

# Native Vegetation Clearance

## Uley South Bore Sites

### Data Report

Clearance under the *Native Vegetation Regulations 2017*

1 June 2021

Prepared by Marcus Cooling and Renate Faast



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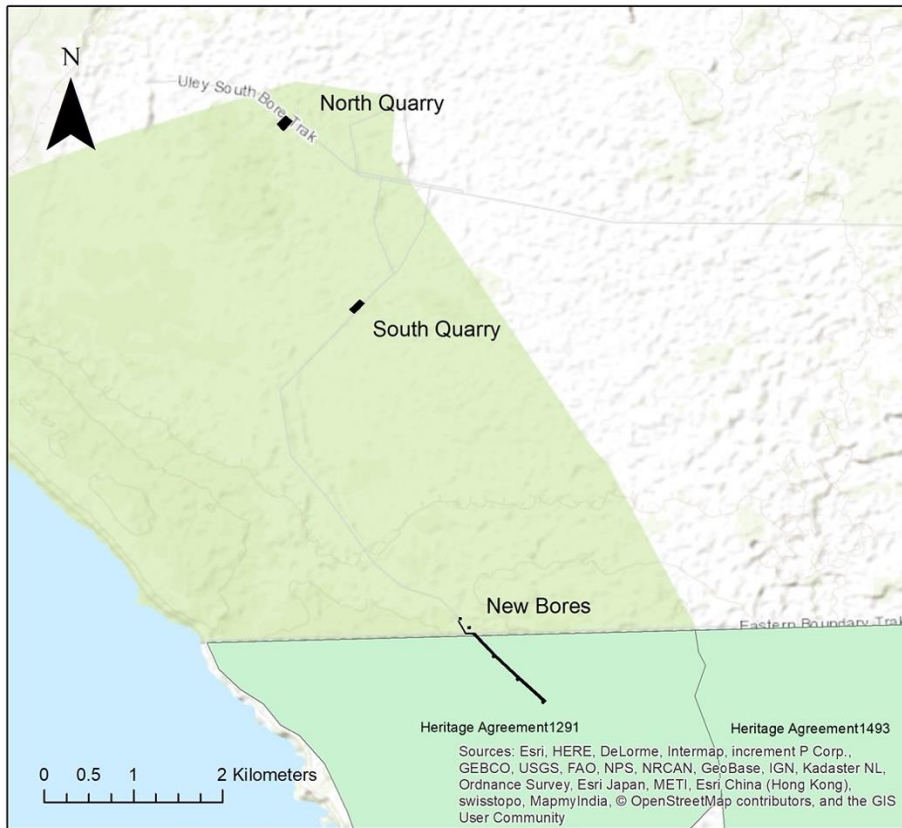
# 1. Application information

## Application Details

Applicant:	SA Water		
Key contact:	Hazel Vandeleur Senior Environmental Impact Assessment Officer 250 Victoria Square Adelaide SA 5000 0407 106 531		
Landowner:	SA Water		
Site Address:	via Eastern Boundary Track, Sleaford		
Local Government Area:	DC of Lower Eyre Peninsula	Hundred:	Uley
Title ID:	CT/6028/185	Parcel ID	D511200 S35
Landowner:	S. Stagg		
Site Address:	via Eastern Boundary Track, Sleaford		
Local Government Area:	DC of Lower Eyre Peninsula	Hundred:	Sleaford
Title ID:	CT/5962/128	Parcel ID	D66185 A10

## Summary of proposed clearance

Purpose of clearance	Clearance is required to install bores that contribute to potable water supply on Eyre Peninsula.
Native Vegetation Regulation	Vegetation clearance in this project is permitted under Regulation 12(34) - Infrastructure 5(1)(d) Clearance incidental to the construction or expansion of a building or infrastructure (and associated services) where the Minister has declared that the clearance is in the public interest.
Description of the vegetation under application	Clearance is proposed of: A1 0.608 ha of <i>Leucopogon parviflorus</i> shrubland A2 0.603 ha of <i>Eucalyptus diversifolia</i> / <i>Allocasuarina verticillata</i> mallee A3 0.1715 ha of <i>Eucalyptus diversifolia</i> mallee over <i>Melaleuca lanceolata</i> shrubland A4 0.117 ha of <i>Eucalyptus diversifolia</i> over <i>Melaleuca lanceolata</i> shrubland B1 0.18 ha of <i>Eucalyptus diversifolia</i> over <i>Leucopogon parviflorus</i> , <i>Acacia longifolia</i> and <i>Exocarpos aphyllus</i> B2 0.232 ha of degraded <i>Leucopogon parviflorus</i> shrubland
Total proposed clearance - area (ha) and number of trees	1.9115 ha
Level of clearance	Level 4
Overlay (Planning and Design Code)	Part of the site is located in a Heritage Agreement



Mitigation hierarchy	<p>Clearance has been avoided by locating the pipeline in an existing track in part of the route.</p> <p>Clearance has been minimised by using existing disused quarries to provide road building material.</p> <p>Clearance has been minimised by co-locating the new access track and bore pipeline.</p> <p>Clearance has been minimised by reducing the planned bore arrangement from 4 bores over 2.4 km of new road to 3 bores over 1 km of new road.</p> <p>After construction vegetation recovery will be permitted along tracks outside the minimum 5 km corridor.</p> <p>Clearance will be offset with a payment to the Native Vegetation Fund.</p>
SEB Offset proposal	Payment of \$84,832.18

# 2. Purpose of clearance

## 2.1 Description

SA Water is proposing to add three new groundwater bores to the Uley South Borefield. The works involve bore sites, access roads, electricity power poles and borrow pits (quarries) to provide materials for road construction

## 2.2 Background

The Uley Borefield is located on the west coast of Lower Eyre Peninsula, west of Port Lincoln. The borefield is a principal water source for Eyre Peninsula including the city of Port Lincoln.

The borefield is managed by SA Water. Monitoring has indicated that some bores are under stress and that additional bores are required to maintain water security. Hydrogeological investigations have identified a suitable site for three new bores to supplement water supply.

## 2.3 General location map

The Uley Borefield is located on the west coast of Lower Eyre Peninsula, 26 km south-west of Port Lincoln and 23 km south of Coffin Bay (Figure 1).

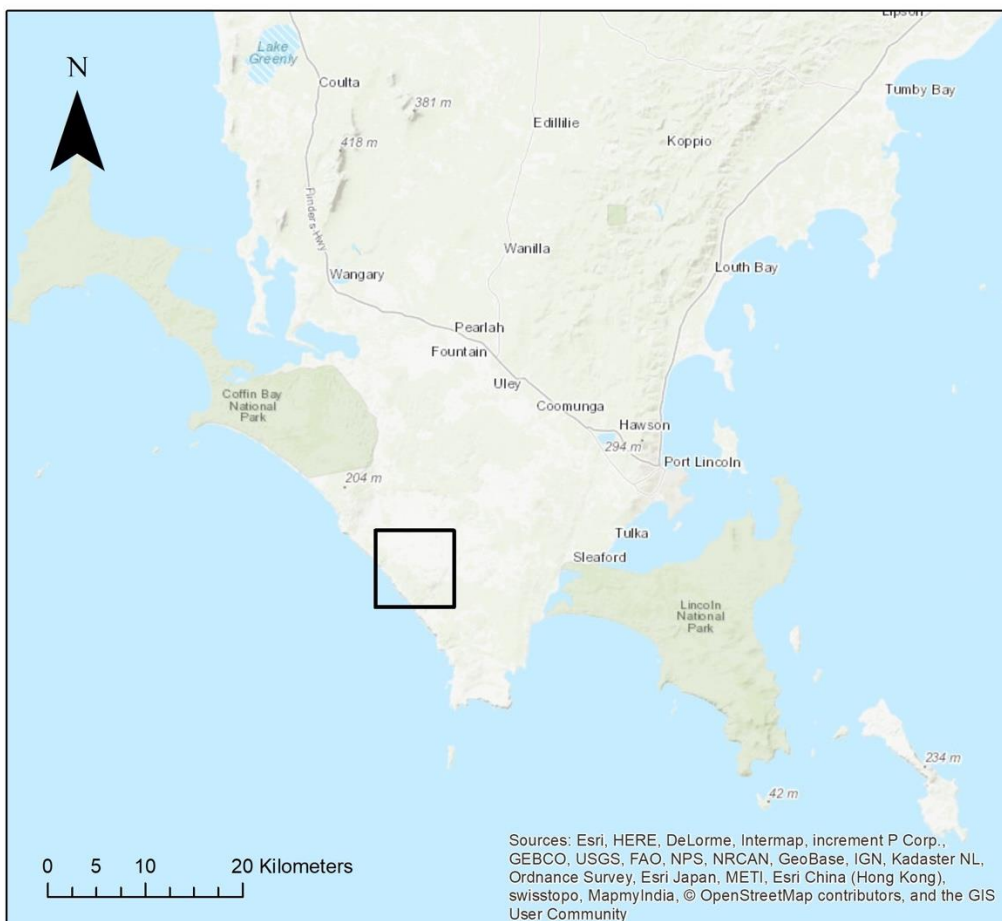
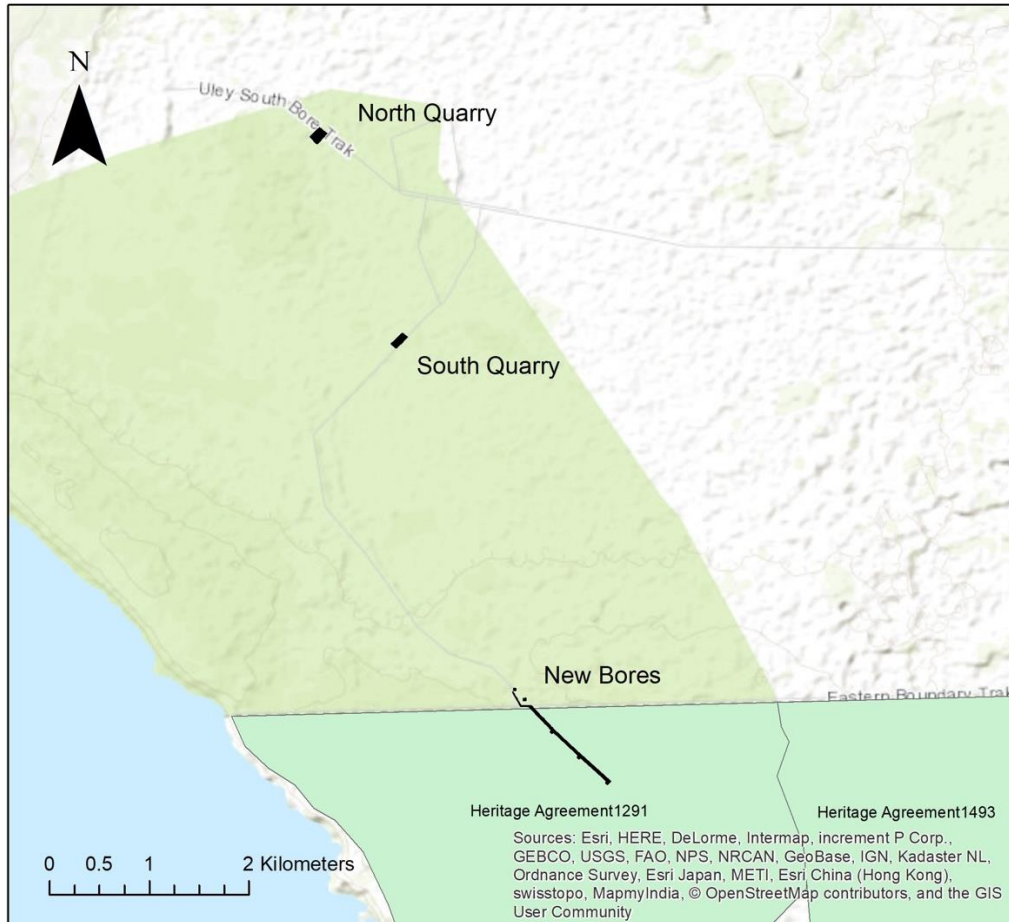


Figure 1. The location of the site.

## 2.4 Details of the proposal

The three new bores will be added to the existing Uley South bore network. The bores will connect to existing Uley South Bore 17 and will extend in a line 1 km south-east of the Eastern Boundary Track (Figure 2).

Each bore will be located in a cleared compound and accessed by a new road. The bores will be connected to the existing bore network by a pipeline that follows the new road. SA Power Network poles will be installed to supply electricity to the bores.



**Figure 2. The locations of the bores and quarries**

Limestone will be sourced for the road and other related purposes from two inactive quarries (borrow pits).

The works will involve clearance to:

- construct the road to access the bores;
- clearance around the bores;
- lay the pipeline to connect to the existing network;
- provide 6 m of clearance around the base of SA Power Network poles
- clear vegetation at the edge of an existing track that connects the new bores to the existing network;
- clear vegetation in the disused limestone quarries to supply construction material.

Work north of Eastern Boundary Track is located on SA Water land in the Hundred of Uley. This includes the quarries, widening of vegetation clearance on existing roads and the installation of three SAPN poles.

Work south of Eastern Boundary Track is located in privately held land (landowner S. Stagg) that is under Heritage Agreement 1291 in the Hundred of Sleaford. This comprises the three new bores, the new road and pipeline and installation of SAPN poles.

## 2.5 Approvals required or obtained

Vegetation clearance requires approval under the Native Vegetation Act 1991.

An easement will be created for SA Water to access and use land in the Heritage Agreement. SA Water will have a lease to access and use the easement in an agreement between the landholder, Cathedral Rocks Windfarm, SA Water and the Minister for the Environment.

Previous cultural heritage investigations for SA Water near the site have not encountered matters of cultural significance. SA Water have completed an internal risk assessment of the Uley South project which included a desktop review of previous cultural heritage surveys in the region and determined it to have a medium risk of encountering heritage. Should the location or methodology change then further assessment will be required. SA Waters has an Aboriginal Heritage standard operating procedure which applies to any potential heritage discovery. In the unlikely event of a discovery the risk will change and further assessment and risk mitigation will be required which can include, but is not limited to, consultation with the heritage group and an archaeologist.

## **2.6 Native Vegetation Regulation**

Vegetation clearance in this project is permitted under Regulation 12(34) - Infrastructure 5(1)(d) Clearance incidental to the construction or expansion of a building or infrastructure (and associated services) where the Minister has declared that the clearance is in the public interest.

# 3. Method

## 3.1 Flora assessment

Existing plant species and community records were reviewed for a 5 km search radius centered on the site using Naturemaps (20 May 2021), the EPBC protected matters search tool (20 May 2021) and Atlas of Living Australia (20 May 2021).

The clearance sites were assessed on 24th of May 2021. Vegetation clearance areas were grouped into plant associations. The vegetation in each plant association was described and plant species lists were compiled.

Regional conservation ratings were sourced from Gillam, S. and Urban, R. (2009) Regional Species Conservation Assessment Project, Phase 1 Report: Regional Species Status Assessments, West Region. Department for Environment and Heritage, South Australia.

Four and a half hours were spent on site.

## 3.2 Fauna assessment

Records of rare and threatened fauna made since 1995 were reviewed for a 5 km search radius centered on the site using NatureMaps (20 May 2021), the EPBC protected matters search tool (20 February 2021) and Atlas of Living Australia (20 May 2021). The likelihood of an impact was assessed in relation to nature and quality of habitat at the site and the habitat requirements of fauna species.



# 4. Assessment Outcomes

## 4.1 Vegetation Assessment

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

The proposed clearance area is located in the Talia subregion of the Munderowie IBRA Association.


The site is located in the Theakstone Land System which represents coastal and subcoastal areas of western Eyre Peninsula between Cape Carnot and Shoal Point, extending up to 5 km inland. The landscape comprises undulating dunes of Bridgewater Formation calcarenites that are partly covered by calcareous and siliceous Semaphore Sands as dunes and spreads. Swales feature shallow dune sand and red (terra rossa) soils, but soil development is minimal.


Limestone dunes with outcropping rock are vegetated by a mallee woodland dominated by *Eucalyptus diversifolia* with *Eucalyptus albopurpurea*, *Allocasuarina verticillata*, *Callitris gracilis* and *Melaleuca lanceolata*. Swales with shallow soils support a shrubland dominated by *Melaleuca lanceolata*, *Olearia axillaris* and *Leucopogon parviflorus* with scattered *Allocasuarina verticillata* and *Callitris gracilis*. Woody debris in the open shrubland suggests that tree species (*Allocasuarina verticillata* and *Callitris gracilis*) may have been scattered through this community in the past. Where shrubs are absent, the vegetation remains dominated by native species, particularly *Rytidosperma* sp., *Vittadinia* sp. and *Austrostipa* sp. Moss was widespread and soil crusts were generally intact.

The site supports high densities of Western Grey Kangaroo and forage plants were heavily grazed. The SA Water land north of Eastern Boundary Track was grazed by sheep. Wombat dropping were observed.

Average annual rainfall is 559 mm (Naturemaps).

## Details of the vegetation associations and scattered trees proposed to be impacted

Vegetation Association	Vegetation Association A1. <i>Leucopogon parviflorus</i> shrubland over native grasses and forbs				
					
Photo 4159 looking along the proposed clearance corridor south-east from Waypoint 54					
General description	<p>The sparse shrub overstorey is dominated by <i>Leucopogon parviflorus</i>, <i>Acacia longifolia</i> ssp. <i>sophorae</i> and <i>Exocarpus aphyllus</i> with scattered <i>Pittosporum angustifolium</i>. Understorey species include small native shrubs and forbs such as <i>Leucopogon cordifolius</i>, <i>Clematis microphylla</i>, <i>Acacia triquetra</i>, <i>Nicotiana velutina</i> and <i>Olearia axillaris</i>. The pest plant <i>Asparagus asparagoides</i> was present at the base of several shrubs.</p> <p>There is sparse regeneration from these species.</p> <p>The understorey is heavily grazed, dominated by native wallaby grasses <i>Rytidosperma</i>. Other ground layer species include <i>Austrostipa</i> sp. <i>Dichondra repens</i>, <i>Geranium</i> sp., <i>Acaena</i> sp., <i>Vittadenia</i> sp., as well as a number of exotic grasses and forbs such as <i>Avena barbata</i>, <i>Lagurus ovata</i>, <i>Dittrichia graveolens</i>, <i>Lysimachia arvensis</i> and <i>Centaurium tenuiflorum</i>.</p>				
Threatened species or community	The vegetation is sparse and unlikely to provide critical habitat for rare and threatened fauna species. The vegetation does not support threatened plant species and is not part of a threatened plant community.				
Landscape context score	1.06	Vegetation Condition Score	36.03	Conservation significance score	1.00
Unit biodiversity Score	38.19	Area (ha)	0.608	Total biodiversity Score	23.22

Vegetation Association	Vegetation Association A2. <i>Eucalyptus diversifolia</i> / <i>Allocasuarina verticillata</i> mallee over <i>Leucopogon parviflorus</i> shrubland				
					
Photo 4160 looking along the proposed clearance corridor south-east from Waypoint 55.					
General description	<p>The tree overstorey is dominated by <i>Allocasuarina verticillata</i> and <i>Eucalyptus diversifolia</i> ssp. <i>diversifolia</i> with scattered <i>Eucalyptus albopurpurea</i>. Midstorey species include <i>Leucopogon parviflorus</i>, <i>Acacia longifolia</i> ssp. <i>sophorae</i>, <i>Melaleuca lanceolata</i>, <i>Exocarpus aphyllus</i>, <i>Hakea vittata</i>, <i>Pittosporum angustifolium</i>, <i>Dodonaea viscosa</i> ssp. <i>spatulata</i>, <i>Olearia axillaris</i> and <i>Beyeria lechenaultii</i>. The understorey consists of small native shrubs, sedges and forbs such as <i>Acacia rupicola</i>, <i>Hibbertia devitata</i>, <i>Correa pulchella</i>, <i>Clematis microphylla</i>, <i>Acacia triquetra</i>, <i>Goodia medicaginea</i>, <i>Gahnia deusta</i>, <i>Dianella</i> sp., <i>Nicotiana velutina</i> and <i>Pimelea glauca</i>. Seedlings of many of these species are present indicating regeneration of overstorey and midstorey species</p> <p>The pest plant <i>Asparagus asparagoides</i> was present at the base of several shrubs.</p> <p>The ground layer is heavily grazed, dominated by native wallaby grasses <i>Rytidosperma</i>. Other ground layer species include <i>Austrostipa</i> sp., <i>Microlaena stipoides</i>, <i>Dichondra repens</i>, <i>Geranium</i> sp., <i>Kennedia prostrata</i>, as well as exotic grasses and forbs such as <i>Avena barbata</i>, <i>Lagurus ovata</i>, <i>Dittrichia graveolens</i>, <i>Lysimachia arvensis</i> and <i>Centaurium tenuiflorum</i>.</p>				
Threatened species or community	<p>Several plants of the threatened forb <i>Phyllanthus calycinus</i> (Sea Spurge) (SA Rare) were recorded within the ground layer.</p> <p>The vegetation may provide critical habitat for the following rare and threatened fauna species:</p> <ul style="list-style-type: none"> <li>• <i>Stipiturus malachurus parimeda</i> (Southern Emuwren) - (EPBC Vulnerable, SA Endangered)</li> <li>• <i>Psophodes leucagaster leucogaster</i> (White-bellied Whip-bird) - (EPBC Vulnerable, SA Endangered)</li> </ul>				
Landscape context score	1.06	Vegetation Condition Score	62.76	Conservation significance score	1.14
Unit biodiversity Score	75.84	Area (ha)	0.603	Total biodiversity Score	45.73

Vegetation Association	Vegetation Association A3. <i>Eucalyptus diversifolia</i> mallee over <i>Melaleuca lanceolata</i> shrubland
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Photo 4165 looking along the proposed clearance corridor south-east from Waypoint 61.

General description	<p>Association A3 is located within a Heritage agreement Area (HA 1291) and is assigned a loading for Clearance of Protected Areas.</p> <p>The overstorey is dominated by <i>Eucalyptus diversifolia</i> ssp. <i>diversifolia</i> and <i>Melaleuca lanceolata</i> with <i>Leucopogon parviflorus</i>, <i>Acacia longifolia</i> ssp. <i>sophorae</i>, <i>Pittosporum angustifolium</i>, <i>Allocasuarina verticillata</i> and <i>Exocarpus aphyllus</i>.</p> <p>Understorey species include <i>Hibbertia devitata</i>, <i>Leucopogon cordifolius</i>, <i>Acacia triquetra</i>, <i>Hardenbergia violacea</i>, <i>Beyeria lechenaultii</i>, <i>Orthrosanthus multiflorus</i>, <i>Dianella</i> sp. and <i>Lepidosperma</i> sp. Seedlings of many of these species are present indicating regeneration of overstorey and midstorey species.</p> <p>The ground layer contains several species of native grasses and forbs, such as <i>Rytidosperma</i>, <i>Austrostipa</i> sp., <i>Linum marginale</i>, <i>Nicotiana velutina</i>, <i>Vittadenia</i> sp. and <i>Geranium</i> sp. and sparsely introduced species (<i>Avena barbata</i>, <i>Lagurus ovata</i>, <i>Lysimachia arvensis</i>, <i>Marrubium vulgare</i> and <i>Asparagus asparagoides</i>).</p> <p>Grazing of the ground layer is relatively low, compared to that observed in Associations A1 and A2.</p>
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Threatened species or community	<p>The vegetation may provide critical habitat for the following rare and threatened fauna species:</p> <ul style="list-style-type: none"> <li>• <i>Stipiturus malachurus parimeda</i> (Southern Emuwren) - (EPBC Vulnerable, SA Endangered)</li> <li>• <i>Psophodes leucogaster leucogaster</i> (White-bellied Whip-bird) - (EPBC Vulnerable, SA Endangered)</li> </ul>
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Landscape context score	1.06	Vegetation Condition Score	55.09	Conservation significance score	1.10
Unit biodiversity Score	64.23	Area (ha)	0.1715	Total biodiversity Score	11.02

Vegetation Association	Vegetation Associations A4. <i>Eucalyptus diversifolia</i> mallee over <i>Melaleuca lanceolata</i> shrubland				
					
Photo 4167 looking north from Waypoint 64, along the proposed clearance area required to straighten and widen an existing track.					
General description	<p>Association A4 is located outside of the Heritage agreement Area and consists of the same vegetation community as A3.</p> <p>The overstorey is dominated by <i>Eucalyptus diversifolia</i> ssp. <i>diversifolia</i> and <i>Melaleuca lanceolata</i> with <i>Leucopogon parviflorus</i>, <i>Acacia longifolia</i> ssp. <i>sophorae</i>, <i>Pittosporum angustifolium</i>, <i>Allocasuarina verticillata</i> and <i>Exocarpus aphyllus</i>.</p> <p>Understorey species include <i>Hibbertia devitata</i>, <i>Leucopogon cordifolius</i>, <i>Acacia triquetra</i>, <i>Hardenbergia violacea</i>, <i>Beyeria lechenaultii</i>, <i>Orthrosanthus multiflorus</i>, <i>Dianella</i> sp. and <i>Lepidosperma</i> sp. Seedlings of many of these species are present indicating regeneration of overstorey and midstory species.</p> <p>The ground layer contains several species of native grasses and forbs, such as <i>Rytidosperma</i>, <i>Austrostipa</i> sp., <i>Linum marginale</i>, <i>Nicotiana velutina</i>, <i>Vittadenia</i> sp. and <i>Geranium</i> sp. and sparsely introduced species (<i>Avena barbata</i>, <i>Lagurus ovata</i>, <i>Lysimachia arvensis</i>, <i>Marrubium vulgare</i> and <i>Asparagus asparagoides</i>).</p>				
Threatened species or community	<p>The vegetation may provide critical habitat for the following rare and threatened fauna species:</p> <ul style="list-style-type: none"> <li>• <i>Stipiturus malachurus parimeda</i> (Southern Emuwren) - (EPBC Vulnerable, SA Endangered)</li> <li>• <i>Psophodes leucagaster leucogaster</i> (White-bellied Whip-bird) - (EPBC Vulnerable, SA Endangered)</li> </ul>				
Landscape context score	1.06	Vegetation Condition Score	55.09	Conservation significance score	1.10
Unit biodiversity Score	64.23	Area (ha)	0.117	Total biodiversity Score	7.52

Vegetation Association	Vegetation Associations B1. <i>Eucalyptus diversifolia mallee</i> over <i>Leucopogon parvifolius</i> , <i>Acacia longifolia</i> and <i>Exocarpus aphyllus</i>
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Photo 4169 looking south-west from Waypoint 66, across undisturbed mallee shrubland surrounding the limestone extraction sites.

General description	The overstorey is dominated by regenerating <i>Eucalyptus diversifolia</i> ssp. <i>diversifolia</i> with <i>Leucopogon parviflorus</i> , <i>Acacia longifolia</i> ssp. <i>sophorae</i> , <i>Pittosporum angustifolium</i> , <i>Allocasuarina verticillata</i> and <i>Exocarpus aphyllus</i> . Understorey species include <i>Lasiopetalum discolor</i> , <i>Adriana quadripartita</i> , <i>Clematis microphylla</i> and <i>Olearia axillaris</i> , with a ground layer containing <i>Rytidosperma</i> , <i>Auistrostipa</i> sp., <i>Nicotiana velutina</i> , <i>Vittadenia</i> sp., <i>Oxalis perennans</i> and <i>Geranium</i> sp. and introduced species such as <i>Avena barbata</i> , <i>Lagurus ovata</i> , <i>Lysimachia arvensis</i> , <i>Hypericum perforatum</i> and <i>Asparagus asparagoides</i> .				
Threatened species or community	The vegetation is sparse and unlikely to provide critical habitat for rare and threatened fauna species. The vegetation does not support threatened plant species and is not part of a threatened plant community.				
Landscape context score	1.06	Vegetation Condition Score	34.5	Conservation significance score	1.00
Unit biodiversity Score	36.57	Area (ha)	0.18	Total biodiversity Score	6.58

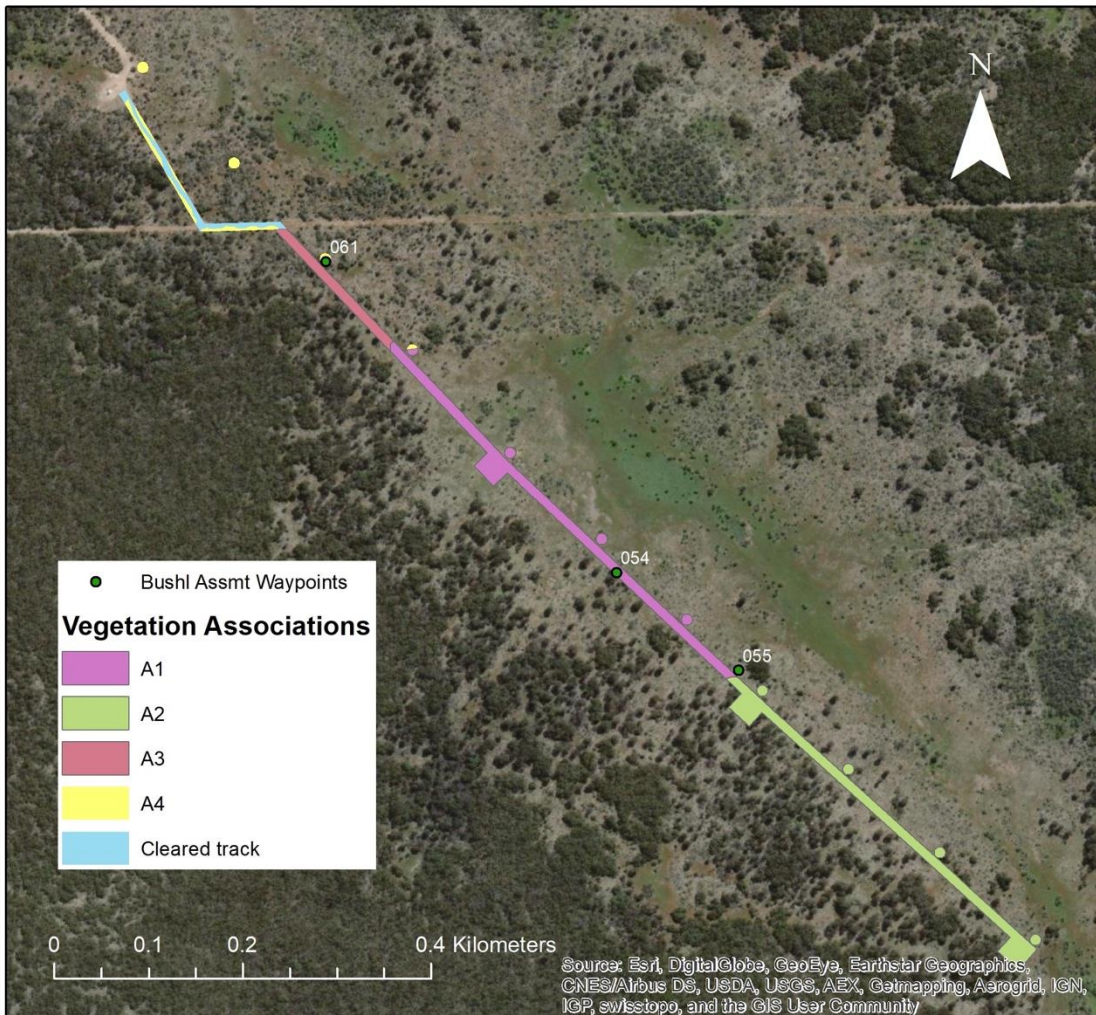
Vegetation Association	Vegetation Associations B2. Degraded (previously mined limestone Quarry) with regenerating <i>Leucopogon parviflorus</i> shrubland
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Photo 4168 looking south-west from Waypoint 65, across shrubland previously disturbed for limestone extraction.

General description	The vegetation consists of a highly degraded shrubland with regenerating <i>Leucopogon parviflorus</i> , <i>Olearia axillaris</i> and <i>Allocasuarina verticillata</i> and understory species including <i>Rytidosperma</i> sp., <i>Vittadenia</i> sp. and <i>Clematis microphylla</i> . The sites contain exotic grasses and herbs such as <i>Asphodelus fistulosus</i> , <i>Senecio pterophorus</i> , <i>Dittrichia graveolens</i> , <i>Echium plantagineum</i> , <i>Marrubium vulgare</i> and <i>Asparagus asparagoides</i> .				
Threatened species or community	The vegetation is sparse and unlikely to provide critical habitat for rare and threatened fauna species. The vegetation does not support threatened plant species and is not part of a threatened plant community.				
Landscape context score	1.06	Vegetation Condition Score	20.54	Conservation significance score	1.00
Unit biodiversity Score	21.77	Area (ha)	0.232	Total biodiversity Score	5.05

**Site map showing areas of proposed impact**

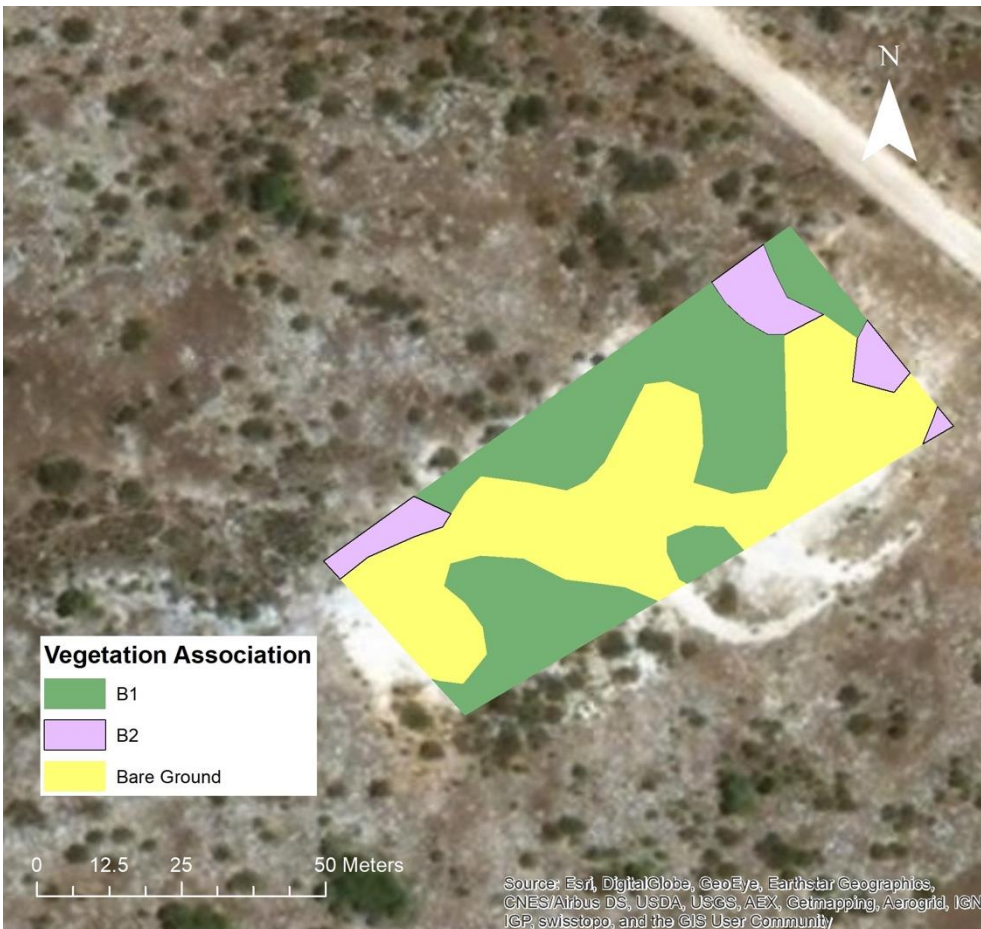


**Figure 3. Vegetation associations and clearance requirements for the new bores**





**Figure 3. Vegetation associations and clearance requirements for the new bores**



**Figure 3. Vegetation associations and clearance requirements for the new bores**

**Photo log**

<b>Photo</b>	<b>Direction</b>	<b>Waypoint</b>
4159 - Vegetation Association A1	south-west	54
4160 - Vegetation Association A2	south-west	55
4165 - Vegetation Association A3	south-west	61
4167 - Vegetation Association A4	north	64
4169 - Vegetation Association B1	south-west	66
4168 - Vegetation Association B2	south-west	65

**Pest Plant Risk**

The quarries support the declared weeds *Asphodelus fistulosus*, *Marrubium vulgare*, *Asparagus asparagoides* f. SA Water should take appropriate measures to prevent the dispersal of weeds from these sites in soil or on machinery.

## 4.2 Threatened Species assessment

The works do not impact on threatened plant communities. One plant species of conservation significance under the NPWSA Act was recorded within the proposed clearance area.

Snowdrop Spurge *Phyllanthus calycinus* (SA – Rare) was recorded within Plant Association A2. An additional ten species of regional conservation significance (Rating of Near Threatened or higher in the West (EP) Region) were recorded, including Morning Flag *Orthrosanthus multiflorus* (West – Vulnerable) and Purple-flowered Mallee Box *Eucalyptus albopurpurea* (West – Rare).

The works are located in native vegetation at the edge of an extensive tract of *Eucalyptus diversifolia* mallee which provides habitat for Southern Emu-wren and White-bellied Whip-bird on Southern Eyre Peninsula. Plant Associations A2, A3 and A4 provide suitable habitat but Plant Association A1 is too open and degraded.

### Species observed on site, or recorded within 5km (50km in the arid zone) of the application area since 1995

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>Stipiturus malachurus parimeda</i> (Southern Emu-wren)	E	VU	3,5	2008	Woodland, mallee and heath	Likely. The site provides suitable habitat and is in proximity to recent observations
<i>Psophodes leucogaster leucogaster</i> (White-bellied Whip-bird)	E	VU	3,4	2008	Woodland, mallee and heath	Likely. The site provides suitable habitat and is in proximity to recent observations
Source; 1- BDBSA, 2 - AoLA, 3 – NatueMaps 4 – Observed/recorded in the field, 5 - Protected matters search tool, 6 – others 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 provide limited habitat or feeding resources for the species. Recorded within 20 -40 years, survey effort is considered adequate, habitat and feeding resources present, and species of similar habitat needs have been recorded in the area.
Unlikely	Recorded within the previous 20 years, but the area provide no habitat or feeding resources for the species, including perching, roosting or nesting opportunities, corridor for movement or shelter. Recorded within 20 -40 years; however, suitable habitat does not occur, and species of similar habitat requirements have not been recorded in the area. No records despite adequate survey effort.

## 4.3 Cumulative impact

This is a stand-alone project. There are no other works planned that depend on this project and that will lead to additional vegetation clearance.

## 4.4 Address the Mitigation Hierarchy

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

The pipeline has been positioned in an existing roadway in the section north of Eastern Boundary Track to avoid impacts to native vegetation (Vegetation Association A4). This section of the route will only require clearance where vegetation encroaches on the road.

The pipeline will be located within the new track that will be constructed to access the bores to avoid additional clearance.

Clearance has been avoided by re-activating disused quarries (borrow pits) where there are areas of non-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).**

The proposed bores arrangement was changed to minimise impacts on native vegetation. The original scope was to construct four bores over a distance of 2.4 km. This was reduced to three bores over 1 km to reduce impacts on native vegetation and costs.



Vegetation clearance for limestone extraction (Block B) will be restricted to areas that have been previously mined, and 45% of the proposed clearance area is bare ground.

### 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.**

An eight metre wide corridor is required for construction along the tracks north of Eastern Boundary Track. In the future, a corridor of only 5 m will be maintained to provide access. Native vegetation will be allowed to recover back outside this corridor.

- 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.**

Clearance will be offset with a payment to the Native Vegetation 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

Principle of clearance	Considerations																					
<p><b>- Principle 1a - it comprises a high level of diversity of plant species</b></p>	<p><u>Relevant information</u></p> <p>Number of plant species</p> <table border="1" data-bbox="316 533 778 779"> <thead> <tr> <th></th> <th>Native</th> <th>Exotic</th> </tr> </thead> <tbody> <tr> <td>Site A1</td> <td>22</td> <td>12</td> </tr> <tr> <td>Site A2</td> <td>37</td> <td>9</td> </tr> <tr> <td>Site A3</td> <td>26</td> <td>6</td> </tr> <tr> <td>Site A4</td> <td>26</td> <td>6</td> </tr> <tr> <td>Site B1</td> <td>17</td> <td>6</td> </tr> <tr> <td>Site B2</td> <td>7</td> <td>6</td> </tr> </tbody> </table> <p>Native plant species diversity score:</p> <p>Site A1 - 16  Site A2 - 24  Site A3 - 18  Site A4 - 18  Site B1 - 12  Site B2 - 6</p> <p><u>Assessment against the principles</u></p> <p><u>Seriously at Variance</u>  Plant Association A2</p> <p><u>At Variance –</u>  Plant Associations A1, A3, A4 and B1</p> <p><u>Moderating factors that may be considered by the NVC</u>  The entire area within 5 km of the site supports native vegetation (i.e. 7,850 ha). Clearance of 0.6 ha of plant association A2 is less than 0.25% of this vegetation.</p>		Native	Exotic	Site A1	22	12	Site A2	37	9	Site A3	26	6	Site A4	26	6	Site B1	17	6	Site B2	7	6
	Native	Exotic																				
Site A1	22	12																				
Site A2	37	9																				
Site A3	26	6																				
Site A4	26	6																				
Site B1	17	6																				
Site B2	7	6																				
<p><b>Principle 1b - significance as a habitat for wildlife</b></p>	<p><u>Relevant information</u></p> <p>Threatened species that were recorded or may use the vegetation are Southern Emuwren (southern Eyre Peninsula) (EPBC V, NPW E) and White-bellied Whipbird (eastern subspecies (EPBC V, NPW E). Plant Associations A2, A3 and A4 provide suitable shrubby and woodland habitat for these species. Plant Association A1 is too open and does not provide suitable habitat. The site is contiguous with an extensive tract of mallee vegetation where the species may occur.</p> <p>Fauna survey records near the site report only 5 native species within 5 km of the site. A broader search of an area extending 5 km inland from a section of the coast 10 km long reports 17 native fauna species. While this data suggests that the area supports a low diversity of fauna, it is more likely to reflect a low survey effort.</p> <p>The proposed clearance represents a small patch within an extensive continuous tract and does not impact the continuity of vegetation corridors.</p> <p>The proposed clearance areas not have any features that could provide a refuge.</p>																					

	<p>Threatened Fauna Score  Association A1 - 0  Association A2 - 0.1  Association A3 - 0.1  Association A4 - 0.1  Association B1 - 0  Association B2 - 0</p> <p>Unit biodiversity Score  Association A1 - 38.19  Association A2 - 75.84  Association A3 - 64.23  Association A4 - 64.23  Association B1 - 36.57  Association B2 - 21.77</p> <p><u>Assessment against the principles</u>  <u>Seriously at Variance</u>  Plant Association A2, A3, A4</p> <p><u>Moderating factors that may be considered by the NVC</u>  Given the small extent of clearance in relation to the extent of surrounding vegetation and habitat, and its location within the tract rather than in a corridor or refuge, clearance is not expected to significantly affect populations of threatened species or their potential for recovery.</p>
<p><b>Principle 1c - plants of a rare, vulnerable or endangered species</b></p>	<p><u>Relevant information</u>  One rare species under the NPW Act was found at the site: <i>Phyllanthus calycinus</i> (Snowdrop Spurge) in Plant Association A2.  Between 10 to 20 individuals of <i>Phyllanthus calycinus</i> were present in the proposed clearance area. Under the Regional Species Conservation Assessment (Seeds of South Australia Website) the species is rated as Rare and under probable decline in the Eyre Peninsula. It has a scattered distribution on the southern and western Eyre Peninsula.</p> <p>A rare plant under the NPW Act that is known from the area and may be present but was undetectable at the time of the assessment was:  <i>Drosera stricticaulis</i> (Erect Sundew) - Rare (SA)</p> <p>Threatened Flora Score(s)  Association A1 - 0  Association A2 - 0.04  Association A3 - 0  Association A4 - 0  Association B1 - 0  Association B2 - 0</p> <p><u>Assessment against the principles</u>  <u>Seriously at Variance</u>  None</p> <p><u>At Variance</u> -  A2</p> <p><u>Moderating factors that may be considered by the NVC</u>  Clearance affects a small number of individuals within an extensive area of suitable habitat for a species with a scattered distribution on the southern Eyre Peninsula.</p>

<p><b>Principle 1d - the vegetation comprises the whole or part of a plant community that is Rare, Vulnerable or endangered:</b></p>	<p><u>Relevant information</u> The site does not support plant communities that are rare, vulnerable or endangered.</p> <p>Threatened Community Score Association A1 - 1 Association A2 - 1 Association A3 - 1 Association A4 - 1 Association B1 - 1 Association B2 - 1</p>
	<p><u>Assessment against the principles</u> <u>Seriously at Variance</u> None</p>
	<p><u>Moderating factors that may be considered by the NVC</u></p>
<p><b>Principle 1e - it is significant as a remnant of vegetation in an area which has been extensively cleared.</b></p>	<p><u>Relevant information</u> Vegetation remnancy in the Mungerowie IBRA Association is 87%</p> <p>The remnant is in good health with a high canopy cover and low levels of dieback. However in some areas the understorey grasses and herbs are heavily grazed by western grey Kangaroos and sheep.</p> <p>Total Biodiversity Score:  Association A1 – 23.22 Association A2 – 45.73 Association A3 – 11.02 Association A4 – 7.52 Association B1 – 6.58 Association B2 – 5.05</p>
	<p><u>Assessment against the principles</u> <u>Seriously at Variance</u> None <u>At Variance</u> A1 A2 A3 A4 B1 B2</p>
	<p><u>Moderating factors that may be considered by the NVC</u> Given the small extent of clearance in relation to the extent of surrounding vegetation, clearance is not expected to significant impact on the remnant.</p>
<p><b>Principle 1f - it is growing in, or in association with, a wetland environment.</b></p>	<p><u>Relevant information</u> Not relevant</p>



<b>Principle 1g - it contributes significantly to the amenity of the area in which it is growing or is situated.</b>	Relevant information
	The site is located within private property and is not visible from any public roads.
	N/A
	<u>Moderating factors that may be considered by the NVC</u>

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

## 4.6 Risk Assessment

**Determine the level of risk associated with the application**

<b>Total clearance</b>	No. of trees	None
	Area (ha)	1.912
	Total biodiversity Score	99.12
<b>Seriously at variance with principle 1(b), 1(c) or 1 (d)</b>		1(b)
<b>Risk assessment outcome</b>		Level 4

## 4.7 NVC Guidelines

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

Not applicable

# 5. Clearance summary

**Clearance Area(s) Summary table**

Block	Site	Species diversity score	Threatened Ecological community Score	Threatened plant score	Threatened fauna score	UBS	Area (ha)	Total Biodiversity score	Loss factor	Loadings	Reductions	SEB Points required	SEB payment	Admin Fee
A	1	16	1	0	0	38.19	0.608	23.22	1	1		48.76	\$20,850.54	\$1,146.78
A	2	24	1	0.04	0.1	75.84	0.603	45.73	1	1		96.03	\$41,068.78	\$2,258.78
A	3	18	1	0	0.1	64.23	0.1715	11.02	1	1		23.13	\$9,892.81	\$544.10
A	4	18	1	0	0.1	64.23	0.117	7.52	1	0		7.89	\$3,374.52	\$185.60
B	1	12	1	0	0	36.57	0.18	6.58	1	0		6.91	\$2,955.77	\$162.57
B	2	6	1	0	0	21.77	0.232	5.05	1	0		5.3	\$2,267.86	\$124.073
						<b>Total</b>	<b>1.9115</b>	<b>99.12</b>				<b>188.02</b>	<b>\$80,410.28</b>	<b>\$4,421.90</b>

**Totals summary table**

	Total Biodiversity score	Total SEB points required	SEB Payment	Admin Fee	Total Payment
<b>Application</b>	99.12	188.02	\$80,410.28	\$4,421.90	\$84,832.18

Economies of Scale Factor	0.29
Rainfall (mm)	559

# 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:

Pay into the Native Vegetation Fund.

# 7. Appendices

Appendix 1. Bushland and or Scattered Tree Vegetation Assessment Scoresheets

Appendix 2. Species List

Appendix 3. Threatened Flora records and Conservation Ratings