>Regulation 12(32) – Works on behalf of Commissioner of Highways</i>
Description of the vegetation under application	<ul style="list-style-type: none"> • 2.97 ha of <i>Eucalyptus porosa</i> (Mallee Box) woodland with open chenopod & sclerophyll shrub understorey in moderate condition • 1.45 ha of <i>Eucalyptus porosa</i> (Mallee Box) woodland with degraded open chenopod & sclerophyll shrub understorey in poor condition • 0.29 ha of <i>Eucalyptus porosa</i> (Mallee Box) +/- <i>Eucalyptus socialis ssp. socialis</i> (Beaked Red Mallee) woodland with open chenopod & sclerophyll shrub understorey in moderate condition • 0.68 ha of <i>Eucalyptus porosa</i> (Mallee Box) +/- <i>Eucalyptus socialis ssp. socialis</i> (Beaked Red Mallee) woodland with degraded open chenopod & sclerophyll shrub understorey in poor condition • 0.02 ha of <i>Eucalyptus porosa</i> (Mallee Box) +/- <i>Eucalyptus gracilis</i> (Yorrell) woodland with degraded open chenopod & sclerophyll shrub understorey in poor condition • 3.0 ha of <i>Eucalyptus socialis ssp. socialis</i> (Beaked Red Mallee) +/- <i>Eucalyptus gracilis</i> (Yorrell) +/- <i>Eucalyptus porosa</i> (Mallee Box) open mallee with open chenopod & sclerophyll shrub understorey in moderate condition • 1.74 ha of <i>Eucalyptus socialis ssp. socialis</i> (Beaked Red Mallee) +/- <i>Eucalyptus gracilis</i> (Yorrell) mallee with open chenopod & sclerophyll shrub understorey in moderate condition • 0.03 ha of <i>Eucalyptus odorata</i> (Peppermint Box) open woodland with degraded open chenopod & sclerophyll shrub understorey in poor condition • 0.25 ha of <i>Callitris gracilis</i> (Southern Cypress Pine) very open woodland with open chenopod & sclerophyll shrub understorey in poor condition • 0.02 ha of <i>Rhagodia parabolica</i> (Mealy Saltbush) +/- <i>Nitraria billardierei</i> (Nitre-bush) inland tall shrubland in poor condition • 0.06 ha of <i>Acacia oswaldii</i> (Umbrella Wattle) inland tall shrubland in poor condition • 0.02 ha of <i>Senna artemisioides</i> (Desert Senna) inland tall shrubland in poor condition

	<ul style="list-style-type: none"> • 0.01 ha of <i>Senna artemisioides</i> ssp. <i>X coriacea</i> (Broad-leaf Desert Senna) inland tall shrubland in poor condition • 0.05 ha of <i>Acacia ligulata</i> (Umbrella Bush) open inland tall shrubland in very poor condition • 0.15 ha of <i>Eremophila longifolia</i> (Weeping Emubush) open inland tall shrubland in poor condition • 0.84 ha of <i>Eremophila longifolia</i> (Weeping emubush) and <i>Acacia ligulata</i> (Umbrella Bush) inland tall shrubland in moderate condition • 0.63 ha of <i>Maireana brevifolia</i> (Short-leaf Bluebush), <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> (Ruby Saltbush) open shrubland in very poor condition • 0.41 ha of <i>Senna artemisioides</i> ssp. <i>X coriacea</i> (Broad-leaf Desert Senna) +/- <i>Maireana brevifolia</i> (Short-leaf Bluebush), <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> (Ruby Saltbush) open shrubland in very poor condition • 0.48 ha of <i>Nitraria billardiarei</i> (Nitire-bush) inland tall shrubland with planted overstorey and tall shrubs in poor condition • 1.79 ha of mixed very open coastal plain shrubland with planted overstorey in moderate condition • 0.06 ha of degraded inland tall shrubland with scattered <i>Acacia oswaldii</i> (Umbrella Wattle) in poor condition • 0.02 ha of degraded chenopod shrubland • 1 large <i>Eucalyptus socialis</i> ssp. <i>socialis</i> (Beaked Red Mallee) in poor-moderate health • 1 medium <i>Eucalyptus odorata</i> (Peppermint Box) in moderate health • 1 small <i>Eucalyptus odorata</i> (Peppermint Box) in good health • 1 medium <i>Eucalyptus porosa</i> (Mallee Box) in moderate health
Total proposed clearance - area (ha) and number of trees	12.26 ha and 4 scattered trees are proposed to be cleared.
Level of clearance	Level 4

Map of proposed clearance area



Mitigation hierarchy

The Augusta Highway Duplication – Port Wakefield to Lochiel – Option B Project reduces native vegetation clearance by following the existing highway alignment to construct the new northbound duplicated highway lanes. A reduction in the number of 'cross overs' of the existing highway further avoids impacts to native roadside vegetation. Additional measures to reduce the overall footprint and avoid impacts to native vegetation include install of roadside barriers to allow the steepening of batters, use of existing infrastructure (drainage lines etc) & utilising the proposed impact footprint as work area for install of associated infrastructure (communication/water services).

Further minimisation measures shall be implemented in accordance with the project's Construction Environmental Management Plan. Measures include installation of vegetation protection areas, site education, dust suppression and implementation of internal clearing permit system.

A significant area of roadside batters, drainage lines and temporary use areas will be available for rehabilitation at the landscaping phase of the project. General rehabilitation measures will include a topsoil treatment with a combination of native hydroseed mix and tube stock replanting of locally native species.

SEB Offset payment	\$240,878.00
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2. Purpose of clearance

2.1 Description

Jeremy Tiller was engaged by the Port Wakefield to Port Augusta Alliance (PW2PA) to conduct a native vegetation clearance assessment for the development of the Augusta Highway Duplication project from Port Wakefield to Lochiel (PW2LD) in the mid north region of South Australia (Map 1), and to assess the proposed clearance envelopes against the Clearance Requirements of the *Native Vegetation Act 1991* and *Native Vegetation Regulations 2017*.

As stated on the Department for Infrastructure and Transport (DIT) website:

'The duplication of the Augusta Highway between Port Wakefield and Lochiel aims to:

- Provide a more reliable and safer road network;
- Improve access for high productivity freight vehicles;
- Better connect rural communities;
- Facilitate economic growth; and
- Enhance tourism opportunities in rural South Australia (DPTI 2021¹).

2.2 Background

The project is located within the Mallala, Barung and Bumbunga IBRA Associations of South Australia.

The landform in the Mallala IBRA Association is described as undulating plains with occasional dunes. The association is dominated by grasslands of sown pastures and cereal crops. Approximately 3% of the Mallala IBRA Association is mapped as remnant native vegetation, of which 2% is protected.

The landform in the Barung IBRA Association is described as quartzite strike ridges and footslopes. The association is dominated by low open forest, grasslands of sown pastures and cereal crops. Approximately 4% of the Barung IBRA Association is mapped as remnant native vegetation, of which 0% is protected.

The landform in the Bumbunga IBRA Association is described as depressions with salt lakes with occasional dunes. The association is dominated by grasslands of sown pastures and cereal crops. Approximately 17% of the Bumbunga IBRA Association is mapped as remnant native vegetation, of which 0% is protected.

Current land use of the properties to be impacted by the project includes roads and highways, vacant residential, livestock grazing and other agricultural purposes. Adjacent land uses to the project includes rural residential, vacant residential, livestock grazing and other agricultural purposes (accessed from NatureMaps, 2021).

2.3 Details of the proposal

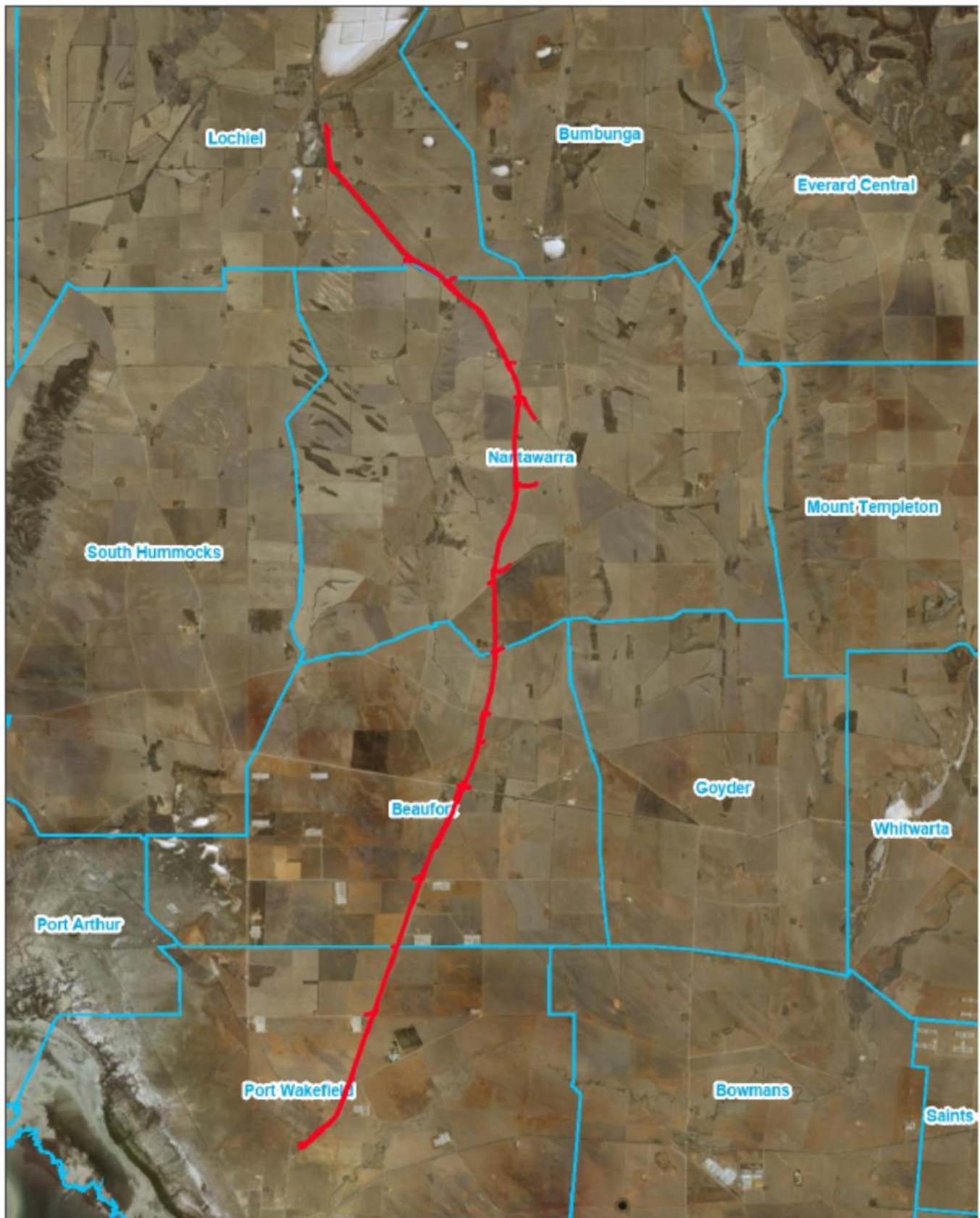
As discussed above, the PW2LD design includes (refer to Appendix 1 for the Augusta Highway Duplication project from Port Wakefield to Lochiel design plans and project layout):

- Construction of a duplicated dual carriageway on the eastern side of existing Augusta Highway from south of Lochiel Township to Beaufort.
- Construction of a duplicated dual carriageway on the western side of the existing Augusta Highway from Beaufort to north of the Port Wakefield Township.
- Associated local road access reconstructions
- Associated infrastructure works including; stormwater, watermain relocations, service relocations and property fencing.

¹ DPTI 2021, SA Government, accessed 13 May 2021,

https://dit.sa.gov.au/infrastructure/road_projects/south_australian_rural_highway_corridor_upgrades

Map 1. Location of the Augusta Highway Duplication Project



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2.4 Approvals required or obtained

Native Vegetation Act 1991

Consent to clear native vegetation under the *Native Vegetation Act 1991* is subject to this application and data report. In November 2021, Stage 1 of the Augusta Highway Duplication project was granted consent to clear 22.75 ha of native vegetation and 8 scattered native trees (Clearance Application – 2020/3097/373).

Planning, Development and Infrastructure Act 2016

No Development Approval is required for the PW2LD project. The project was approved by the Parliamentary Public Works Committee.

Water Resources Act 1997

No current water licences exist for the project.

Landscapes SA

Not applicable.

Aboriginal Heritage Act 1988

PW2PA are currently undertaking additional investigations to confirm obligations under the AHA. Where possible through refinement of design all DPC-AAR site will be avoided. Where this is not possible Ministerial consent under section 23 of the AHA will be required.

2.5 Native Vegetation Regulation

Regulation 12(32) – Works on behalf of Commissioner of Highways.

3. Method

Prior to the site survey the following desktop assessments were conducted:

- Review of the Atlas of Living Australia and *Environmental Protection and Biodiversity Conservation (EPBC) Act 1999* Protected Matter search tools within 5km of the proposed clearance areas to determine the likelihood of any National and State listed fauna species that may utilise the vegetation under application.
- Review of the Atlas of Living Australia and *EPBC Act 1999* Protected Matter search tools within 5km of the proposed clearance areas to determine the likelihood of any National and State listed flora species and/or habitats of conservation significance that may be present on the subject land.

3.1 Flora assessment

The project site was surveyed on 31 August 2020, 28 - 29 April 2021, 22 – 23 June 2021 and 9 & 11 March 2022. The site survey was undertaken in accordance with the Native Vegetation Council (NVC) Bushland and Scattered Tree Assessment Manual 2020 and DPTI Vegetation Removal Policy (2018). The aim of the site survey was to:

- record the vegetation association and flora species present;
- record the condition of the vegetation present;
- record the attributes of the native trees present;
- record any threatened flora species, if present;
- record any opportunistic fauna sightings; and
- to assess the proposed clearance against the Requirements and Regulations of the *Native Vegetation Act 1991* and *Native Vegetation Regulations 2017*.

3.2 Fauna assessment

Methodology involved active physical searching of the survey sites and investigating any potential shelter and habitat for the following threatened terrestrial fauna species that have been recorded in the area or are known to occur in the area:

- | | |
|---|---|
| • White-bellied Cuckooshrike (<i>Coracina papuensis robusta</i>) SA: Rare | • Hooded Robin (<i>Melanodryas cucullate cucullate</i>) SA: Rare |
| • Letter-Winged Kite (<i>Elanus scriptus</i>) SA: Rare | • Elegant Parrot (<i>Neophema elegans</i>) SA: Rare |
| • Peregrine Falcon (<i>Falco peregrinus</i>) SA: Rare | • Olive-backed Oriole (<i>Oriolus sagittatus sagittatus</i>) SA: Rare |
| • Black Falcon (<i>Falco subniger</i>) SA: Rare | |

4. Assessment Outcomes

4.1 Vegetation Assessment

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

As discussed above, the project is located within the Mallala, Barung and Bumbunga IBRA Associations of South Australia. The Associations have been heavily cleared in the past with approximately 3-17% of the region containing remnant vegetation.

The soil types within the project footprint are described as loam over pedaric red clay, calcareous loam, friable gradational clay loam and siliceous sand (accessed from Locations SA, 2021).

The southern extent of the project area is located approximately 2.5km to the east of Clinton Conservation Park and Clinton Wetlands, which is listed as a listed Wetland of National Importance. No Heritage Agreements are near the proposed development, with the closest being approximately 9km to the north (HA1114).

The native vegetation under application contains 18 different vegetation associations ranging from poor to moderate condition. In addition, 4 scattered trees are under application.

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

Site A1 (Map 2)

Vegetation Association	<i>Eucalyptus porosa</i> (Mallee Box) woodland with degraded open chenopod & sclerophyll shrub understorey
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Photo 1: Site A1 viewing Southeast



Photo 2: Site A1 viewing south



Photo 3: Site A1 viewing north



Photo 4: Site A1 viewing south



General description	<p>Dominant understorey species include <i>Exocarpos aphyllus</i> (Leafless Cherry), <i>Senna artemisioides</i> (Desert Senna), <i>Senna artemisioides</i> ssp. <i>X coriacea</i> (Broad-leaf Desert Senna), <i>Acacia ligulata</i> (Umbrella Bush), <i>Rhagodia parabolica</i> (Mealy Saltbush), <i>Maireana brevifolia</i> (Short-leaf Bluebush), <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> (Ruby Saltbush), <i>Atriplex stipitata</i> (Bitter Saltbush) and <i>Austrostipa</i> sp. (Spear-grass). The full flora species list recorded during the survey in Site A1 is shown in Appendix 3.</p> <p>Regeneration in Site A1 was recorded as moderate with three native flora species recorded regenerating. Tree canopy cover in Site A1 was approximately 30%. The trees were observed to be in moderate health with approximately 25% die-back of their canopies. Several various sized hollows were recorded. The site contained numerous trunk and branch sized logs and patchy litter layers. The understorey in A1 contains approximately 15% native species cover and is dominated by introduced flora species.</p> <p>Dominant introduced species include <i>Trifolium</i> sp. (Clover), <i>Carrichtera annua</i> (Ward's Weed), <i>Asparagus asparagoides</i> f. (Bridal Creeper), <i>Lycium ferocissimum</i> (African Boxthorn) and <i>Avena barbata</i> (Bearded Oat). <i>Asparagus asparagoides</i> f. and <i>Lycium ferocissimum</i> are declared plant species listed under the <i>Landscape South Australia Act 2019</i>. In addition, declared plant <i>Pinus halepensis</i> (Aleppo Pine) was also observed in Site A1</p>				
Threatened species or community	<p>No threatened flora species listed under the NP&W Act or EPBC Act listed flora species or community were recorded in Site A1.</p> <p>Upon advice from the Native Vegetation Branch (Graham Carpenter), it was determined that Site A1 would provide suitable habitat for the <i>Neophema elegans</i> (Elegant Parrot), <i>Melanodryas cucullata cucullata</i> (Hooded Robin) and <i>Plectorhyncha lanceolata</i> (Striped Honeyeater) which are listed as rare under the <i>National Parks and Wildlife Act 1972</i> (Personnel communication, 26 July 2021).</p>				
Landscape context score	1.12	Vegetation Condition Score	33.13	Conservation significance score	1.04
Unit biodiversity Score	38.59	Area (ha)	1.17	Total biodiversity Score	45.15

Map 2. Site A1



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Government of South Australia
Department for Environment and Water

Site B1 (Map 3)

Vegetation Association	<i>Eucalyptus socialis ssp. socialis</i> (Beaked Red Mallee) +/- <i>Eucalyptus gracilis</i> (Yorrell) +/- <i>Eucalyptus porosa</i> (Mallee Box) open mallee with open chenopod & sclerophyll shrub understorey
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Photo 5: Site B1 viewing north-west



Photo 6: Site B1 viewing north-west



Photo 7: Site B1 viewing north-west



General description	<p>Dominant understorey species include <i>Senna artemisioides</i> ssp. <i>X. coriacea</i> (Broad-leaf Desert Senna), <i>Rhagodia parabolica</i> (Mealy Saltbush), <i>Rhagodia crassifolia</i> (Fleshy Saltbush), <i>Maireana brevifolia</i> (Short-leaf Bluebush), <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> (Ruby Saltbush) and <i>Atriplex stipitata</i> (Bitter Saltbush). The full flora species list recorded during the survey in Site B1 is shown in Appendix 3.</p> <p>The regeneration of native flora species was moderate with three species recorded as regenerating. Tree canopy cover in Site B1 was approximately 40%. The trees were observed to be in moderate health with approximately 35% die-back of their canopies. Several various sized hollows were recorded. The site contained numerous fallen branch sized logs and patchy litter layers. The understorey in B1 contains approximately 30% native species cover and is dominated by introduced flora species.</p> <p>Introduced species include <i>Carrichtera annua</i> (Ward's Weed), <i>Bromus diandrus</i> (Great Brome), <i>Asparagus asparagoides</i> f. (Bridal Creeper), <i>Avena barbata</i> (Bearded Oat), <i>Lycium ferocissimum</i> (African Boxthorn) and <i>Asphodelus fistulosus</i> (Onion Weed). <i>Asparagus asparagoides</i> f. and <i>Lycium ferocissimum</i> are declared plant species listed under the <i>Landscape South Australia Act 2019</i>.</p>				
Threatened species or community	<p>No threatened flora species listed under the NP&W Act or EPBC Act listed flora species or community were recorded in Site B1.</p> <p>Upon advice from the Native Vegetation Branch (Graham Carpenter), it was determined that Site B1 would provide suitable habitat for the <i>Neophema elegans</i> (Elegant Parrot) which is listed as rare under the <i>National Parks and Wildlife Act 1972</i> (Personnel communication, 26 July 2021).</p>				
Landscape context score	1.13	Vegetation Condition Score	39.54	Conservation significance score	1.04
Unit biodiversity Score	46.47	Area (ha)	3	Total biodiversity Score	139.42

Map 3. Site B1



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Site C1 (Map 4)

Vegetation Association	<i>Eucalyptus porosa</i> (Mallee Box) woodland with degraded open chenopod & sclerophyll shrub understorey				
Photo 8: Site C1 viewing Southeast					
					
General description	<p>Dominant understorey species include <i>Callitris gracilis</i> (Southern Cypress Pine), <i>Acacia ligulata</i> (Umbrella Bush), <i>Rhagodia parabolica</i> (Mealy Saltbush) and <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> (Ruby Saltbush). The full flora species list recorded during the survey in Site C1 is shown in Appendix 3.</p> <p>No native flora species were recorded as regenerating. Tree canopy cover in Site C1 was approximately 30%. The trees were observed to be in moderate health with approximately 20% die-back of their canopies. No hollows were recorded. The site contained numerous branch sized logs and patchy litter layers. The understorey in C1 contains approximately 15% native species cover and is dominated by introduced flora species.</p> <p>Dominant introduced species include <i>Brassica</i> sp. (Wild Mustard), <i>Solanum elaeagnifolium</i> (Silver-leaf Nightshade), <i>Lycium ferocissimum</i> (African Boxthorn), <i>Asparagus asparagoides</i> f. (Bridal Creeper) and <i>Avena barbata</i> (Bearded Oat). <i>Lycium ferocissimum</i> and <i>Asparagus asparagoides</i> f. are declared plant species listed under the <i>Landscape South Australia Act 2019</i>.</p>				
Threatened species or community	<p>No threatened flora species listed under the NP&W Act or EPBC Act listed flora species or community were recorded in Site C1.</p> <p>Upon advice from the Native Vegetation Branch (Graham Carpenter), it was determined that Site C1 would provide suitable habitat for the <i>Neophema elegans</i> (Elegant Parrot), <i>Melanodryas cucullata cucullata</i> (Hooded Robin) and <i>Plectorhyncha lanceolata</i> (Striped Honeyeater) which are listed as rare under the <i>National Parks and Wildlife Act 1972</i> (Personnel communication, 26 July 2021).</p>				
Landscape context score	1.12	Vegetation Condition Score	22.86	Conservation significance score	1.04
Unit biodiversity Score	26.62	Area (ha)	0.15	Total biodiversity Score	3.99

Map 4. Site C1



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Site D1 (Map 5)

Vegetation Association	<i>Eucalyptus porosa</i> (Mallee Box) +/- <i>Eucalyptus socialis</i> ssp. <i>socialis</i> (Beaked Red Mallee) woodland with degraded open chenopod & sclerophyll shrub understorey				
Photo 9: Site D1 viewing southwest					
					
General description	<p>Dominant understorey species include <i>Maireana brevifolia</i> (Short-leaf Bluebush), <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> (Ruby Saltbush), <i>Salsola australis</i> (Buckbush) and <i>Austrostipa</i> sp. (Spear-grass). The full flora species list recorded during the survey in Site D1 is shown in Appendix 3.</p> <p>No native flora species were recorded as regenerating. Tree canopy cover in Site D1 was approximately 20%. The trees were observed to be in moderate health with approximately 35% die-back of their canopies. Several various sized hollows were recorded. The site contained numerous trunk and branch sized logs and patchy litter layers. The understorey in D1 contains approximately 30% native species cover and is dominated by introduced flora species.</p> <p>Introduced species include <i>Brassica</i> sp. (Wild Mustard), <i>Carrichtera annua</i> (Ward's Weed), <i>Asparagus asparagoides</i> f. (Bridal Creeper), <i>Avena barbata</i> (Bearded Oat), <i>Lycium ferocissimum</i> (African Boxthorn) and <i>Solanum elaeagnifolium</i> (Silver-leaf Nightshade). <i>Marrubium vulgare</i>, <i>Asparagus asparagoides</i> f., <i>Solanum elaeagnifolium</i> and <i>Lycium ferocissimum</i> are declared plant species listed under the <i>Landscape South Australia Act 2019</i>.</p>				
Threatened species or community	<p>No threatened flora species listed under the NP&W Act or EPBC Act listed flora species or community were recorded in Site D1.</p> <p>Upon advice from the Native Vegetation Branch (Graham Carpenter), it was determined that Site D1 would provide suitable habitat for the <i>Neophema elegans</i> (Elegant Parrot), <i>Melanodryas cucullata cucullata</i> (Hooded Robin) and <i>Plectorhyncha lanceolata</i> (Striped Honeyeater) which are listed as rare under the <i>National Parks and Wildlife Act 1972</i> (Personnel communication, 26 July 2021).</p>				
Landscape context score	1.13	Vegetation Condition Score	24.15	Conservation significance score	1.04
Unit biodiversity Score	28.38	Area (ha)	0.24	Total biodiversity Score	6.81

Map 5. Site D1



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Site E1 (Map 6)


Vegetation Association	<i>Eucalyptus porosa</i> (Mallee Box) woodland with degraded open chenopod & sclerophyll shrub understorey
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Photo 10: Site E1 viewing southeast

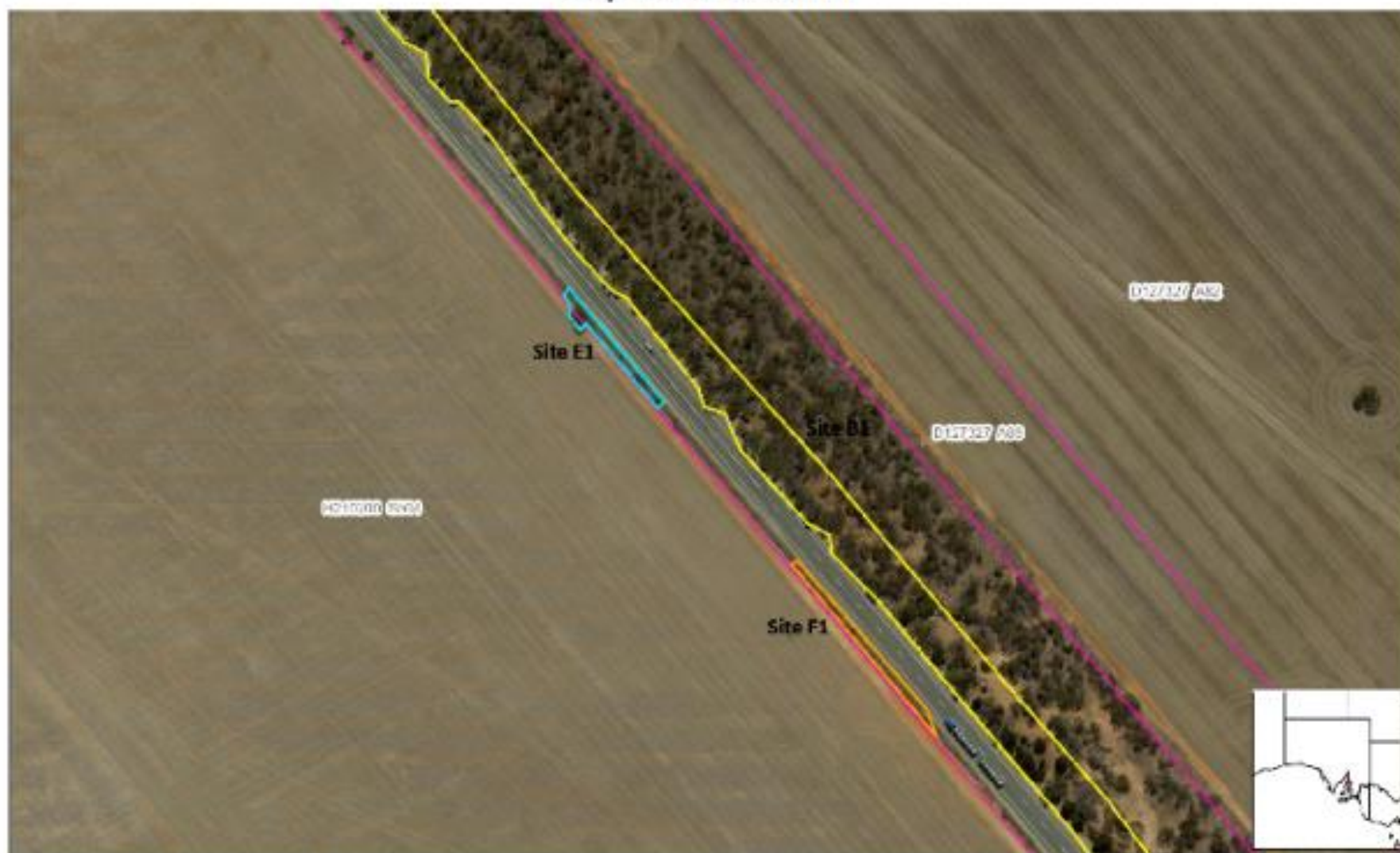


General description	<p>Understorey species include <i>Acacia brachybotrya</i> (Grey Mulga-Bush), <i>Senna artemisioides</i> ssp. <i>X coriacea</i> (Broad-leaf Desert Senna), <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> (Ruby Saltbush) and <i>Enneapogon nigricans</i> (Black-head Grass). The full flora species list recorded during the survey in Site E1 is shown in Appendix 3.</p> <p>No native flora species were recorded as regenerating. Tree canopy cover in Site E1 was approximately 10%. The trees were observed to be in moderate health with approximately 20% die-back of their canopies. No hollows or debris were recorded. The understorey in E1 contains approximately 15% native species cover and is dominated by introduced flora species.</p> <p>Introduced species include <i>Avena barbata</i> (Bearded Oat), <i>Solanum elaeagnifolium</i> (Silver-leaf Nightshade), <i>Bromus diandrus</i> (Giant Brome), <i>Solanum nigrum</i> (Black Nightshade) and <i>Avena barbata</i> (Bearded Oat). <i>Solanum elaeagnifolium</i> is a declared plant species listed under the <i>Landscape South Australia Act 2019</i>.</p>				
Threatened species or community	<p>No threatened flora species listed under the NP&W Act or EPBC Act listed flora species or community were recorded in Site E1.</p> <p>Due to the degraded quality of the vegetation, sparse cover of native species and close proximity to the Augusta Highway, it is unlikely Site E1 would provide habitat for threatened fauna species.</p>				
Landscape context score	1.13	Vegetation Condition Score	14.01	Conservation significance score	1.00
Unit biodiversity Score	15.83	Area (ha)	0.02	Total biodiversity Score	0.32

Site F1 (Map 6)

Vegetation Association	<i>Rhagodia parabolica</i> (Mealy Saltbush) +/- <i>Nitraria billardierei</i> (Nitre-bush) inland tall shrubland				
Photo 11: Site F1 viewing northwest					
					
General description	<p>Dominant native species include <i>Rhagodia parabolica</i> (Mealy Saltbush), <i>Nitraria billardierei</i> (Nitre-bush), <i>Maireana brevifolia</i> (Short-leaf Bluebush) and <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> (Ruby Saltbush). The full flora species list recorded during the survey in Site F1 is shown in Appendix 3.</p> <p>No species were recorded as regenerating. Site F1 contains approximately 30% native species cover.</p> <p>Introduced species include <i>Asparagus asparagoides</i> f. (Bridal Creeper), <i>Dittrichia graveolens</i> (Stinkweed), <i>Salvia verbenaca</i> var. (Wild Sage) and <i>Avena barbata</i> (Bearded Oat). <i>Asparagus asparagoides</i> f. is a declared plant species listed under the <i>Landscape South Australia Act 2019</i>.</p>				
Threatened species or community	<p>No threatened flora species listed under the NP&W Act or EPBC Act listed flora species or community were recorded in Site F1.</p> <p>Due to the degraded quality of the vegetation, sparse cover of native species and close proximity to the Augusta Highway, it is unlikely Site F1 would provide habitat for threatened fauna species.</p>				
Landscape context score	1.13	Vegetation Condition Score	21.39	Conservation significance score	1.00
Unit biodiversity Score	24.17	Area (ha)	0.02	Total biodiversity Score	0.48

Map 6. Site E1 and F1



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Site G1 (Map 7)

Vegetation Association	<i>Eucalyptus porosa</i> (Mallee Box) +/- <i>Eucalyptus socialis</i> ssp. <i>socialis</i> (Beaked Red Mallee) woodland with degraded open chenopod & sclerophyll shrub understorey				
Photo 12: Site G1 viewing northwest					
					
General description	<p>Understorey species include <i>Maireana brevifolia</i> (Short-leaf Bluebush), <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> (Ruby Saltbush), <i>Dianella revoluta</i> var. <i>revoluta</i> (Black-anther Flax-lily) and <i>Austrostipa</i> sp. (Spear-grass). The full flora species list recorded during the survey in Site G1 is shown in Appendix 3.</p> <p>No native flora species were recorded as regenerating. Tree canopy cover in Site G1 was approximately 40%. The trees were observed to be in moderate health with approximately 25% die-back of their canopies. No hollows were recorded. The site contains several branch sized logs. The understorey in G1 contains approximately 5-10% native species cover and is dominated by introduced flora species.</p> <p>Introduced species include <i>Brassica</i> sp. (Wild Mustard), <i>Piptatherum miliaceum</i> (Rice Millet), <i>Dittrichia graveolens</i> (Stinkwees), <i>Avena barbata</i> (Bearded Oat), <i>Bromus diandrus</i> (Great Brome) and <i>Sonchus oleraceus</i> (Common Sow-thistle).</p>				
Threatened species or community	<p>No threatened flora species listed under the NP&W Act or EPBC Act listed flora species or community were recorded in Site G1.</p> <p>Due to the degraded quality of the vegetation, sparse cover of native species and close proximity to the Augusta Highway, it is unlikely Site G1 would provide habitat for threatened fauna species.</p>				
Landscape context score	1.13	Vegetation Condition Score	21.94	Conservation significance score	1.00
Unit biodiversity Score	24.79	Area (ha)	0.04	Total biodiversity Score	0.99

Map 7. Site G1



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Site H1 (Map 8)

Vegetation Association	<i>Eucalyptus socialis</i> ssp. <i>socialis</i> (Beaked Red Mallee) +/- <i>Eucalyptus gracilis</i> (Yorrell) mallee with open chenopod & sclerophyll shrub understorey
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Photo 13: Site H1 viewing northwest



Photo 14: Site H1 viewing northwest




Photo 15: Site H1 viewing southeast



General description	<p>Dominant understorey species include <i>Senna artemisioides</i> ssp. <i>X coriacea</i> (Broad-leaf Desert Senna), <i>Rhagodia parabolica</i> (Mealy Saltbush), <i>Rhagodia crassifolia</i> (Fleshy Saltbush), <i>Maireana brevifolia</i> (Short-leaf Bluebush), <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> (Ruby Saltbush) and <i>Atriplex stipitata</i> (Bitter Saltbush). The full flora species list recorded during the survey in Site H1 is shown in Appendix 3.</p> <p>The regeneration of native flora species was low with two species recorded as regenerating. Tree canopy cover in Site H1 was approximately 40%. The trees were observed to be in moderate health with approximately 35% die-back of their canopies. Several various sized hollows were recorded. The site contained numerous fallen branch sized logs and patchy litter layers. The understorey in H1 contains approximately 30% native species cover and is dominated by introduced flora species.</p> <p>Introduced species include <i>Bromus diandrus</i> (Great Brome), <i>Asparagus asparagoides</i> f. (Bridal Creeper), <i>Avena barbata</i> (Bearded Oat), <i>Lycium ferocissimum</i> (African Boxthorn) and <i>Asphodelus fistulosus</i> (Onion Weed). <i>Asparagus asparagoides</i> f. and <i>Lycium ferocissimum</i> are declared plant species listed under the <i>Landscape South Australia Act 2019</i>.</p>				
Threatened species or community	<p>No threatened flora species listed under the NP&W Act or EPBC Act listed flora species or community were recorded in Site H1.</p> <p>Upon advice from the Native Vegetation Branch (Graham Carpenter), it was determined that Site H1 would provide suitable habitat for the <i>Neophema elegans</i> (Elegant Parrot) which is listed as rare under the <i>National Parks and Wildlife Act 1972</i> (Personnel communication, 26 July 2021).</p>				
Landscape context score	1.13	Vegetation Condition Score	34.59	Conservation significance score	1.02
Unit biodiversity Score	39.87	Area (ha)	1.45	Total biodiversity Score	57.82

Site I1 (Map 8)

Vegetation Association	<i>Eucalyptus porosa</i> (Mallee Box) +/- <i>Eucalyptus socialis ssp. socialis</i> (Beaked Red Mallee) woodland with degraded open chenopod & sclerophyll shrub understorey				
Photo 16: Site I1 viewing northwest					
					
General description	<p>Dominant understorey species include <i>Pittosporum angustifolium</i> (Native Apricot), <i>Rhagodia parabolica</i> (Mealy Saltbush), <i>Acacia ligulata</i> (Umbrella Bush), <i>Dianella revoluta</i> var. <i>revoluta</i> (Black-anther Flax-lily) and <i>Enneapogon nigricans</i> (Blank-head Grass). The full flora species list recorded during the survey in Site I1 is shown in Appendix 3.</p> <p>No native flora species were recorded as regenerating. Tree canopy cover in Site I1 was approximately 25%. The trees were observed to be in moderate health with approximately 25% die-back of their canopies. No hollows were recorded. The site contained several trunk and branch sized logs and patchy litter layers. The understorey in I1 contains approximately 30% native species cover and is dominated by introduced flora species.</p> <p>Dominant introduced species include <i>Scabiosa atropurpurea</i> (Pincushion), <i>Asphodelus fistulosus</i> (Onion Weed), <i>Asparagus asparagoides</i> f. (Bridal Creeper), <i>Salvia verbenaca</i> (Wild sage) and <i>Avena barbata</i> (Bearded Oat). <i>Asparagus asparagoides</i> f. is a declared plant species listed under the <i>Landscape South Australia Act 2019</i>.</p>				
Threatened species or community	<p>No threatened flora species listed under the NP&W Act or EPBC Act listed flora species or community were recorded in Site I1.</p> <p>Due to the degraded quality of the vegetation, sparse cover of native species and close proximity to the Augusta Highway, it is unlikely Site I1 would provide habitat for threatened fauna species.</p>				
Landscape context score	1.13	Vegetation Condition Score	22.17	Conservation significance score	1.00
Unit biodiversity Score	25.05	Area (ha)	0.2	Total biodiversity Score	5.01

Map 8. Site H1 and I1

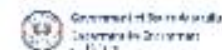


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Site J1 (Map 9)

Vegetation Association	<i>Eucalyptus porosa</i> (Mallee Box) +/- <i>Eucalyptus socialis</i> ssp. <i>socialis</i> (Beaked Red Mallee) woodland with degraded open chenopod & sclerophyll shrub understorey				
Photo 17: Site J1 viewing northwest					
					
General description	<p>Dominant understorey species include <i>Rhagodia parabolica</i> (Mealy Saltbush), <i>Acacia ligulata</i> (Umbrella Bush), <i>Maireana brevifolia</i> (Short-leaf Bluebush), <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> (Ruby Saltbush) and <i>Enneapogon nigricans</i> (Blank-head Grass). The full flora species list recorded during the survey in Site J1 is shown in Appendix 3.</p> <p>No native flora species were recorded as regenerating. Tree canopy cover in Site J1 was approximately 25%. The trees were observed to be in moderate health with approximately 15% die-back of their canopies. No hollows were recorded. The site contained several branch sized logs and patchy litter layers. The understorey in J1 contains approximately 30% native species cover and is dominated by introduced flora species.</p> <p>Introduced species include <i>Carrichtera annua</i> (Ward's Weed), <i>Salvia verbenaca</i> (Wild sage) and <i>Avena barbata</i> (Bearded Oat).</p>				
Threatened species or community	<p>No threatened flora species listed under the NP&W Act or EPBC Act listed flora species or community were recorded in Site J1.</p> <p>Due to the degraded quality of the vegetation, sparse cover of native species and close proximity to the Augusta Highway, it is unlikely Site J1 would provide habitat for threatened fauna species.</p>				
Landscape context score	1.13	Vegetation Condition Score	26.55	Conservation significance score	1.00
Unit biodiversity Score	30.00	Area (ha)	0.05	Total biodiversity Score	1.50

Map 9. Site J1



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Site K1 (Map 10)

Vegetation Association	<i>Eucalyptus porosa</i> (Mallee Box) woodland with open chenopod & sclerophyll shrub understorey				
Photo 18: Site K1 viewing South					
					
General description	<p>Dominant understorey species include <i>Acacia oswaldii</i> (Umbrella Wattle), <i>Rhagodia parabolica</i> (Mealy Saltbush), <i>Maireana brevifolia</i> (Short-leaf Bluebush), <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> (Ruby Saltbush), <i>Atriplex stipitata</i> (Bitter Saltbush) and <i>Austrostipa</i> sp. (Spear-grass). The full flora species list recorded during the survey in Site K1 is shown in Appendix 3.</p> <p>Regeneration in Site K1 was recorded as low with one native flora species recorded regenerating. Tree canopy cover in Site K1 was approximately 40%. The trees were observed to be in moderate health with approximately 35% die-back of their canopies. Several various sized hollows were recorded. The site contained numerous trunk and branch sized logs and dense litter layers. The understorey in K1 contains approximately 50% native species cover.</p> <p>Dominant introduced species include <i>Carrichtera annua</i> (Ward's Weed), <i>Asparagus asparagoides</i> f. (Bridal Creeper), <i>Solanum elaeagnifolium</i> (Silver-leaf Nightshade) <i>Scabiosa atropurpurea</i> (Pincushion), and <i>Avena barbata</i> (Bearded Oat). <i>Asparagus asparagoides</i> f. and <i>Solanum elaeagnifolium</i> are declared plant species listed under the <i>Landscape South Australia Act 2019</i>.</p>				
Threatened species or community	<p>No threatened flora species listed under the NP&W Act or EPBC Act listed flora species or community were recorded in Site K1.</p> <p>Upon advice from the Native Vegetation Branch (Graham Carpenter), it was determined that Site K1 would provide suitable habitat for the <i>Neophema elegans</i> (Elegant Parrot), <i>Melanodryas cucullata cucullata</i> (Hooded Robin) and <i>Plectorhyncha lanceolata</i> (Striped Honeyeater) which are listed as rare under the <i>National Parks and Wildlife Act 1972</i> (Personnel communication, 26 July 2021).</p>				
Landscape context score	1.13	Vegetation Condition Score	31.73	Conservation significance score	1.04
Unit biodiversity Score	37.28	Area (ha)	0.9	Total biodiversity Score	3.36

Map 10. Site K1

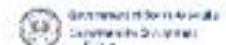


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Site L1 (Map 11)

Vegetation Association	<i>Eucalyptus porosa</i> (Mallee Box) woodland with degraded chenopod & sclerophyll shrub understorey				
Photo 19: Site L1 viewing north					
					
General description	<p>Dominant understorey species include <i>Acacia oswaldii</i> (Umbrella Wattle), <i>Rhagodia parabolica</i> (Mealy Saltbush), <i>Maireana brevifolia</i> (Short-leaf Bluebush), <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> (Ruby Saltbush), <i>Dianella revoluta</i> var. <i>revoluta</i> (Black-anther Flax-lily) and <i>Salsola australis</i> (Buckbush). The full flora species list recorded during the survey in Site L1 is shown in Appendix 3.</p> <p>No native flora species were recorded as regenerating. Tree canopy cover in Site L1 was approximately 40%. The trees were observed to be in moderate health with approximately 20% die-back of their canopies. No hollows were recorded. The site contained several branch sized logs and dense litter layers. The understorey in L1 contains approximately 30% native species cover.</p> <p>Dominant introduced species include <i>Piptatherum miliaceum</i> (Rice Millet), <i>Asphodelus fistulosus</i> (Onion Weed) <i>Scabiosa atropurpurea</i> (Pincushion), and <i>Avena barbata</i> (Bearded Oat).</p>				
Threatened species or community	<p>No threatened flora species listed under the NP&W Act or EPBC Act listed flora species or community were recorded in Site L1.</p> <p>Upon advice from the Native Vegetation Branch (Graham Carpenter), it was determined that Site L1 would provide suitable habitat for the <i>Neophema elegans</i> (Elegant Parrot), <i>Melanodryas cucullata cucullata</i> (Hooded Robin) and <i>Plectorhyncha lanceolata</i> (Striped Honeyeater) which are listed as rare under the <i>National Parks and Wildlife Act 1972</i> (Personnel communication, 26 July 2021).</p>				
Landscape context score	1.13	Vegetation Condition Score	29.00	Conservation significance score	1.04
Unit biodiversity Score	34.08	Area (ha)	0.9	Total biodiversity Score	3.07

Map 11. Site L1

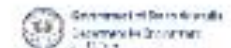


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Site M1 (Map 12)

Vegetation Association	Degraded Inland Tall Shrubland with scattered <i>Acacia oswaldii</i> (Umbrella Wattle)				
Photo 20: Site M1 viewing north					
					
General description	<p>Dominant native species include <i>Acacia oswaldii</i> (Umbrella Wattle), <i>Maireana eriolada</i> (Rosy Bluebush), <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> (Ruby Saltbush), <i>Chloris truncata</i> (Windmill Grass), <i>Austrostipa</i> sp. (Spear-grass) and <i>Enneapogon nigricans</i> (Black-head Grass). The full flora species list recorded during the survey in Site M1 is shown in Appendix 3.</p> <p>No species were recorded as regenerating. Site M1 contains approximately 10% native species cover.</p> <p>Dominant introduced species include Dominant introduced species include <i>Piptatherum miliaceum</i> (Rice Millet), <i>Marrubium vulgare</i> (Horehound), <i>Scabiosa atropurpurea</i> (Pincushion), <i>Salvia verbenaca</i> var. (Wild Sage) and <i>Avena barbata</i> (Bearded Oat). <i>Marrubium vulgare</i> is a declared plant species listed under the <i>Landscape South Australia Act 2019</i>.</p>				
Threatened species or community	<p>No threatened flora species listed under the NP&W Act or EPBC Act listed flora species or community were recorded in Site M1.</p> <p>Due to the degraded quality of the vegetation, sparse cover of native species and close proximity to the Augusta Highway, it is unlikely Site M1 would provide habitat for threatened fauna species.</p>				
Landscape context score	1.13	Vegetation Condition Score	23.78	Conservation significance score	1.00
Unit biodiversity Score	26.87	Area (ha)	0.06	Total biodiversity Score	1.61

Map 12. Site M1



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Site N1 (Map 13)

Vegetation Association	Acacia oswaldii (Umbrella Wattle) Inland Tall Shrubland				
Photo 21: Site N1 viewing north					
					
General description	<p>Dominant native understorey species include <i>Maireana erioclada</i> (Rosy Bluebush), <i>Maireana brevifolia</i> (Short-leaf Bluebush), <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> (Ruby Saltbush), <i>Chloris truncata</i> (Windmill Grass), and <i>Enneapogon nigricans</i> (Black-head Grass). The full flora species list recorded during the survey in Site N1 is shown in Appendix 3.</p> <p>No species were recorded as regenerating. Site N1 contains approximately 15% native species cover.</p> <p>Dominant introduced species include Dominant introduced species include <i>Piptatherum miliaceum</i> (Rice Millet), <i>Diplotaxis tenuifolia</i> (Lincoln Weed), <i>Salvia verbenaca</i> var. (Wild Sage) and <i>Avena barbata</i> (Bearded Oat). <i>Diplotaxis tenuifolia</i> is a declared plant species listed under the <i>Landscape South Australia Act 2019</i>.</p>				
Threatened species or community	<p>No threatened flora species listed under the NP&W Act or EPBC Act listed flora species or community were recorded in Site N1.</p> <p>Due to the degraded quality of the vegetation, sparse cover of native species and close proximity to the Augusta Highway, it is unlikely Site N1 would provide habitat for threatened fauna species.</p>				
Landscape context score	1.13	Vegetation Condition Score	24.60	Conservation significance score	1.00
Unit biodiversity Score	27.80	Area (ha)	0.06	Total biodiversity Score	1.67

Map 13. Site N1



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Site O1 (Map 14)

Vegetation Association	<i>Eucalyptus porosa</i> (Mallee Box) +/- <i>Eucalyptus gracilis</i> (Yorrell) woodland with degraded open chenopod & sclerophyll shrub understorey
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Photo 22: Site O1 viewing west



General description	<p>Dominant understorey species include <i>Maireana brevifolia</i> (Short-leaf Bluebush), <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> (Ruby Saltbush) and <i>Salsola australis</i> (Buckbush). The full flora species list recorded during the survey in Site O1 is shown in Appendix 3.</p> <p>No native flora species were recorded as regenerating. Tree canopy cover in Site O1 was approximately 20%. The trees were observed to be in moderate health with approximately 30-40% die-back of their canopies. No hollows were recorded. The site contained numerous branch sized logs. The understorey in O1 contains approximately 10-15% native species cover and is dominated by introduced flora species.</p> <p>Dominant introduced species include <i>Carrichtera annua</i> (Ward's Weed), <i>Asphodelus fistulosus</i> (Onion Weed), <i>Avena barbata</i> (Bearded Oat) and <i>Lycium ferocissimum</i>. (African Boxthorn). <i>Lycium ferocissimum</i> is a declared plant species listed under the <i>Landscape South Australia Act 2019</i>.</p>				
Threatened species or community	<p>No threatened flora species listed under the NP&W Act or EPBC Act listed flora species or community were recorded in Site O1.</p> <p>Due to the degraded quality of the vegetation, sparse cover of native species and close proximity to the Augusta Highway, it is unlikely Site O1 would provide habitat for threatened fauna species.</p>				
Landscape context score	1.13	Vegetation Condition Score	20.16	Conservation significance score	1.00
Unit biodiversity Score	22.78	Area (ha)	0.02	Total biodiversity Score	0.46

Map 14. Site O1



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Continued on page 14

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Site P1 (Map 15)

Vegetation Association	<i>Eucalyptus socialis</i> ssp. <i>socialis</i> (Beaked Red Mallee) +/- <i>Eucalyptus gracilis</i> (Yorrell) open mallee with mid-dense shrub understorey				
Photo 23: Site P1 viewing south					
					
General description	<p>Dominant understorey species include <i>Acacia ligulata</i> (Umbrella Bush), <i>Rhagodia parabolica</i> (Mealy Saltbush), <i>Rhagodia crassifolia</i> (Fleshy Saltbush), <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> (Ruby Saltbush) and <i>Atriplex stipitata</i> (Bitter Saltbush). The full flora species list recorded during the survey in Site P1 is shown in Appendix 3.</p> <p>The regeneration of native flora species was very low with only one species recorded as regenerating. Tree canopy cover in Site P1 was approximately 30%. The trees were observed to be in moderate health with approximately 20-30% die-back of their canopies. Several various sized hollows were recorded. The site contained numerous fallen trunk and branch sized logs and patchy litter layers. The understorey in P1 contains approximately 50% native species cover.</p> <p>Dominant introduced species include <i>Carrichtera annua</i> (Ward's Weed), <i>Trifolium</i> sp. (Clover), <i>Diplotaxis tenuifolia</i> (Lincoln Weed), <i>Avena barbata</i> (Bearded Oat), <i>Asparagus asparagoides</i> f. (Bridal Creeper), <i>Marrubium vulgare</i> (Horehound) and <i>Asteriscus spinosus</i>. (Golden Pallensis). <i>Diplotaxis tenuifolia</i>, <i>Asparagus asparagoides</i> f. and <i>Marrubium vulgare</i> are declared plant species listed under the <i>Landscape South Australia Act 2019</i>.</p>				
Threatened species or community	<p>No threatened flora species listed under the NP&W Act or EPBC Act listed flora species or community were recorded in Site P1.</p> <p>Upon advice from the Native Vegetation Branch (Graham Carpenter), it was determined that Site P1 would provide suitable habitat for the <i>Neophema elegans</i> (Elegant Parrot) which is listed as rare under the <i>National Parks and Wildlife Act 1972</i> (Personnel communication, 26 July 2021).</p>				
Landscape context score	1.13	Vegetation Condition Score	34.22	Conservation significance score	1.02
Unit biodiversity Score	39.44	Area (ha)	0.29	Total biodiversity Score	11.44

Site Q1 (Map 15)

Vegetation Association	<i>Eucalyptus porosa</i> (Mallee Box) +/- <i>Eucalyptus socialis</i> ssp. <i>socialis</i> (Beaked Red Mallee) woodland with degraded open chenopod & sclerophyll shrub understorey				
Photo 24: Site Q1 viewing west					
					
General description	<p>Dominant understorey species include <i>Rhagodia parabolica</i> (Mealy Saltbush), <i>Acacia ligulata</i> (Umbrella Bush), <i>Maireana brevifolia</i> (Short-leaf Bluebush), <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> (Ruby Saltbush), <i>Salsola australis</i> (Buckbush) and <i>Austrostipa</i> sp. (Spear-grass). The full flora species list recorded during the survey in Site Q1 is shown in Appendix 3.</p> <p>No native flora species were recorded as regenerating. Tree canopy cover in Site Q1 was approximately 25%. The trees were observed to be in moderate health with approximately 15% die-back of their canopies. No hollows were recorded. The site contained several branch sized logs and patchy litter layers. The understorey in Q1 contains approximately 30% native species cover and is dominated by introduced flora species.</p> <p>Dominant introduced species include <i>Carrichtera annua</i> (Ward's Weed), <i>Salvia verbenaca</i> (Wild Sage), <i>Avena barbata</i> (Bearded Oat) and <i>Lycium ferocissimum</i>. (African Boxthorn). <i>Lycium ferocissimum</i> is a declared plant species listed under the <i>Landscape South Australia Act 2019</i>.</p>				
Threatened species or community	<p>No threatened flora species listed under the NP&W Act or EPBC Act listed flora species or community were recorded in Site Q1.</p> <p>Upon advice from the Native Vegetation Branch (Graham Carpenter), it was determined that Site Q1 would provide suitable habitat for the <i>Neophema elegans</i> (Elegant Parrot), <i>Melanodryas cucullata cucullata</i> (Hooded Robin) and <i>Plectorhyncha lanceolata</i> (Striped Honeyeater) which are listed as rare under the <i>National Parks and Wildlife Act 1972</i> (Personnel communication, 26 July 2021).</p>				
Landscape context score	1.13	Vegetation Condition Score	26.74	Conservation significance score	1.04
Unit biodiversity Score	31.42	Area (ha)	0.19	Total biodiversity Score	5.97

Map 15. Site P1 and Q1



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Site R1 (Map 16)

Vegetation Association	<i>Senna artemisioides</i> (Desert Senna) inland tall shrubland				
Photo 25: Site R1 viewing south					
					
General description	<p>Dominant native species include <i>Senna artemisioides</i> (Desert Senna), <i>Maireana brevifolia</i> (Short-leaf Bluebush), <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> (Ruby Saltbush), <i>Chloris truncata</i> (Windmill Grass) and <i>Enneapogon nigricans</i> (Black-head Grass). The full flora species list recorded during the survey in Site R1 is shown in Appendix 3.</p> <p>No species were recorded as regenerating. Site R1 contains approximately 20% native species cover.</p> <p>Dominant introduced species include <i>Asphodelus fistulosus</i> (Onion Weed), <i>Avena barbata</i> (Bearded Oat) and <i>Bromus diandrus</i> (Great Brome).</p>				
Threatened species or community	<p>No threatened flora species listed under the NP&W Act or EPBC Act listed flora species or community were recorded in Site R1.</p> <p>Due to the degraded quality of the vegetation, sparse cover of native species and close proximity to the Augusta Highway, it is unlikely Site R1 would provide habitat for threatened fauna species.</p>				
Landscape context score	1.13	Vegetation Condition Score	19.22	Conservation significance score	1.00
Unit biodiversity Score	21.72	Area (ha)	0.02	Total biodiversity Score	0.43

Map 16. Site R1



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Site S1 (Map 17)

Vegetation Association	<i>Eucalyptus porosa</i> (Mallee Box) +/- <i>Eucalyptus socialis</i> ssp. <i>socialis</i> (Beaked Red Mallee) woodland with degraded open chenopod & sclerophyll shrub understorey				
Photo 26: Site S1 viewing north					
					
General description	<p>Dominant understorey species include <i>Senna artemisioides</i> ssp. <i>filifolia</i> (Fine-leaf Desert Senna), <i>Rhagodia parabolica</i> (Mealy Saltbush), <i>Eremophila longifolia</i> (Weeping Emubush), <i>Acacia ligulata</i> (Umbrella Bush), <i>Maireana brevifolia</i> (Short-leaf Bluebush), <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> (Ruby Saltbush), <i>Austrostipa</i> sp. (Spear-grass) and <i>Enneapogon nigricans</i> (Blank-head Grass). The full flora species list recorded during the survey in Site S1 is shown in Appendix 3.</p> <p>No native flora species were recorded as regenerating. Tree canopy cover in Site S1 was approximately 50%. The trees were observed to be in moderate health with approximately 15% die-back of their canopies. Several various sized hollows were recorded. The site contained several branch sized logs and patchy litter layers. The understorey in S1 contains approximately 35% native species cover and is dominated by introduced flora species.</p> <p>Dominant introduced species include <i>Brassica</i> sp. (Wild Mustard), <i>Marrubium vulgare</i> (Horehound), <i>Aizoon pubescens</i> (Coastal Galenia), <i>Salvia verbenaca</i> var. (Wild Sage) and <i>Avena barbata</i> (Bearded Oat). <i>Marrubium vulgare</i> is a declared plant species listed under the <i>Landscape South Australia Act 2019</i>.</p>				
Threatened species or community	<p>No threatened flora species listed under the NP&W Act or EPBC Act listed flora species or community were recorded in Site S1.</p> <p>Upon advice from the Native Vegetation Branch (Graham Carpenter), it was determined that Site S1 would provide suitable habitat for the <i>Neophema elegans</i> (Elegant Parrot), <i>Melanodryas cucullata cucullata</i> (Hooded Robin) and <i>Plectorhyncha lanceolata</i> (Striped Honeyeater) which are listed as rare under the <i>National Parks and Wildlife Act 1972</i> (Personnel communication, 26 July 2021).</p>				
Landscape context score	1.13	Vegetation Condition Score	31.27	Conservation significance score	1.04
Unit biodiversity Score	36.04	Area (ha)	0.13	Total biodiversity Score	4.68

Map 17. Site S1



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Site T1 (Map 17)

Vegetation Association	<i>Eucalyptus porosa</i> (Mallee Box) very open woodland with degraded open chenopod & sclerophyll shrub understorey				
Photo 27: Site T1 viewing south					
					
General description	<p>Dominant understorey species include <i>Senna artemisioides</i> ssp. <i>filifolia</i> (Fine-leaf Desert Senna), <i>Rhagodia parabolica</i> (Mealy Saltbush), <i>Eremophila longifolia</i> (Weeping Emubush), <i>Acacia ligulata</i> (Umbrella Bush), <i>Maireana brevifolia</i> (Short-leaf Bluebush), <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> (Ruby Saltbush), <i>Salsola australis</i> (Buckbush), <i>Austrostipa</i> sp. (Spear-grass) and <i>Enneapogon nigricans</i> (Blank-head Grass). The full flora species list recorded during the survey in Site T1 is shown in Appendix 3.</p> <p>No native flora species were recorded as regenerating. Tree canopy cover in Site T1 was approximately 15%. The trees were observed to be in moderate health with approximately 15% die-back of their canopies. No hollows were recorded. The site contained several trunk and branch sized logs and patchy litter layers. The understorey in T1 contains approximately 30% native species cover and is dominated by introduced flora species.</p> <p>Dominant introduced species include <i>Carrichtera annua</i> (Ward's Weed), <i>Aizoon pubescens</i> (Coastal Galenia), <i>Asphodelus fistulosus</i> (Onion Weed) and <i>Avena barbata</i> (Bearded Oat).</p>				
Threatened species or community	<p>No threatened flora species listed under the NP&W Act or EPBC Act listed flora species or community were recorded in Site T1.</p> <p>Upon advice from the Native Vegetation Branch (Graham Carpenter), it was determined that Site T1 would provide suitable habitat for the <i>Neophema elegans</i> (Elegant Parrot), <i>Melanodryas cucullata cucullata</i> (Hooded Robin) and <i>Plectorhyncha lanceolata</i> (Striped Honeyeater) which are listed as rare under the <i>National Parks and Wildlife Act 1972</i> (Personnel communication, 26 July 2021).</p>				
Landscape context score	1.13	Vegetation Condition Score	27.45	Conservation significance score	1.04
Unit biodiversity Score	32.26	Area (ha)	0.24	Total biodiversity Score	7.74

Map 18. Site T1



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Site U1 (Map 19)

Vegetation Association	Mixed Very Open Coastal Plain Shrubland with planted overstorey				
Photo 28: Site U1 viewing north					
					
General description	<p>Dominant native species include <i>Senna artemisioides</i> (Desert Senna), <i>Atriplex stipitata</i> (Bitter Saltbush), <i>Nitraria billardierei</i> (Nitre-Bush), <i>Eremophila longifolia</i> (Weeping Emubush), <i>Maireana brevifolia</i> (Short-leaf Bluebush), <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> (Ruby Saltbush) and <i>Austrostipa</i> sp. (Spear-grass). The full flora species list recorded during the survey in Site U1 is shown in Appendix 3.</p> <p>The regeneration of native flora species in Site U1 was moderate with three species recorded as regenerating. The understorey in Site U1 contains approximately 20-30% native species cover.</p> <p>Dominant introduced species include <i>Carrichtera annua</i> (Ward's Weed), <i>Aizoon pubescens</i> (Coastal Galenia), <i>Oxalis pes-caprae</i> (Soursob), <i>Asphodelus fistulosus</i> (Onion Weed) and <i>Avena barbata</i> (Bearded Oat).</p>				
Threatened species or community	<p>No threatened flora under the NP&W Act or EPBC Act listed flora species or community were recorded in Site U1.</p> <p>Due to the degraded quality of the vegetation, sparse cover of native species and close proximity to the Augusta Highway, it is unlikely Site U1 would provide habitat for threatened fauna species.</p>				
Landscape context score	1.13	Vegetation Condition Score	34.06	Conservation significance score	1.00
Unit biodiversity Score	38.70	Area (ha)	1.79	Total biodiversity Score	69.28

Map 19. Site U1



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Site V1 (Map 20)

Vegetation Association	<i>Callitris gracilis</i> (Southern Cypress Pine) Very Open Woodland with Open Chenopod & Sclerophyll Shrub Understorey				
Photo 29: Site V1 viewing north					
					
General description	<p>Dominant understorey species include <i>Eremophila longifolia</i> (Weeping Emubush), <i>Senna artemisioides</i> ssp. <i>filifolia</i> (Fine-leaf Desert Senna), <i>Nitraria billardiarei</i> (Nitre-Bush), <i>Rhagodia parabolica</i> (Mealy Saltbush), <i>Acacia ligulata</i> (Umbrella Bush) and <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> (Ruby Saltbush). The full flora species list recorded during the survey in Site V1 is shown in Appendix 3.</p> <p>The regeneration of native flora species in Site V1 was moderate with three species recorded as regenerating. Tree canopy cover in Site V1 was approximately 5%. The trees were observed to be in moderate health with approximately 25% die-back of their canopies. No hollows were recorded. The site contained several branch sized logs and patchy litter layers. The understorey in V1 contains approximately 30% native species cover and is dominated by introduced flora species.</p> <p>Dominant introduced species include <i>Carrichtera annua</i> (Ward's Weed), <i>Oxalis pes-caprae</i> (Soursob) and <i>Avena barbata</i> (Bearded Oat).</p>				
Threatened species or community	<p>No threatened flora species listed under the NP&W Act or EPBC Act listed flora species or community were recorded in Site V1.</p> <p>Upon advice from the Native Vegetation Branch (Graham Carpenter), it was determined that Site V1 would provide suitable habitat for the <i>Neophema elegans</i> (Elegant Parrot) which is listed as rare under the <i>National Parks and Wildlife Act 1972</i> (Personnel communication, 26 July 2021).</p>				
Landscape context score	1.13	Vegetation Condition Score	29.53	Conservation significance score	1.02
Unit biodiversity Score	34.04	Area (ha)	0.25	Total biodiversity Score	8.51

Site V2 (Map 20)

Vegetation Association	<i>Eucalyptus porosa</i> (Mallee Box) +/- <i>Eucalyptus socialis</i> ssp. <i>socialis</i> (Beaked Red Mallee) open woodland with degraded open chenopod & sclerophyll shrub understorey				
Photo 30: Site V2 viewing south					
					
General description	<p>Dominant understorey species include <i>Senna artemisioides</i> ssp. <i>filifolia</i> (Fine-leaf Desert Senna), <i>Rhagodia parabolica</i> (Mealy Saltbush), <i>Nitraria billardierei</i> (Nitre-Bush), <i>Acacia ligulata</i> (Umbrella Bush), <i>Maireana brevifolia</i> (Short-leaf Bluebush), <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> (Ruby Saltbush), <i>Salsola australis</i> (Buckbush) and <i>Austrostipa</i> sp. (Spear-grass). The full flora species list recorded during the survey in Site V2 is shown in Appendix 3.</p> <p>The regeneration of native flora species in Site V1 was low with one species recorded as regenerating. Tree canopy cover in Site V2 was approximately 30%. The trees were observed to be in moderate health with approximately 20-25% die-back of their canopies. Numerous large and small hollows were recorded. The site contained several branch sized logs and patchy litter layers. The understorey in V2 contains approximately 15% native species cover and is dominated by introduced flora species.</p> <p>Dominant introduced species include <i>Carrichtera annua</i> (Ward's Weed), <i>Oxalis pes-caprae</i> (Soursob), <i>Asphodelus fistulosus</i> (Onion Weed) and <i>Lycium ferocissimum</i>. (<i>Lycium ferocissimum</i> is a declared plant species listed under the <i>Landscape South Australia Act 2019</i>).</p>				
Threatened species or community	<p>No threatened flora species listed under the NP&W Act or EPBC Act listed flora species or community were recorded in Site V2.</p> <p>Upon advice from the Native Vegetation Branch (Graham Carpenter), it was determined that Site V2 would provide suitable habitat for the <i>Neophema elegans</i> (Elegant Parrot), <i>Melanodryas cucullata cucullata</i> (Hooded Robin) and <i>Plectorhyncha lanceolata</i> (Striped Honeyeater) which are listed as rare under the <i>National Parks and Wildlife Act 1972</i> (Personnel communication, 26 July 2021).</p>				
Landscape context score	1.13	Vegetation Condition Score	31.04	Conservation significance score	1.04
Unit biodiversity Score	36.48	Area (ha)	0.16	Total biodiversity Score	5.84

Map 20. Site V1 and V2



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Site W1 (Map 21)

Vegetation Association	<i>Acacia ligulata</i> (Umbrella Bush) open inland tall shrubland				
Photo 31: Site W1 viewing south					
					
General description	<p>Native species include <i>Acacia ligulata</i> (Umbrella Bush), <i>Senna artemisioides</i> ssp. <i>filifolia</i> (Fine-leaf Desert Senna), <i>Maireana brevifolia</i> (Short-leaf Bluebush), <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> (Ruby Saltbush), <i>Salsola australis</i> (Buckbush) and <i>Enneapogon nigricans</i> (Black-head Grass). The full flora species list recorded during the survey in Site W1 is shown in Appendix 3.</p> <p>No species were recorded as regenerating. Site W1 contains approximately 20% native species cover.</p> <p>Dominant introduced species include <i>Carrichtera annua</i> (Ward's Weed), <i>Dittrichia graveolens</i> (Stinkweed), <i>Avena barbata</i> (Bearded Oat) and <i>Brassica</i> sp. (Wild Mustard).</p>				
Threatened species or community	<p>No threatened flora species listed under the NP&W Act or EPBC Act listed flora species or community were recorded in Site W1.</p> <p>Due to the degraded quality of the vegetation, sparse cover of native species and close proximity to the Augusta Highway, it is unlikely Site W1 would provide habitat for threatened fauna species.</p>				
Landscape context score	1.13	Vegetation Condition Score	9.30	Conservation significance score	1.00
Unit biodiversity Score	10.51	Area (ha)	0.05	Total biodiversity Score	0.53

Map 21. Site W1



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Site X1 (Map 22)

Vegetation Association	<i>Eucalyptus porosa</i> (Mallee Box) open woodland with degraded open chenopod & sclerophyll shrub understorey				
Photo 32: Site X1 viewing south					
					
General description	<p>Native understorey species include <i>Rhagodia parabolica</i> (Mealy Saltbush), <i>Acacia ligulata</i> (Umbrella Bush), <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> (Ruby Saltbush) and <i>Enneapogon nigricans</i> (Black-head Grass). The full flora species list recorded during the survey in Site X1 is shown in Appendix 3.</p> <p>No species were recorded as regenerating. Tree canopy cover in Site X1 was approximately 25%. The trees were observed to be in poor health with approximately 40% die-back of their canopies. No hollows were recorded. The site contained several trunk and branch sized logs. The understorey in X1 contains approximately 35% native species cover and is dominated by introduced flora species.</p> <p>Introduced species include <i>Solanum nigrum</i> (Black Nightshade), <i>Asphodelus fistulosus</i> (Onion Weed), <i>Avena barbata</i> (Bearded Oat) and <i>Piptatherum miliaceum</i> (Rice Millet).</p>				
Threatened species or community	<p>No threatened flora species listed under the NP&W Act or EPBC Act listed flora species or community were recorded in Site X1.</p> <p>Due to the degraded quality of the vegetation, sparse cover of native species and close proximity to the Augusta Highway, it is unlikely Site X1 would provide habitat for threatened fauna species.</p>				
Landscape context score	1.13	Vegetation Condition Score	20.70	Conservation significance score	1.00
Unit biodiversity Score	23.39	Area (ha)	0.02	Total biodiversity Score	0.47

Map 22. Site X1



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Site Y1 (Map 23)

Vegetation Association	<i>Eucalyptus porosa</i> (Mallee Box) open woodland with degraded open chenopod & sclerophyll shrub understorey				
Photo 33: Site Y1 viewing south					
					
General description	<p>Native understorey species include <i>Rhagodia parabolica</i> (Mealy Saltbush), <i>Acacia ligulata</i> (Umbrella Bush), <i>Acacia brachybotrya</i> (Grey Mulga-bush), <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> (Ruby Saltbush) and <i>Maireana brevifolia</i> (Short-leaf Bluebush). The full flora species list recorded during the survey in Site Y1 is shown in Appendix 3.</p> <p>No species were recorded as regenerating. Tree canopy cover in Site Y1 was approximately 10%. The trees were observed to be in poor health with approximately 30% die-back of their canopies. Several small hollows were recorded. The site contained several branch sized logs. The understorey in Y1 contains approximately 15% native species cover and is dominated by introduced flora species.</p> <p>Dominant introduced species include <i>Brassica</i> sp. (Wild Mustard), <i>Asphodelus fistulosus</i> (Onion Weed), <i>Carrichtera annua</i> (Ward's Weed) and <i>Piptatherum miliaceum</i> (Rice Millet).</p>				
Threatened species or community	<p>No threatened flora species listed under the NP&W Act or EPBC Act listed flora species or community were recorded in Site Y1.</p> <p>Due to the degraded quality of the vegetation, sparse cover of native species and close proximity to the Augusta Highway, it is unlikely Site Y1 would provide habitat for threatened fauna species.</p>				
Landscape context score	1.13	Vegetation Condition Score	17.05	Conservation significance score	1.00
Unit biodiversity Score	19.27	Area (ha)	0.05	Total biodiversity Score	0.96

Map 23. Site Y1



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Site Z1 (Map 24)

Vegetation Association	<i>Eucalyptus porosa</i> (Mallee Box) open woodland with degraded open chenopod & sclerophyll shrub understorey
------------------------	---

Photo 34: Site Z1 viewing south



General description	<p>Dominant native understorey species include <i>Rhagodia parabolica</i> (Mealy Saltbush), <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> (Ruby Saltbush), <i>Salsola australis</i> (Buckbush) and <i>Maireana brevifolia</i> (Short-leaf Bluebush). The full flora species list recorded during the survey in Site Z1 is shown in Appendix 3.</p> <p>No species were recorded as regenerating. Tree canopy cover in Site Z1 was approximately 15%. The trees were observed to be in poor health with approximately 35% die-back of their canopies. No hollows were recorded. The site contained a continuous layer of leaf litter. The understorey in Z1 contains approximately 15% native species cover and is dominated by introduced flora species.</p> <p>Introduced species include <i>Brassica</i> sp. (Wild Mustard), <i>Carrichtera annua</i> (Ward's Weed) and <i>Solanum elaeagnifolium</i> (Silver-leaf Nightshade). <i>Solanum elaeagnifolium</i> is a declared plant species listed under the <i>Landscape South Australia Act 2019</i>.</p>				
Threatened species or community	<p>No threatened flora species listed under the NP&W Act or EPBC Act listed flora species or community were recorded in Site Z1.</p> <p>Due to the degraded quality of the vegetation, sparse cover of native species and close proximity to the Augusta Highway, it is unlikely Site Z1 would provide habitat for threatened fauna species.</p>				
Landscape context score	1.13	Vegetation Condition Score	16.93	Conservation significance score	1.00
Unit biodiversity Score	19.13	Area (ha)	0.03	Total biodiversity Score	0.57

Map 24. Site Z1



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Site AA1 (Map 25)

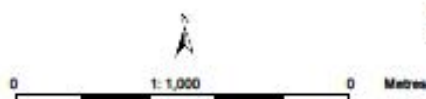
Vegetation Association	<i>Eremophila longifolia</i> (Weeping Emubush) open inland tall shrubland				
Photo 35: Site AA1 viewing north					
					
General description	<p>Dominant native species include <i>Eremophila longifolia</i> (Weeping Emubush), <i>Rhagodia parabolica</i> (Mealy Saltbush), <i>Maireana brevifolia</i> (Short-leaf Bluebush), <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> (Ruby Saltbush) and <i>Austrostipa</i> sp. (Spear-grass). The full flora species list recorded during the survey in Site AA1 is shown in Appendix 3.</p> <p>The regeneration of native flora species in Site AA1 was low with one species recorded as regenerating. Site AA1 contains approximately 30% native species cover.</p> <p>Introduced species include <i>Carrichtera annua</i> (Ward's Weed), <i>Asphodelus fistulosus</i> (Onion Weed), and <i>Avena barbata</i> (Bearded Oat).</p>				
Threatened species or community	<p>No threatened flora species listed under the NP&W Act or EPBC Act listed flora species or community were recorded in Site AA1.</p> <p>Due to the degraded quality of the vegetation, sparse cover of native species and close proximity to the Augusta Highway, it is unlikely Site AA1 would provide habitat for threatened fauna species.</p>				
Landscape context score	1.13	Vegetation Condition Score	29.02	Conservation significance score	1.00
Unit biodiversity Score	32.79	Area (ha)	0.03	Total biodiversity Score	0.98

Map 25. Site AA1



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Site BB1 (Map 26)

Vegetation Association	<i>Eremophila longifolia</i> (Weeping Emubush) inland tall shrubland				
Photo 36: Site BB1 viewing west					
					
General description	<p>Dominant native species include <i>Eremophila longifolia</i> (Weeping Emubush), <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> (Ruby Saltbush), <i>Chloris truncata</i> (Windmill Grass), <i>Enneapogon nigricans</i> (Black-head Grass) and <i>Austrostipa</i> sp. (Spear-grass). The full flora species list recorded during the survey in Site BB1 is shown in Appendix 3.</p> <p>No native species were recorded as regenerating. Site BB1 contains approximately 30% native species cover.</p> <p>Introduced species include <i>Carrichtera annua</i> (Ward's Weed), <i>Asphodelus fistulosus</i> (Onion Weed), and <i>Avena barbata</i> (Bearded Oat).</p>				
Threatened species or community	<p>No threatened flora species listed under the NP&W Act or EPBC Act listed flora species or community were recorded in Site BB1.</p> <p>Due to the degraded quality of the vegetation, sparse cover of native species and close proximity to the Augusta Highway, it is unlikely Site BB1 would provide habitat for threatened fauna species.</p>				
Landscape context score	1.13	Vegetation Condition Score	21.39	Conservation significance score	1.00
Unit biodiversity Score	24.17	Area (ha)	0.12	Total biodiversity Score	2.90

Site CC1 (Map 26)

Vegetation Association	<i>Eucalyptus odorata</i> (Peppermint Box) open woodland with open chenopod & sclerophyll shrub understorey				
Photo 37: Site CC1 viewing south					
					
General description	<p>Dominant understorey species include <i>Acacia brachybotrya</i> (Grey Mulga-bush), <i>Rhagodia parabolica</i> (Mealy Saltbush), <i>Maireana erioclada</i> (Rosy Bluebush), <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> (Ruby Saltbush) and <i>Salsola australis</i> (Buckbush). The full flora species list recorded during the survey in Site CC1 is shown in Appendix 3.</p> <p>No native species were recorded as regenerating. Tree canopy cover in Site CC1 was approximately 90%. The trees were observed to be in moderate health with approximately 40% die-back of their canopies. Several small hollows were recorded. The site contained several branch sized logs and dense litter layers. The understorey in CC1 contains approximately 50% native species cover.</p> <p>Dominant introduced species include <i>Carrichtera annua</i> (Ward's Weed), <i>Asphodelus fistulosus</i> (Onion Weed), <i>Solanum elaeagnifolium</i> (Silver-leaf Nightshade) and <i>Avena barbata</i> (Bearded Oat). <i>Solanum elaeagnifolium</i> is a declared plant species listed under the <i>Landscape South Australia Act 2019</i>.</p>				
Threatened species or community	<p>No threatened flora species listed under the NP&W Act or EPBC Act listed flora species or community were recorded in Site CC1.</p> <p>Due to the degraded quality of the vegetation, sparse cover of native species and close proximity to the Augusta Highway, it is unlikely Site CC1 would provide habitat for threatened fauna species.</p>				
Landscape context score	1.13	Vegetation Condition Score	21.56	Conservation significance score	1.00
Unit biodiversity Score	24.37	Area (ha)	0.03	Total biodiversity Score	0.73

Map 26. Site BB1 and Site CC1



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Site DD1 (Map 27)

Vegetation Association	Degraded chenopod shrubland				
Photo 38: Site DD1 viewing south					
					
General description	<p>Native species include <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> (Ruby Saltbush), <i>Maireana brevifolia</i> (Short-leaf Bluebush) and <i>Austrostipa</i> sp. (Spear-grass). The full flora species list recorded during the survey in Site DD1 is shown in Appendix 3.</p> <p>No native species were recorded as regenerating. Site DD1 contains approximately 10% native species cover.</p> <p>Introduced species include <i>Carrichtera annua</i> (Ward's Weed), <i>Asphodelus fistulosus</i> (Onion Weed), <i>Asteriscus spinosus</i> (Golden Pallensis) and <i>Avena barbata</i> (Bearded Oat).</p>				
Threatened species or community	<p>No threatened flora species listed under the NP&W Act or EPBC Act listed flora species or community were recorded in Site DD1.</p> <p>Due to the degraded quality of the vegetation, sparse cover of native species and close proximity to the Augusta Highway, it is unlikely Site DD1 would provide habitat for threatened fauna species.</p>				
Landscape context score	1.13	Vegetation Condition Score	12.49	Conservation significance score	1.00
Unit biodiversity Score	14.12	Area (ha)	0.02	Total biodiversity Score	0.28

Site EE1 (Map 27)

Vegetation Association	<i>Eremophila longifolia</i> (Weeping Emubush) and <i>Acacia ligulata</i> (Umbrella Bush) inland tall shrubland				
Photo 39: Site EE1 viewing west					
					
General description	<p>Dominant native species include <i>Eremophila longifolia</i> (Weeping Emubush), <i>Acacia ligulata</i> (Umbrella Bush), <i>Rhagodia parabolica</i> (Mealy Saltbush), <i>Maireana eriolada</i> (Rosy Bluebush), <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> (Ruby Saltbush), <i>Salsola australis</i> (Buckbush), <i>Chloris truncata</i> (Windmill Grass) and <i>Austrostipa</i> sp. (Spear-grass). The full flora species list recorded during the survey in Site EE1 is shown in Appendix 3.</p> <p>The regeneration of native flora species in Site EE1 was low with one species recorded as regenerating. Site EE1 contains approximately 30% native species cover.</p> <p>Dominant introduced species include <i>Carrichtera annua</i> (Ward's Weed), <i>Asphodelus fistulosus</i> (Onion Weed), <i>Asteriscus spinosus</i> (Golden Pallensis), <i>Avena barbata</i> (Bearded Oat) and <i>Lycium ferocissimum</i>. (African Boxthorn). <i>Lycium ferocissimum</i> is a declared plant species listed under the <i>Landscape South Australia Act 2019</i>.</p>				
Threatened species or community	<p>No threatened flora species listed under the NP&W Act or EPBC Act listed flora species or community were recorded in Site EE1.</p> <p>Due to the degraded quality of the vegetation, sparse cover of native species and close proximity to the Augusta Highway, it is unlikely Site EE1 would provide habitat for threatened fauna species.</p>				
Landscape context score	1.13	Vegetation Condition Score	36.39	Conservation significance score	1.00
Unit biodiversity Score	41.13	Area (ha)	0.56	Total biodiversity Score	23.03

Map 27. Site DD1 and Site EE1



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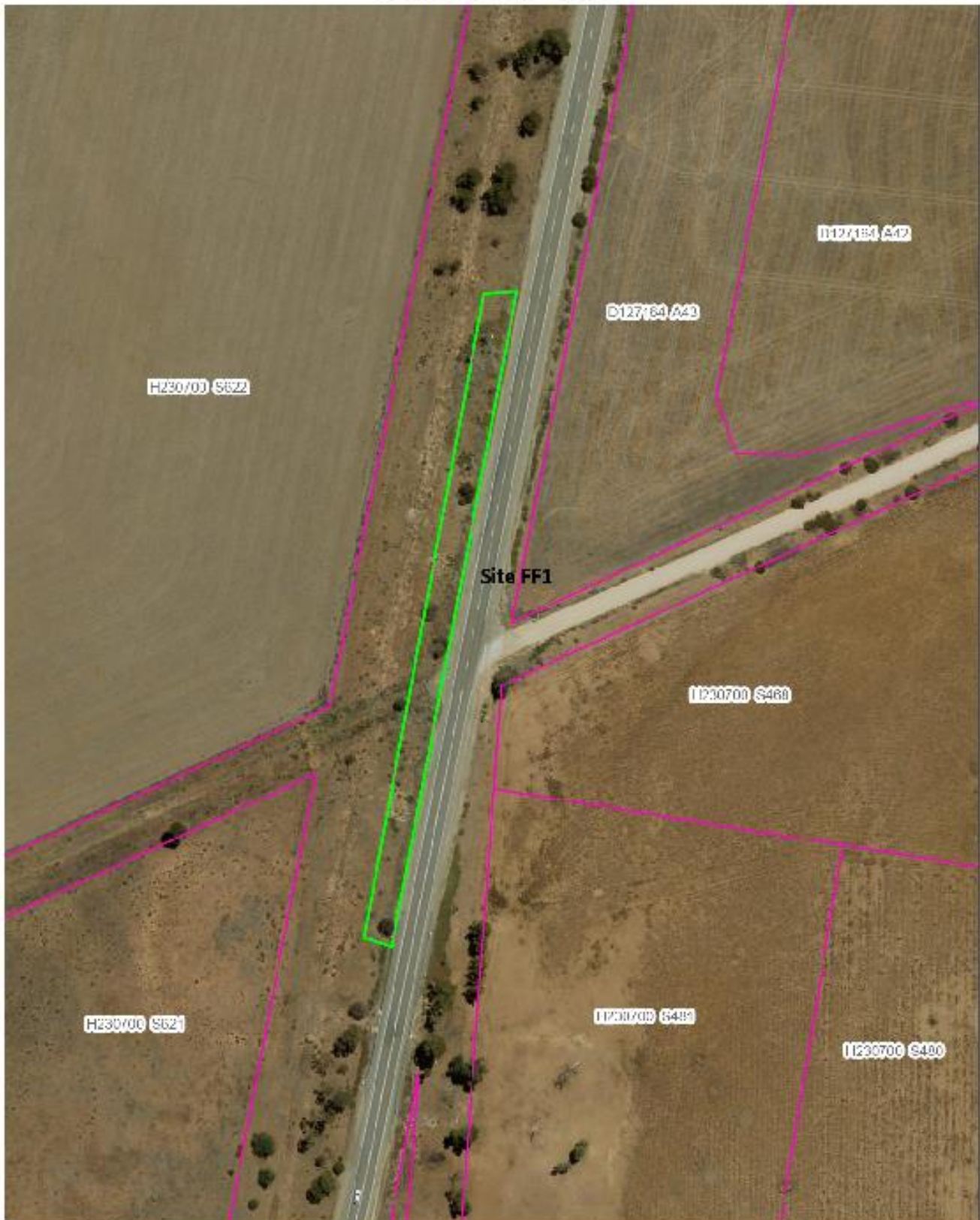


Department of Environment and Water
SOUTH AUSTRALIA

Site FF1 (Map 28)

Vegetation Association	<i>Eremophila longifolia</i> (Weeping Emubush) and <i>Acacia ligulata</i> (Umbrella Bush) very open inland tall shrubland				
Photo 40: Site FF1 viewing north					
					
General description	<p>Dominant native species include <i>Eremophila longifolia</i> (Weeping Emubush), <i>Acacia ligulata</i> (Umbrella Bush), <i>Maireana aphylla</i> (Cotton-bush), <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> (Ruby Saltbush), <i>Salsola australis</i> (Buckbush), <i>Chloris truncata</i> (Windmill Grass) and <i>Austrostipa</i> sp. (Spear-grass). The full flora species list recorded during the survey in Site FF1 is shown in Appendix 3.</p> <p>No native species were recorded as regenerating. Site FF1 contains approximately 30% native species cover.</p> <p>Dominant introduced species include <i>Carrichtera annua</i> (Ward's Weed), <i>Asphodelus fistulosus</i> (Onion Weed), <i>Brassica</i> sp. (Wild Mustard), <i>Avena barbata</i> (Bearded Oat) and <i>Cynara cardunculus</i> ssp. <i>flavescens</i> (Artichoke Thistle). <i>Cynara cardunculus</i> ssp. <i>flavescens</i> is a declared plant species listed under the <i>Landscape South Australia Act 2019</i>.</p>				
Threatened species or community	<p>No threatened flora species listed under the NP&W Act or EPBC Act listed flora species or community were recorded in Site FF1.</p> <p>Due to the degraded quality of the vegetation, sparse cover of native species and close proximity to the Augusta Highway, it is unlikely Site FF1 would provide habitat for threatened fauna species.</p>				
Landscape context score	1.13	Vegetation Condition Score	27.81	Conservation significance score	1.00
Unit biodiversity Score	31.42	Area (ha)	0.28	Total biodiversity Score	8.80

Map 28. Site FF1



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Department of Environment and Water
Natural Resources

Site GG1 (Map 29)

Vegetation Association	<i>Senna artemisioides</i> ssp. <i>X coriacea</i> (Broad-leaf Desert Senna) inland tall shrubland				
Photo 41: Site GG1 viewing south					
					
General description	<p>Native species include <i>Senna artemisioides</i> ssp. <i>X coriacea</i> (Broad-leaf Desert Senna), <i>Maireana erioclada</i> (Rosy Bluebush), <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> (Ruby Saltbush) and <i>Enneapogon nigricans</i> (Black-head Grass). The full flora species list recorded during the survey in Site GG1 is shown in Appendix 3.</p> <p>No species were recorded as regenerating. Site GG1 contains approximately 40% native species cover.</p> <p>Introduced species include <i>Carrichtera annua</i> (Ward's Weed), <i>Brassica</i> sp. (Wild Mustard), <i>Dittrichia graveolens</i> (Stinkweed) and <i>Lycium ferocissimum</i> (African Boxthorn). <i>Lycium ferocissimum</i> is a declared plant species listed under the <i>Landscape South Australia Act 2019</i>.</p>				
Threatened species or community	<p>No threatened flora species listed under the NP&W Act or EPBC Act listed flora species or community were recorded in Site GG1.</p> <p>Due to the degraded quality of the vegetation, sparse cover of native species and close proximity to the Augusta Highway, it is unlikely Site GG1 would provide habitat for threatened fauna species.</p>				
Landscape context score	1.13	Vegetation Condition Score	19.76	Conservation significance score	1.00
Unit biodiversity Score	22.33	Area (ha)	0.01	Total biodiversity Score	0.22

Map 29. Site GG1



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Site HH1 (Map 30)

Vegetation Association	Degraded <i>Maireana brevifolia</i> (Short-leaf Bluebush), <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> (Ruby Saltbush) open shrubland				
Photo 42: Site HH1 viewing south					
					
General description	<p>Dominant native species include <i>Maireana brevifolia</i> (Short-leaf Bluebush), <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> (Ruby Saltbush), <i>Salsola australis</i> (Buckbush) and <i>Maireana aphylla</i> (Cotton-bush). The full flora species list recorded during the survey in Site HH1 is shown in Appendix 3.</p> <p>No species were recorded as regenerating. Site HH1 contains approximately 5-10% native species cover.</p> <p>Dominant introduced species include <i>Echium elaterium</i> (Squirting Cucumber), <i>Avena barbata</i> (Bearded Oat), <i>Brassica</i> sp. (Wild Turnip), <i>Oxalis pes-caprae</i> (Soursob) and <i>Trifolium</i> sp. (Clover). Two declared plant species listed under the <i>Landscape South Australia Act 2019</i>, <i>Marrubium vulgare</i> (Horehound) and <i>Echium plantagineum</i> (Salvation Jane), were recorded in Site HH1.</p>				
Threatened species or community	<p>No threatened flora species listed under the NP&W Act or EPBC Act listed flora species or community were recorded in Site HH1.</p> <p>Due to the degraded quality of the vegetation and close proximity to the Augusta Highway, it is unlikely Site HH1 would provide habitat for threatened fauna species.</p>				
Landscape context score	1.13	Vegetation Condition Score	11.16	Conservation significance score	1.00
Unit biodiversity Score	12.61	Area (ha)	0.22	Total biodiversity Score	2.77

Map 30. Site HH1



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Site II1 (Map 31)

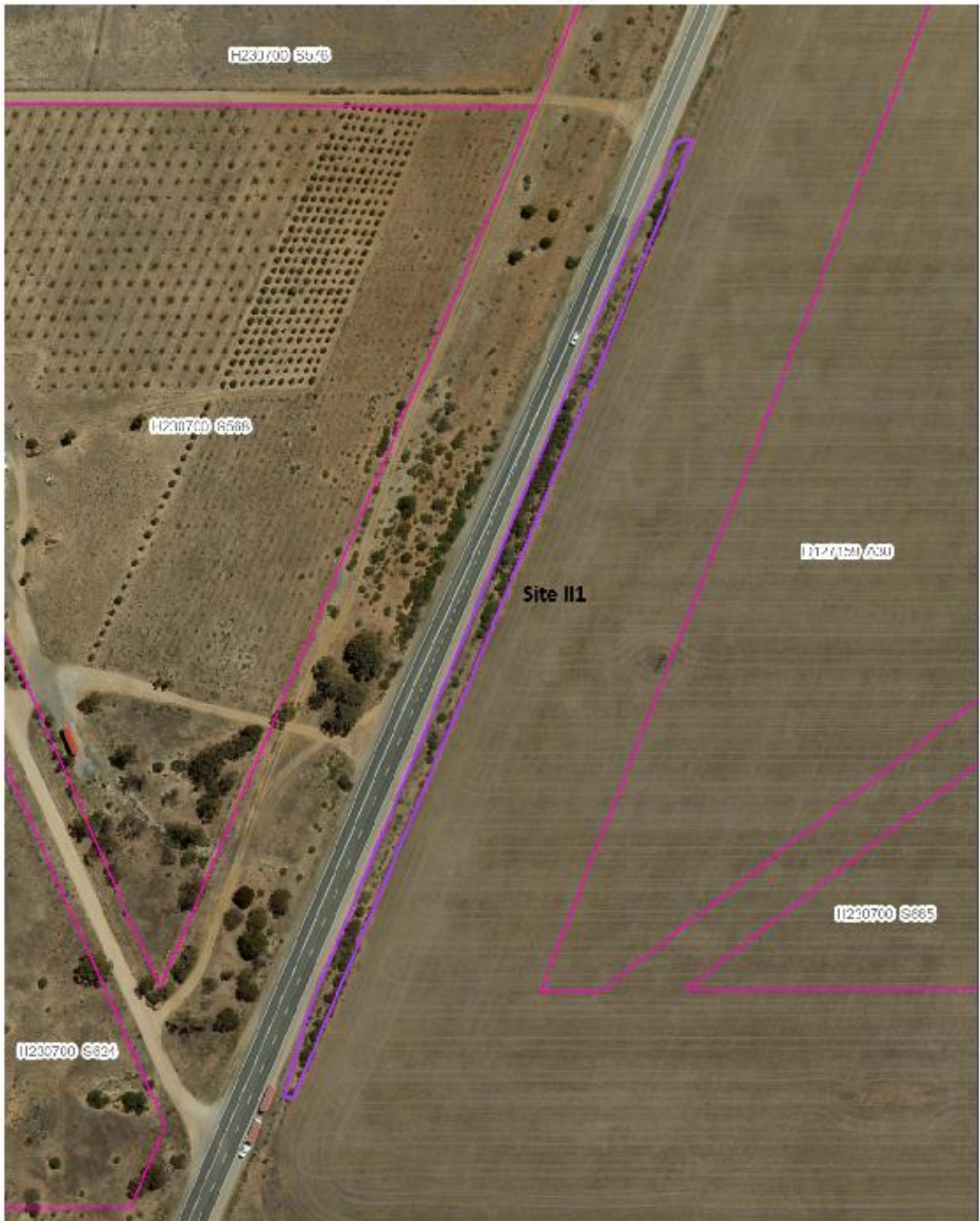
Vegetation Association	Degraded <i>Senna artemisioides</i> ssp. <i>X coriacea</i> (Broad-leaf Desert Senna) +/- <i>Maireana brevifolia</i> (Short-leaf Bluebush), <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> (Ruby Saltbush) open shrubland
------------------------	---

Photo 43: Site II1 viewing south



General description	<p>Dominant native species include <i>Senna artemisioides</i> ssp. <i>X coriacea</i> (Broad-leaf Desert Senna), <i>Maireana brevifolia</i> (Short-leaf Bluebush), <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> (Ruby Saltbush), <i>Salsola australis</i> (Buckbush) and <i>Maireana aphylla</i> (Cotton-bush). The full flora species list recorded during the survey in Site II1 is shown in Appendix 3.</p> <p>No species were recorded as regenerating. Site II1 contains approximately 5-10% native species cover.</p> <p>Dominant introduced species include <i>Echium elaterium</i> (Squirting Cucumber), <i>Avena barbata</i> (Bearded Oat), <i>Brassica</i> sp. (Wild Turnip), <i>Oxalis pes-caprae</i> (Sour sob) and <i>Trifolium</i> sp. (Clover). Two declared plant species listed under the <i>Landscape South Australia Act 2019</i>, <i>Marrubium vulgare</i> (Horehound) and <i>Echium plantagineum</i> (Salvation Jane), were recorded in Site II1.</p>				
Threatened species or community	<p>No threatened flora species listed under the NP&W Act or EPBC Act listed flora species or community were recorded in Site II1.</p> <p>Due to the degraded quality of the vegetation and close proximity to the Augusta Highway, it is unlikely Site II1 would provide habitat for threatened fauna species.</p>				
Landscape context score	1.13	Vegetation Condition Score	11.16	Conservation significance score	1.00
Unit biodiversity Score	12.61	Area (ha)	0.41	Total biodiversity Score	2.77

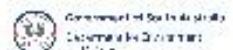
Map 31. Site II1



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Site JJ1 (Map 32)

Vegetation Association	Degraded <i>Senna artemisioides</i> ssp. <i>X coriacea</i> (Broad-leaf Desert Senna) +/- <i>Maireana brevifolia</i> (Short-leaf Bluebush), <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> (Ruby Saltbush) open shrubland
------------------------	---

Photo 44: Site JJ1 viewing south



General description	<p>Dominant native species include <i>Senna artemisioides</i> ssp. <i>X coriacea</i> (Broad-leaf Desert Senna), <i>Maireana brevifolia</i> (Short-leaf Bluebush), <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> (Ruby Saltbush), <i>Salsola australis</i> (Buckbush) and <i>Maireana aphylla</i> (Cotton-bush). The full flora species list recorded during the survey in Site JJ1 is shown in Appendix 3.</p> <p>No species were recorded as regenerating. Site JJ1 contains approximately 5-10% native species cover.</p> <p>Dominant introduced species include <i>Ecballium elaterium</i> (Squirting Cucumber), <i>Avena barbata</i> (Bearded Oat), <i>Brassica</i> sp. (Wild Turnip), <i>Oxalis pes-caprae</i> (Sour sob) and <i>Trifolium</i> sp. (Clover). Two declared plant species listed under the <i>Landscape South Australia Act 2019</i>, <i>Marrubium vulgare</i> (Horehound) and <i>Echium plantagineum</i> (Salvation Jane), were recorded in Site JJ1.</p>				
Threatened species or community	<p>No threatened flora species listed under the NP&W Act or EPBC Act listed flora species or community were recorded in Site JJ1.</p> <p>Due to the degraded quality of the vegetation and close proximity to the Augusta Highway, it is unlikely Site JJ1 would provide habitat for threatened fauna species.</p>				
Landscape context score	1.19	Vegetation Condition Score	11.16	Conservation significance score	1.00
Unit biodiversity Score	13.38	Area (ha)	0.41	Total biodiversity Score	5.44

Map 32. Site JJ1



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Site KK1 (Map 35)

Vegetation Association	<i>Nitraria billardierei</i> (Nitre-bush) inland tall shrubland with a planted overstorey and tall shrubs				
Photo 45: Site KK1 viewing south					
					
General description	<p>Dominant native species include <i>Nitraria billardierei</i> (Nitre-bush), <i>Atriplex stipitata</i> (Bitter Saltbush) <i>Maireana brevifolia</i> (Short-leaf Bluebush) and <i>Salsola australis</i> (Buckbush). The full flora species list recorded during the survey in Site KK1 is shown in Appendix 3.</p> <p>Site KK1 contains a planted overstorey and tall shrubs, including <i>Eucalyptus sp.</i>, <i>Acacia ligulata</i> (Umbrella Bush) and <i>Senna artemisioides ssp.</i> (Desert Senna)</p> <p>No species were recorded as regenerating. Site KK1 contains approximately 15% native species cover.</p> <p>Introduced species include <i>Lycium ferocissimum</i> (African Boxthorn), <i>Carrichtera annua</i> (Ward's Weed), <i>Asteriscus spinosus</i>. (Golden Pallensis) and <i>Avena barbata</i> (Bearded Oat). <i>Lycium ferocissimum</i> is a declared plant species listed under the <i>Landscape South Australia Act 2019</i>.</p>				
Threatened species or community	<p>No threatened flora species listed under the NP&W Act or EPBC Act listed flora species or community were recorded in Site KK1.</p> <p>Due to the degraded quality of the vegetation and sparse cover of native species, it is unlikely Site KK1 would provide habitat for threatened fauna species.</p>				
Landscape context score	1.12	Vegetation Condition Score	21.57	Conservation significance score	1.00
Unit biodiversity Score	24.16	Area (ha)	0.48	Total biodiversity Score	11.60

Scattered Trees 1-4 (Map 33 and Map 34)

Tree #	Tree spp.	No. of trees	Height (m)	Hollows	Diameter (cm)	Canopy dieback (%)	Biodiversity Score	General comments
1	<i>Eucalyptus socialis ssp. socialis</i>	1	6	Nil	25	40	0.43	Large tree in poor-moderate health. Due to the tree's proximity to an existing major transport route, it is unlikely to be used as habitat by a threatened fauna species.
2	<i>Eucalyptus odorata</i>	1	6	Nil	35	30	0.39	Medium tree in moderate health. Due to the tree's proximity to an existing major transport route, it is unlikely to be used as habitat by a threatened fauna species.
3	<i>Eucalyptus odorata</i>	1	4	Nil	19	10	0.23	Small tree in good health. Due to the tree's proximity to an existing major transport route, it is unlikely to be used as habitat by a threatened fauna species.
4	<i>Eucalyptus porosa</i>	1	6	Nil	16	25	0.34	Medium tree in moderate health. Due to the tree's proximity to an existing major transport route, it is unlikely to be used as habitat by a threatened fauna species.

Photo 46: Tree 1 (Map 33)



Photo 47: Tree 2 (Map 33)



Photo 48: Tree 3 (Map 34)



Photo 49: Tree 4 (Map 34)



Map 33. Tree 1 and 2



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Map 34. Tree 3 and 4



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Map 35. Site KK1



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4.2 Threatened Species assessment

No species of conservation significance at the national or state level were recorded during the site assessment. Seven native bird species were observed during the site assessment. They include the Red Wattle Bird (*Anthochaera carunculata*), Crested Pigeon (*Ocyphaps lophotes*), Galah (*Eolophus roseicapilla*), Australian Magpie (*Gymnorhina tibicen*), Noisy Miner (*Manorina melanocephala*), Silver Gull (*Chroicocephalus novaehollandiae*) and Willie Wagtail (*Rhipidura leucophrys*). Introduced bird species recorded included the House Sparrow (*Passer domesticus*), Common Black Bird (*Turdus merula*) and Starling (*Sturnus vulgaris*). In addition, European Rabbit (*Oryctolagus cuniculus*) scats and scratching were observed throughout the survey areas.

Upon advice from the Native Vegetation Branch (Graham Carpenter), it was determined that woodland vegetation communities containing *Eucalyptus porosa* (Mallee Box) would provide suitable habitat for the *Neophema elegans* (Elegant Parrot), *Melanodryas cucullata cucullata* (Hooded Robin) and *Plectorhyncha lanceolata* (Striped Honeyeater) which are listed as rare under the *National Parks and Wildlife Act 1972*. In addition, the Native Vegetation Branch advised that mallee vegetation communities would provide habitat for *Neophema elegans* (Personnel communication, 26 July 2021).

Species observed on site, or recorded within 5km of the application area since 1996, or the vegetation is considered to provide suitable habitat

Species (common name)	NP&W Act	EPBC Act	Data source	Date of last record	Species known habitat preferences	Likelihood of use for habitat – Comments
<i>Acanthiza iredalei rosinae</i> (Gulf St Vincent Slender-billed Thornbill)	V	VU	2 & 5	2007	Mainly inhabits intertidal samphire flats dominated by <i>Tecticornia arbuscula</i> (Shrubby Samphire).	Unlikely - habitat is unsuitable for this species.
<i>Actitis hypoleucos</i> (Common Sandpiper)		R	2	2018	Utilises coastal wetlands and some inland wetlands.	Unlikely - habitat is unsuitable for this species. Most South Australian records in association with the coast or the River Murray.
<i>Biziura lobata</i> (Musk Duck)		R	2	2018	Found in deep freshwater lagoons, with dense reed beds.	Unlikely - habitat is unsuitable for this species.
<i>Calidris ferruginea</i> (Curlew Sandpiper)	CR		5	No records	Intertidal mudflats of estuaries, lagoons, mangroves, as well as beaches, rocky shores and around lakes, dams and floodwaters.	Unlikely - Preferred habitat not present.
<i>Charadrius leschenaultia</i> (Greater Sand Plover)	VU	R	5	No records	Open grasslands in arid and semi-arid zones.	Unlikely - habitat is unsuitable for this species.
<i>Cladorhynchus leucocephalus</i> (Banded Stilt)		V	2	2013	Found mainly in saline and hypersaline waters of the inland and coast, typically large, open and shallow.	Unlikely - habitat is unsuitable for this species.
<i>Coracina papuensis robusta</i> (White-bellied Cuckoo-shrike)		R	2	1998	Mostly forests and woodlands, also Grasslands.	Due to extensive clearance in the region, it is unlikely to utilise woodland communities in assessment area.
<i>Egretta garzetta</i> (Little Egret)		R	2	2018	Tidal mudflats, saltwater and freshwater wetlands, and mangroves.	Unlikely - habitat is unsuitable for this species.

<i>Elanus scriptus</i> (Letter-Winged Kite)		R	2	2013	Open country and grasslands where there are tree-lined streams or water courses.	Unlikely to have significant habitat in the assessed areas.
<i>Falco peregrinus</i> (Peregrine Falcon)		R	2	2017	Found in most habitats, from rainforests to the arid zone, and at most altitudes, from the coast to alpine areas. It requires abundant prey and secure nest sites and prefers coastal and inland cliffs or open woodlands near water, and may even be found nesting on high city buildings.	Due to extensive clearance in the region, it is unlikely to utilise woodland communities in assessment area.
<i>Falco subniger</i> (Black Falcon)		R	2	1998	Found along tree-lined watercourses and in isolated woodlands, mainly in arid and semiarid areas. It roosts in trees at night and often on power poles by day.	Record locations suggest this species prefers to forage over coastal and samphire communities and plains. Unlikely to have significant habitat in the assessment area.
<i>Limosa lapponica baueri</i> (Bar-tailed Godwit)	VU		5	No records	Inhabit estuarine mudflats, beaches and mangroves	Unlikely - Preferred habitat not present.
<i>Melanodryas cucullata cucullata</i> (Hooded Robin)		R	2	2017	Open habitats including grasslands, shrublands, mallee, woodlands and thickets, bluebush plains, heathlands, saltmarsh and farmland.	Possible: utilises woodland vegetation communities containing <i>Eucalyptus porosa</i>
<i>Neophema elegans</i> (Elegant Parrot)		R	2	2017	Open habitats including grasslands, shrublands, mallee, woodlands and thickets, bluebush plains, heathlands, saltmarsh and farmland.	Possible: utilises mallee and woodland communities in assessment area.
<i>Numenius madagascariensis</i> (Far Eastern Curlew)	CR	V	5	No records	Found on intertidal mudflats and sandflats.	Unlikely - Preferred habitat not present.
<i>Oriolus sagittatus</i> <i>Sagittatus</i> (Olive-beaked Oriole)		R	2	2001	Lives in forests, woodlands and rainforests, as well as well-treed urban areas, particularly parks and golf courses.	Due to extensive clearance in the region, it is unlikely to utilise woodland communities in assessment area.
<i>Pedionomus torquatus</i> (Plains-wanderer)	CR	E	5	No records	Lives on open, sparse swards and grasslands.	Unlikely - Preferred habitat not present.
<i>Tringa brevipes</i> (Grey-Tailed Tattler)		R	2	2014	Usually seen in small flocks on sheltered coasts with reefs and rock platforms or with intertidal mudflats.	Unlikely - Preferred habitat not present.

Source; 1- BDBSA, 2 - AoLA, 3 – NatueMaps 4 – Observed/recorded in the field, 5 - Protected matters search tool
NP&W Act; E= Endangered, V = Vulnerable, R= Rare
EPBC Act; Ex = Extinct, CR = Critically endangered, EN = Endangered; VU = Vulnerable

Criteria for the likelihood of occurrence of species within the Study area.

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

4.3 Cumulative impact

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

Direct Impacts

The direct impacts to native vegetation of the proposed development are discussed above in Section 4.1. Clearance is required for the construction of a highway, associated stormwater & service infrastructure, laydown area and site office compound.

Indirect Impacts

No indirect impacts are foreseen for the proposed development. The PW2LD project will avoid indirect impacts to native vegetation by implement an environmental management protection system during construction, such as establishing vegetation protection zones, educating site staff, suppressing dust, designating site access routes and managing the spread and introduction of weed species.

Cumulative Impacts

In November 2021, Stage 1 of the Augusta Highway Duplication project was granted consent to clear 22.75 ha of native vegetation and 8 scattered native trees (Clearance Application – 2020/3097/373).

In addition, the Port Wakefield to Port Augusta Alliance were granted consent to clear 40.856 ha of native vegetation and 5 scattered native trees (Clearance Application – 2020/3097/373) in 2020 as part of the Port Wakefield Overhead Highway Duplication project, which is within 5km of the proposed clearance areas addressed in this report and the Augusta Highway Duplication project.

4.4 Address 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.

It was identified early in the design phase that native vegetation was consistently present in the roadside of the existing Augusta Highway Road reserve, as such the carriageway for the Option B duplicated Augusta highway has been positioned on the existing carriageway. Further to this, roadside batters have been steepened as far as practical to reduce the overall clearance footprint required, the project will also install steel traffic barriers to allow for even steeper batters in some sections of the work. Other avoidance measures include:

- All local road accesses to be constructed have been designed to utilise already cleared sections of land wherever practical.
- Where possible existing drainage lines/swales have been utilised. Use of existing structures culvert structures avoids

additional clearing for associated inlet & outlets.

-Alignment of services (comms lines, watermain etc) that require relocation or reconnection to adjacent properties have been placed at the edge of existing road footprint to avoid any further clearance required.

-location options for site compound and laydown areas are to be located in areas previously cleared to avoid unnecessary impacts to native vegetation.

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).

Where clearance cannot be avoided all reasonable measures shall be implemented in accordance with the Construction Environmental Management Plan & conditions of any related approvals, this includes but is not limited to; physical delineation of native vegetation with exclusion flagging, use of non-destructive digging techniques around scattered trees to be retained, ongoing education and training to construction team regarding the value and protection measures of native vegetation, strict use of designated access and egress points, ongoing weed management to avoid the introduction and spread of pest plant species, installation and maintenance of effective erosion and sediment controls to avoid runoff into vegetated areas, regular dust mitigation to avoid impacted to neighbouring native vegetation as well as engagement of suitably qualified consultants as required (ecologists, fauna-specialists, arborists etc). Further to this, the continuity of alignment in adjacent paddocks allows for an accelerated project timeframe, achieving an overall reduction of impacts to neighbouring flora & fauna during the construction period.

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.

Construction of the project will provide a significant footprint for revegetation of roadside batters; stormwater swale drains and temporary use areas (site compounds/laydown areas). General rehabilitation of these areas will consist of a topsoil treatment with a mix of native hydroseed mix and replanting of native species like the area.

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.

As stated below in Section 6, PW2PA has requested preference to provide the Significant Environmental Benefit (SEB) through payment into the NVC Fund.

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.

Principle of clearance	Relevant information	Assessment against the principles	Moderating factors that may be considered by the NVC
Principle 1b - significance as a habitat for wildlife	<p>No threatened species were recorded during the site assessment.</p> <p>Sites A1, B1, C1, D1, K1, L1, Q1, S1, T1 and V1 would provide habitat for the Elegant Parrot, Hooded Robin and Striped Honeyeater which are listed as rare under NP&W Act.</p> <p>Sites H1 and P1 would provide habitat for the Elegant Parrot which is listed as rare under NP&W Act.</p> <p><u>Patches:</u></p> <p>Threatened Fauna Score:</p> <ul style="list-style-type: none"> Sites A1, B1, C1, D1, K1, L1, Q1, S1, T1 and V1 scored 0.04 Sites H1 and P1 scored 0.02 Sites E1, F1, G1, I1, J1, M1, N1, O1, R1, U1, W1, X1, Y1, Z1, AA1, BB1, CC1, DD1, EE1, FF1, GG1, HH1, II1, JJ1 and KK1 scored 0 <p><u>Trees:</u></p> <ul style="list-style-type: none"> Trees 1-4 scored 0 	<p><u>At Variance –</u></p> <ul style="list-style-type: none"> Sites A1, B1, C1, D1, H1, K1, L1, P1, Q1, S1, T1 and V1 <p><u>Not at Variance</u></p> <ul style="list-style-type: none"> Trees 1-4. Sites E1, F1, G1, I1, J1, M1, N1, O1, R1, U1, W1, X1, Y1, Z1, AA1, BB1, CC1, DD1, EE1, FF1, GG1, HH1, II1, JJ1 and KK1. 	
Principle 1c - plants of a rare, vulnerable or endangered species	<p>No threatened species recorded within the proposed clearance areas.</p> <p>Threatened Flora Scores: All sites scored 0.00.</p>	Not at Variance	
Principle 1d - the vegetation comprises the whole or part of a plant community that is Rare, Vulnerable or endangered:	<p>No threatened plant communities recorded within the proposed clearance areas.</p> <p>Threatened Community Score: All sites scored 0.00.</p>	Not at Variance	

4.6 Risk Assessment

Total clearance	No. of trees	4
	Area (ha)	12.26
	Total biodiversity Score	449.09
Seriously at variance with principle 1(b), 1(c) or 1 (d)		Nil
Risk assessment outcome		Level 4

5. Clearance summary

Clearance Areas 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	A1	14	1	0	0.04	38.59	1.17	45.15	1	0	0	47.41	\$22,199.21	\$1,220.96
B	B1	20	1	0	0.04	46.47	3.0	139.42	1	0	0	146.39	\$71,264.80	\$3,919.56
C	C1	9	1	0	0.04	26.62	0.15	3.99	1	0	0	4.19	\$2,007.68	\$110.42
D	D1	9	1	0	0.04	28.38	0.24	6.81	1	0	0	7.15	\$3,443.54	\$189.39
E	E1	9	1	0	0	15.83	0.02	0.32	1	0	0	0.33	\$161.43	\$8.88
F	F1	12	1	0	0	24.17	0.02	0.48	1	0	0	0.51	\$248.46	\$13.67
G	G1	9	1	0	0	24.79	0.04	0.99	1	0	0	1.04	\$509.65	\$28.03
H	H1	14	1	0	0.02	39.87	1.45	57.82	1	0	0	60.71	\$32,476.34	\$1,786.20
I	I1	12	1	0	0	25.05	0.2	5.01	1	0	0	5.26	\$2,849.89	\$156.74
J	J1	12	1	0	0	30.00	0.05	1.50	1	0	0	1.58	\$855.27	\$47.04
K	K1	12	1	0	0.04	37.28	0.09	3.36	1	0	0	3.52	\$1,884.86	\$103.67
L	L1	12	1	0	0.04	34.08	0.09	3.07	1	0	0	3.22	\$1,722.96	\$94.76
M	M1	18	1	0	0	26.87	0.06	1.61	1	0	0	1.69	\$887.43	\$48.81
N	N1	15	1	0	0	27.80	0.06	1.67	1	0	0	1.75	\$899.36	\$49.46
O	O1	9	1	0	0	22.78	0.02	0.46	1	0	0	0.48	\$253.32	\$13.93
P	P1	12	1	0	0.02	39.44	0.29	11.44	1	0	0	12.01	\$6,087.55	\$334.82
Q	Q1	12	1	0	0.04	31.42	0.19	5.97	1	0	0	6.27	\$3,219.44	\$177.07
R	R1	12	1	0	0	21.72	0.02	0.43	1	0	0	0.46	\$222.04	\$12.21
S	S1	15	1	0	0.04	36.74	0.13	4.78	1	0	0	5.02	\$2,428.25	\$133.55
T	T1	15	1	0	0.04	32.26	0.24	7.74	1	0	0	8.13	\$3,914.09	\$215.27
U	U1	16	1	0	0	38.70	1.79	69.28	1	0	0	72.74	\$33,952.67	\$1,867.40
V	V1	12	1	0	0.02	34.04	0.25	8.51	1	0	0	8.93	\$4,086.86	\$224.78
V	V2	12	1	0	0.04	36.48	0.16	5.84	1	0	0	6.13	\$2,786.79	\$153.27
W	W1	12	1	0	0	10.51	0.05	0.53	1	0	0	0.55	\$250.88	\$13.80

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
X	X1	9	1	0	0	23.39	0.02	0.47	1	0	0	0.49	\$222.05	\$12.21
Y	Y1	9	1	0	0	19.27	0.05	0.96	1	0	0	1.01	\$457.25	\$25.15
Z	Z1	9	1	0	0	19.13	0.03	0.57	1	0	0	0.60	\$271.63	\$14.94
AA	AA1	15	1	0	0	32.79	0.03	0.98	1	0	0	1.03	\$466.89	\$25.68
BB	BB1	12	1	0	0	24.17	0.12	2.90	1	0	0	3.05	\$1,368.59	\$75.27
CC	CC1	9	1	0	0	24.37	0.03	0.73	1	0	0	0.77	\$344.91	\$18.97
DD	DD1	9	1	0	0	14.12	0.02	0.28	1	0	0	0.30	\$132.43	\$7.28
EE	EE1	16	1	0	0	41.13	0.56	23.03	1	0	0	24.18	\$10,769.73	\$592.34
FF	FF1	18	1	0	0	31.42	0.28	8.80	1	0	0	9.24	\$4,077.25	\$224.25
GG	GG1	9	1	0	0	22.33	0.01	0.22	1	0	0	0.23	\$103.18	\$5.67
HH	HH1	12	1	0	0	12.61	0.22	2.77	1	0	0	2.91	\$1,270.12	\$69.86
II	II1	12	1	0	0	12.61	0.22	2.77	1	0	0	2.91	\$1,274.02	\$70.07
JJ	JJ1	12	1	0	0	13.28	0.41	5.44	1	0	0	5.72	\$2,469.79	\$135.84
KK	KK1	15	1	0	0	24.16	0.48	11.60	1	0	0	12.17	\$5,764.22	\$317.03
						Total	12.26	447.70				470.08	\$227,604.83	\$12,518.25

Scattered trees Summary table

Tree or Cluster ID	Number of trees	Fauna Habitat score	Threatened flora score	Biodiversity score	Loss factor	SEB Points required	SEB Payment	Admin Fee
1	1	0	0	0.43	1	0.45	\$222.29	\$12.23
2	1	0	0	0.39	1	0.41	\$202.26	\$11.12
3	1	0	0	0.23	1	0.24	\$116.95	\$6.43
4	1	1	0	0.34	1	0.36	\$174.07	\$9.57
Total	4			1.39		1.46	\$715.57	\$39.35

Total summary table

	Total Biodiversity score	Total SEB points required	SEB Payment	Admin Fee	Total Payment
Application Total	449.09	471.54	\$228,320.40	\$12,557.60	\$240,878.00

Economies of Scale Factor	0.5
Rainfall (mm)	323-420

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

- SEB Amount: \$240,878.00

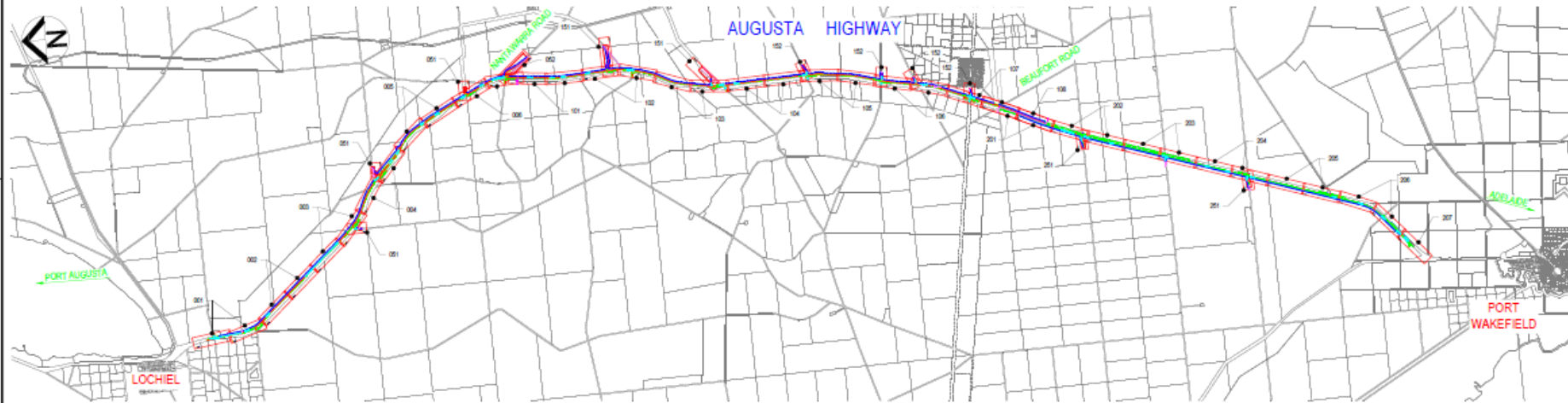
7. Appendices

Appendix 1. Augusta Highway Duplication_Option B design (Refer to Appendix 1a-c in the attached PDF format for more detailed design of the proposed project)

AUGUSTA HIGHWAY

LOCHIEL TO PORT WAKEFIELD AUGUSTA HIGHWAY DUPLICATION DESIGN PACKAGES

426-100 (LOCHIEL TO NANTAWARRA), 424-100 (NANTAWARRA TO BEAUFORT), 422-100 (BEAUFORT TO PORT WAKEFIELD)



TITLE AND INDEX SHEET	LOCATION
1	TITLE AND INDEX SHEET 1 OF 2
11	LEGEND
12	NOTES SHEET 1 OF 2
13	NOTES SHEET 2 OF 2

TYPICAL CROSS SECTIONS

SHEET	LOCATION
51	PACKAGE 426-100 (LOCHIEL TO NANTAWARRA) SHEET 1 OF 1
61	PACKAGE 424-100 (NANTAWARRA TO BEAUFORT) SHEET 1 OF 1
71	PACKAGE 422-100 (BEAUFORT TO PORT WAKEFIELD) SHEET 1 OF 2
72	SHEET 2 OF 2

GENERAL CONSTRUCTION

SHEET	LOCATION
1001	PACKAGE 426-100 (LOCHIEL TO NANTAWARRA)
1002	MO00; CH179988 - CH181395, MC10; CH179988 - CH181443
1003	MO00; CH181395 - CH182995, MC10; CH181443 - CH182943
1004	MO00; CH182995 - CH184383, MC10; CH182943 - CH184455
1005	MO00; CH184383 - CH185887, MC10; CH184455 - CH185952
1006	MO00; CH185887 - CH187400, MC10; CH185952 - CH187439
1007	MO00; CH187400 - CH188923, MC10; CH187439 - CH188944
1051	INTERSECTIONS SHEET 1 OF 2
1052	INTERSECTIONS SHEET 2 OF 2
1101	PACKAGE 424-100 (NANTAWARRA TO BEAUFORT)
1102	MO00; CH188924 - CH190125, MC10; CH188924 - CH190146
1103	MO00; CH190125 - CH191637, MC10; CH190146 - CH191636
1104	MO00; CH191637 - CH193127, MC10; CH191636 - CH193148
1105	MO00; CH193127 - CH194627, MC10; CH193148 - CH194646
1106	MO00; CH194627 - CH196134, MC10; CH194646 - CH196139
1107	MO00; CH196134 - CH197636, MC10; CH196139 - CH197637
1108	MO00; CH197636 - CH199138, MC10; CH197637 - CH199135
1109	MO00; CH199138 - CH199885, MC10; CH199135 - CH199883
1151	INTERSECTIONS SHEET 1 OF 2
1152	INTERSECTIONS SHEET 2 OF 2
1201	PACKAGE 422-100 (BEAUFORT TO PORT WAKEFIELD)
1202	MO00; CH198371 - CH199885, MC10; CH198370 - CH199886
1203	MO00; CH199885 - CH201385, MC10; CH199886 - CH201388
1204	MO00; CH201385 - CH202885, MC10; CH201388 - CH202886
1205	MO00; CH202885 - CH204385, MC10; CH202886 - CH204388
1206	MO00; CH204385 - CH205885, MC10; CH204388 - CH205886
1207	MO00; CH205885 - CH207388, MC10; CH205886 - CH207375
1208	MO00; CH207388 - CH207800, MC10; CH207375 - CH207777
1251	INTERSECTIONS SHEET 1 OF 1

DRAINAGE

1301 DRAINAGE SCHEDULES

VEGETATION REMOVAL (NOT ISSUED)

SHEET	LOCATION
2001	PACKAGE 426-100 (LOCHIEL TO NANTAWARRA)
2002	MO00; CH179988 - CH181395, MC10; CH179988 - CH181443
2003	MO00; CH181395 - CH182995, MC10; CH181443 - CH182943
2004	MO00; CH182995 - CH184383, MC10; CH182943 - CH184455
2005	MO00; CH184383 - CH185887, MC10; CH184455 - CH185952
2006	MO00; CH185887 - CH187400, MC10; CH185952 - CH187439
2007	MO00; CH187400 - CH188923, MC10; CH187439 - CH188944
2051	INTERSECTIONS SHEET 1 OF 2
2052	INTERSECTIONS SHEET 2 OF 2
2101	PACKAGE 424-100 (NANTAWARRA TO BEAUFORT)
2102	MO00; CH188924 - CH190125, MC10; CH188924 - CH190146
2103	MO00; CH190125 - CH191637, MC10; CH190146 - CH191636
2104	MO00; CH191637 - CH193127, MC10; CH191636 - CH193148
2105	MO00; CH193127 - CH194627, MC10; CH193148 - CH194646
2106	MO00; CH194627 - CH196134, MC10; CH194646 - CH196139
2107	MO00; CH196134 - CH197636, MC10; CH196139 - CH197637
2108	MO00; CH197636 - CH199138, MC10; CH197637 - CH199135
2109	MO00; CH199138 - CH199885, MC10; CH199135 - CH199883
2151	INTERSECTIONS SHEET 1 OF 2
2152	INTERSECTIONS SHEET 2 OF 2
2201	PACKAGE 422-100 (BEAUFORT TO PORT WAKEFIELD)
2202	MO00; CH198371 - CH199885, MC10; CH198370 - CH199886
2203	MO00; CH199885 - CH201385, MC10; CH199886 - CH201388
2204	MO00; CH201385 - CH202885, MC10; CH201388 - CH202886
2205	MO00; CH202885 - CH204385, MC10; CH202886 - CH204388
2206	MO00; CH204385 - CH205885, MC10; CH204388 - CH205886
2207	MO00; CH205885 - CH207388, MC10; CH205886 - CH207375
2208	MO00; CH207388 - CH207800, MC10; CH207375 - CH207777
2251	INTERSECTIONS SHEET 1 OF 1

FINAL SURFACE CONTOURS

SHEET	LOCATION
3001	PACKAGE 426-100 (LOCHIEL TO NANTAWARRA)
3002	MO00; CH179988 - CH181395, MC10; CH179988 - CH181443
3003	MO00; CH181395 - CH182995, MC10; CH181443 - CH182943
3004	MO00; CH182995 - CH184383, MC10; CH182943 - CH184455
3005	MO00; CH184383 - CH185887, MC10; CH184455 - CH185952
3006	MO00; CH185887 - CH187400, MC10; CH185952 - CH187439
3007	MO00; CH187400 - CH188923, MC10; CH187439 - CH188944
3051	INTERSECTIONS SHEET 1 OF 2
3052	INTERSECTIONS SHEET 2 OF 2
3101	PACKAGE 424-100 (NANTAWARRA TO BEAUFORT)
3102	MO00; CH188924 - CH190125, MC10; CH188924 - CH190146
3103	MO00; CH190125 - CH191637, MC10; CH190146 - CH191636
3104	MO00; CH191637 - CH193127, MC10; CH191636 - CH193148
3105	MO00; CH193127 - CH194627, MC10; CH193148 - CH194646
3106	MO00; CH194627 - CH196134, MC10; CH194646 - CH196139
3107	MO00; CH196134 - CH197636, MC10; CH196139 - CH197637
3108	MO00; CH197636 - CH199138, MC10; CH197637 - CH199135
3109	MO00; CH199138 - CH199885, MC10; CH199135 - CH199883
3151	INTERSECTIONS SHEET 1 OF 2
3152	INTERSECTIONS SHEET 2 OF 2
3201	PACKAGE 422-100 (BEAUFORT TO PORT WAKEFIELD)
3202	MO00; CH198371 - CH199885, MC10; CH198370 - CH199886
3203	MO00; CH199885 - CH201385, MC10; CH199886 - CH201388
3204	MO00; CH201385 - CH202885, MC10; CH201388 - CH202886
3205	MO00; CH202885 - CH204385, MC10; CH202886 - CH204388
3206	MO00; CH204385 - CH205885, MC10; CH204388 - CH205886
3207	MO00; CH205885 - CH207388, MC10; CH205886 - CH207375
3208	MO00; CH207388 - CH207800, MC10; CH207375 - CH207777
3251	INTERSECTIONS SHEET 1 OF 1

<p>1 OF 1 SHEET 1 OF 1</p> <p>PRELIMINARY NOT FOR CONSTRUCTION</p> <p>PROJECT: PW2PA PROJECT NO: PW2PA-CD-TH-001</p>		<p>DEVELOPER: PW2PA</p> <p>DESIGNER: PW2PA</p> <p>DATE: 17/03/20</p>		<p>GOVERNMENT OF SOUTH AUSTRALIA</p> <p>Department for Infrastructure and Transport</p>		<p>PROJECT: ROAD No. 3500 AUGUSTA HIGHWAY LOCHIEL TO PORT WAKEFIELD SHEET 1 OF 2 TITLE AND INDEX</p> <p>NOT TO SCALE</p>		<p>PROJECT: PW2PA</p> <p>PROJECT NO: PW2PA-CD-TH-001</p> <p>DATE: 17/03/20</p>		<p>PROJECT: PW2PA</p> <p>PROJECT NO: PW2PA-CD-TH-001</p> <p>DATE: 17/03/20</p>		<p>PROJECT: PW2PA</p> <p>PROJECT NO: PW2PA-CD-TH-001</p> <p>DATE: 17/03/20</p>		<p>PROJECT: PW2PA</p> <p>PROJECT NO: PW2PA-CD-TH-001</p> <p>DATE: 17/03/20</p>	
<p>AMENDMENT DESCRIPTION</p>		<p>BY: [Signature]</p> <p>DATE: 17/03/20</p>		<p>UNCONTROLLED COPY WHEN PRINTED</p>		<p>100 MILLIMETRES ON ORIGINAL DRAWING</p>		<p>ALL DIMENSIONS ARE IN METRES UNLESS SHOWN OTHERWISE</p>		<p>PROJECT: PW2PA</p> <p>PROJECT NO: PW2PA-CD-TH-001</p> <p>DATE: 17/03/20</p>		<p>PROJECT: PW2PA</p> <p>PROJECT NO: PW2PA-CD-TH-001</p> <p>DATE: 17/03/20</p>		<p>PROJECT: PW2PA</p> <p>PROJECT NO: PW2PA-CD-TH-001</p> <p>DATE: 17/03/20</p>	

Appendix 2. Bushland, Rangeland and Scattered Tree Vegetation Assessment Scoresheets associated with the proposed clearance (submitted in Excel format)

Appendix 3. Flora Species List

Scientific Name	Common Name	A1	B1	C1	D1	E1	F1	G1	H1	I1	J1	K1	L1	M1	N1	O1	P1	Q1	R1	S1	T1	U1	V1	V2	W1	X1	Y1	Z1	AA1	BB1	CC1	DD1	EE1	FF1	GG1	HH1	II1	JJ1	KK1		
Native Species																																									
<i>Acacia brachybotrya</i>	Grey Mulga-bush		√			√	√																				√				√										
<i>Acacia ligulata</i>	Umbrella Bush	√R	√	√			√		√	√		√	√		√		√	√		√	√		√	√	√	√	√			√	√		√	√							
<i>Acacia notablis</i>	Notable Wattle		√							√																															
<i>Acacia oswaldii</i>	Umbrella Wattle											√	√	√	√																										
<i>Acacia rigens</i>	Nealie											√R																													
<i>Atriplex semibaccata</i>	Berry Saltbush											√		√																											
<i>Atriplex stipitata</i>	Bitter Saltbush	√R	√						√								√	√				√R																		√	
<i>Austrostipa sp.</i>	Spear-grass	√	√		√			√	√		√	√		√		√	√	√		√	√	√		√				√	√	√		√	√	√		√	√	√	√	√	√
<i>Callitris gracilis</i>	Southern Cypress Pine			√	√				√														√																		
<i>Chloris truncata</i>	Windmill Grass	√								√	√		√	√	√	√			√	√	√	√		√						√			√	√							
<i>Convolvulus remotus</i>	Grassy Bindweed												√	√																					√						
<i>Dianella revoluta</i> var. <i>revoluta</i>	Black-anther Flax-lily		√				√	√	√	√			√																												
<i>Echylaena tomentosa</i> var. <i>tomentosa</i>	Ruby Saltbush	√	√R	√	√	√	√	√	√R		√	√	√	√	√	√	√	√	√	√	√	√	√R	√R	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	
<i>Enneapogon nigricans</i>	Black-head Grass		√	√		√				√	√			√	√				√	√	√				√	√		√			√				√					√	
<i>Eremophila longifolia</i>	Weeping Emubush																			√	√	√	√R						√R	√			√R	√							
<i>Eucalyptus gracilis</i>	Yorrell		√						√							√	√																								
<i>Eucalyptus odorata</i>	Peppermint Box																																√								
<i>Eucalyptus porosa</i>	Mallee Box	√	√	√	√	√		√		√	√	√	√			√		√			√			√		√	√	√													
<i>Eucalyptus socialis</i> ssp. <i>socialis</i>	Beaked Red Mallee		√		√			√	√	√	√						√	√						√																	
<i>Exocarpos aphyllus</i>	Leafless Cherry	√	√														√					√	√						√												
<i>Lomandra multiflora</i> ssp. <i>dura</i>	Hard Mat-rush													√																											
<i>Maireana aphylla</i>	Cotton-bush																√																		√		√	√	√		
<i>Maireana appressa</i>	Pale-fruit Bluebush																						√																		
<i>Maireana brevifolia</i>	Short-leaf Bluebush	√	√	√			√	√	√R		√	√	√		√	√		√	√		√	√R		√	√		√	√	√			√	√	√		√	√	√	√	√	√

Scientific Name	Common Name	A1	B1	C1	D1	E1	F1	G1	H1	I1	J1	K1	L1	M1	N1	O1	P1	Q1	R1	S1	T1	U1	V1	V2	W1	X1	Y1	Z1	AA1	BB1	CC1	DD1	EE1	FF1	GG1	HH1	II1	JJ1	KK1			
<i>Maireana erioclada</i>	Rosy Bluebush	√	√						√		√	√		√	√		√				√								√		√		√	√	√					√		
<i>Nitraria billardierei</i>	Nitre-bush						√															√	√	√																√		
<i>Melaleuca lanceolata</i>	Dryland Tea-tree		√																	√																						
<i>Pittosporum angustifolium</i>	Native Apricot		√R						√	√		√							√			√																				
<i>Rhagodia candolleana</i> ssp. <i>candolleana</i>	Sea-berry Saltbush			√																																						
<i>Rhagodia crassifolia</i>	Fleshy Saltbush		√						√								√				√																					
<i>Rhagodia parabolica</i>	Mealy Saltbush		√	√	√		√		√	√	√	√	√	√	√		√R	√	√	√	√	√	√	√		√	√	√			√		√									
<i>Rytidosperma caespitosum</i>	Common Wallaby-grass		√																				√						√				√									
<i>Salsola australis</i>	Buckbush				√								√	√	√	√	√	√		√	√			√	√		√	√			√		√	√		√	√	√	√	√	√	
<i>Senna artemisioides</i> ssp.	Desert Senna									√									√			√							√													
<i>Senna artemisioides</i> ssp. <i>filifolia</i>	Fine-leaf Desert Senna			√													√			√	√	√R	√R	√	√			√					√		√							
<i>Senna artemisioides</i> ssp. <i>X coriacea</i>	Broad-leaf Desert Senna	√R	√R		√				√			√		√																								√				
<i>Vittadinia</i> sp.	New Holland Daisy		√																			√																				
Introduced species																																										
<i>Aizoon pubescens</i>	Coastal Galenia																			√	√	√												√	√							
<i>Asparagus asparagoides</i> f.+	Bridal Creeper	√	√	√			√		√	√		√					√																									
<i>Asphodelus fistulosus</i>	Onion Weed									√		√	√			√	√			√	√	√		√		√	√		√	√	√	√		√		√		√	√	√		
<i>Asteriscus spinosus</i>	Golden Pallensis		√							√		√		√			√															√	√								√	
<i>Avena barbata</i>	Bearded Oat	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√			√	√	√	√	√	√	√	√				√	
<i>Brassica</i> sp.	Wild Mustard	√	√	√	√			√		√				√	√	√		√	√	√	√			√	√		√	√					√	√	√	√	√	√	√			
<i>Bromus diandrus</i>	Great Brome		√			√		√										√	√																		√	√	√			
<i>Carrichtera annua</i>	Ward's Weed	√	√						√		√	√				√		√				√	√	√	√		√	√	√	√	√	√	√	√	√	√	√				√	
<i>Cucumis myriocarpus</i> ssp. <i>myriocarpus</i>	Paddy Melon																																				√					
<i>Cynara cardunculus</i> ssp. <i>flavescens</i> +	Artichoke Thistle																																			√						

Scientific Name	Common Name	A1	B1	C1	D1	E1	F1	G1	H1	I1	J1	K1	L1	M1	N1	O1	P1	Q1	R1	S1	T1	U1	V1	V2	W1	X1	Y1	Z1	AA1	BB1	CC1	DD1	EE1	FF1	GG1	HH1	II1	JJ1	KK1			
<i>Diplotaxis tenuifolia</i> +	Lincoln Weed														√		√																									
<i>Dittrichia graveolens</i>	Stinkweed			√			√	√		√															√		√								√							
<i>Ecballium elaterium</i>	Squirting Cucumber																																			√	√	√				
<i>Echium plantagineum</i> +	Salvation Jane									√																										√	√	√				
<i>Hordeum vulgare</i>	Barley																						√																			
<i>Lycium ferocissimum</i> +	African Boxthorn	√	√	√	√				√			√				√		√						√									√		√					√		
<i>Malva</i> sp.	Mallow																			√				√																		
<i>Marrubium vulgare</i> +	Horehound													√			√			√																	√	√	√			
<i>Mesembryanthemum crystallinum</i>	Common Iceplant															√																										
<i>Oxalis pes-caprae</i>	Soursob																					√	√	√													√	√	√			
<i>Pinus halepensis</i> +	Aleppo Pine	√																																								
<i>Piptatherum miliaceum</i>	Rice Millet	√	√	√				√				√	√	√	√											√	√							√	√							
<i>Romulea</i> sp.	Onion-grass	√							√								√																									
<i>Salvia verbenaca</i> var.	Wild Sage		√	√	√		√			√	√			√	√			√		√		√																				
<i>Scabiosa atropurpurea</i>	Pincushion									√		√	√																													
<i>Schinus mole</i>	Pepper-tree																																		√							
<i>Solanum elaeagnifolium</i> +	Silver-leaf Nightshade		√			√						√																	√			√										
<i>Solanum nigrum</i>	Black Nightshade					√				√																√																
<i>Sonchus oleraceus</i>	Common Sow-thistle		√					√						√	√				√		√														√		√	√	√			
<i>Trifolium</i> sp.	Clover	√	√						√								√																			√	√	√				
<i>Vicia</i> sp.	Vetch																					√	√																			

+Declared plant, R: Regenerating