

Native Vegetation Clearance

Campbell's Pit, Brooker Road

Data Report

Clearance under Section 28 of the Native Vegetation Act 1991

September 2021

Prepared by Catherine Miles and Kerri Muller



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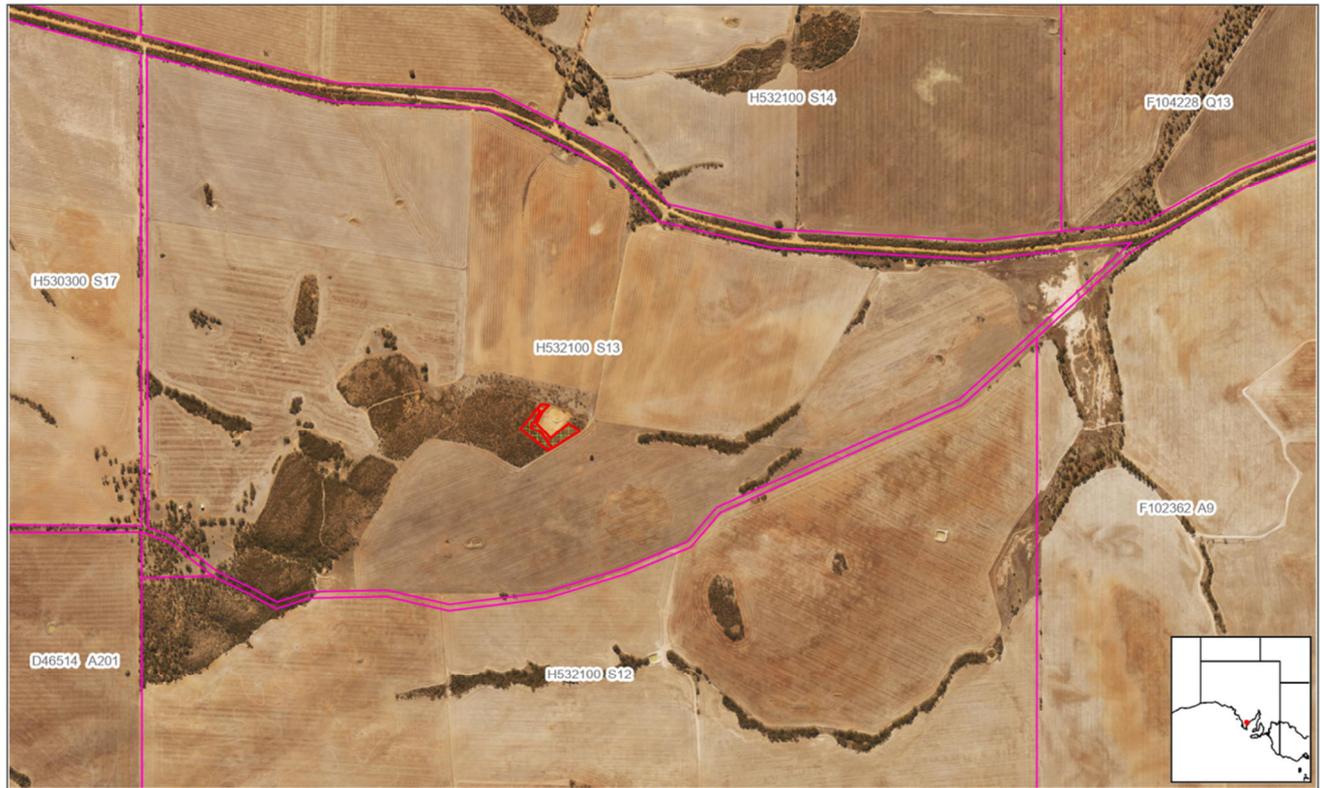
1. Application information

1.1 Application Details

Applicant:	District Council of Tumby Bay		
Key contact:	Damian Windsor Manager Works and Infrastructure District Council of Tumby Bay PO Box 61 Tumby Bay SA 5605 Ph: 8688 2101 Mob: 0427 882 074		
Landowner:	The landowner has given verbal approval and written permission is currently being negotiated and will be provided as soon as it is available.		
Site Address:	Brooker Road, Yeelanna Brooker/Ungarra		
Local Government Area:	Tumby Bay	Hundred:	Moody
Title ID:	CT/5454/899	Parcel ID	H532100 S13

1.2 Summary of proposed clearance

Purpose of clearance	Clearance required for the expansion of an existing quarry to mine road re-surfacing material
Description of the vegetation under application	<u>Size, type and general condition</u> – 0.9 ha of Broombush (<i>Melaleuca uncinata</i>) shrublands, of which 0.4 ha is in good condition and the remainder is disturbed and lacks structural elements and has a high weed coverage.
Total proposed clearance - area (ha) and number of trees	0.9 ha
Level of clearance	Level 4 Mitigating factors are considered applicable to downgrade this to a Level 3.
Overlay (Planning and Design Code)	Native Vegetation Overlay
Map of proposed clearance area	



Map data is compiled from a variety of sources and hence its accuracy is variable

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Compiled: 16-Sep-2021
 Generated at: www.naturemaps.sa.gov.au
 Datum: Geocentric Datum of Australia, 1994
 Projection: Web Mercator (Auxiliary Sphere)



Map 1: Location of the site

<p>Seriously at variance with the Principles of clearance?</p>	<p>B3 is Seriously at Variance with Principle 1(b)</p>
<p>Substantially intact</p>	<p>B3 may be considered to have a substantially intact shrublayer</p>
<p>Mitigation hierarchy</p>	<p>The applicant reviewed all the potential sites available and only 2 were considered likely to have the required material. Of these, clearance at the Campbell's Pit site is considered likely to have a lower impact because part of the vegetation is already degraded, and it is less likely to provide habitat for threatened fauna. On completion of the quarrying activity the site will be rehabilitated by replacing stockpiled surface material.</p>
<p>SEB Offset proposal</p>	<p>Payment of \$14,944.56</p>

2. Purpose of clearance

2.1 Description

The purpose of the clearance is to excavate rock material for a major road re-surfacing project in the District Council of Tumby Bay.

2.2 Background

Background information supplied by the applicant.

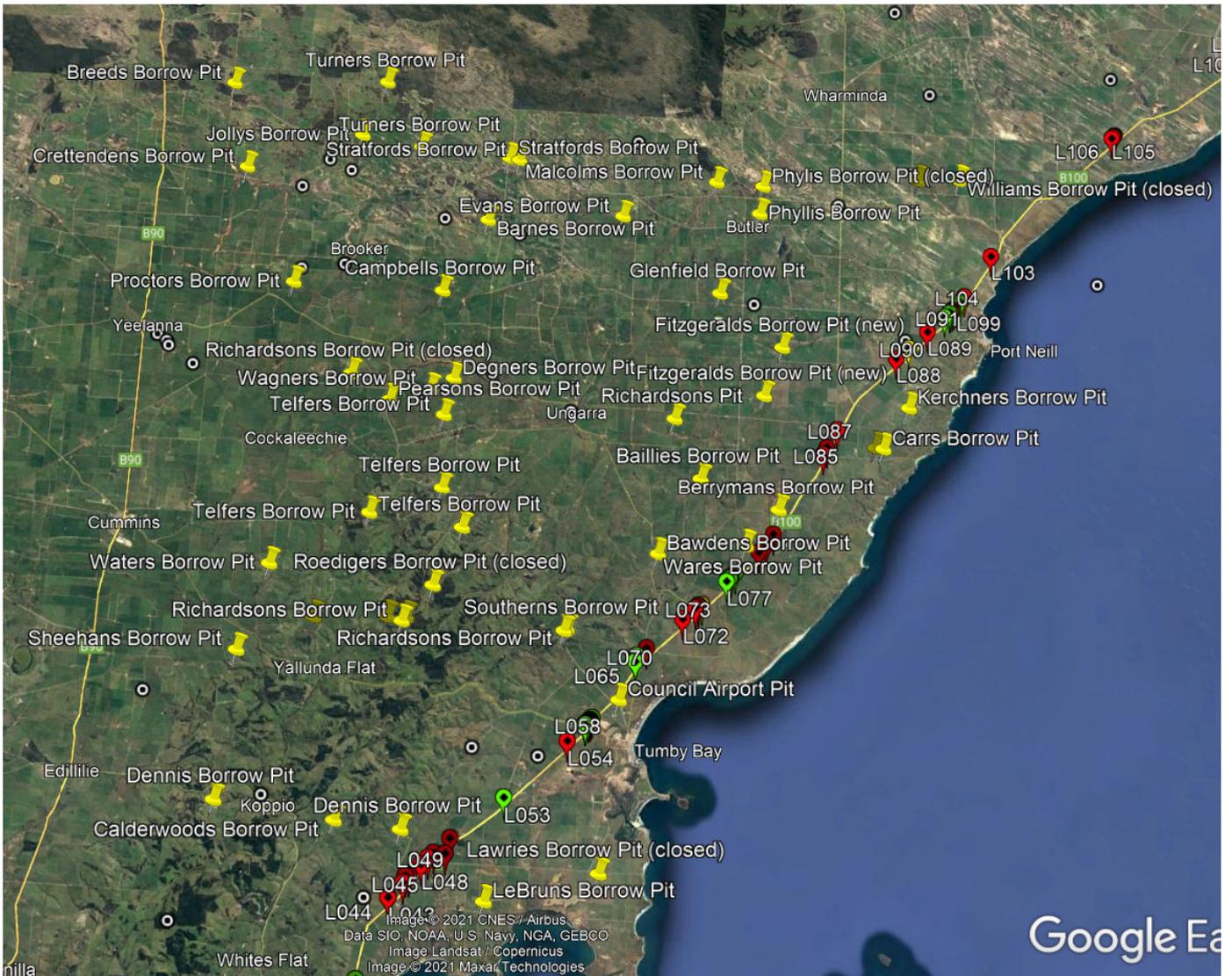
The DC of Tumby Bay requires material to re-surface 18 kms of the Ungarra Yeelanna Road within its Council area. This road is a collector freight route for the district, providing a key link between the Tod Highway and Lincoln Highway, and is used for the transport of commodities by heavy vehicle (up to 36.5m road train) off high yielding crop land. The Council have estimated that the re-sheeting requires approximately 25,000m³ (33,000 tonnes) of rubble, which it can extract from the site by quarrying the proposed clearance area to a depth of 3 m. At the instigation of the applicant another site (Jolly's Pit, see Map 2) was initially investigated, however the Campbell's Pit site was later selected as likely being a site where the impacts would be less; further information regarding the selection of the site is presented in Section 4.5.

Although forming a key road for the District Council of Tumby Bay, the Ungarra Yeelanna Road is a low volume road with <100 vehicles per day on average. Despite the low use, the road is required to be fit-for-purpose for road users, including for access by over-mass and over-dimensional agricultural equipment and trucks up to a 36.5m road train. The road has unsealed surface which requires periodic renewal due to wear and tear of traffic, with an expected life of 15 years applied to the surfacing.

Unsealed road re-sheeting material is generally sourced from Council borrow pits (accessed in accordance with Statutory powers under the Local Government Act), which are located at various locations around the Council district as shown in Map 2. The location of borrow pits is made with consideration of the competing factors of location and the cost of haulage, the quality of material and performance characteristics, landowner acceptance and environmental impact. Often sites that yield suitable materials are found within remnant vegetation. These areas where stony deposits are accessible near to the soil surface were left and not cleared because they were not suitable for cropping activities. Conversely, cropped land is generally not suitable for sourcing road building materials due to the difficulty locating deeper deposits under arable land, the cost of stripping overburden to access deeper deposits and a reluctance from landowners to provide access to arable land. It is often necessary, therefore, for Council to consider clearance of remnant vegetation to access suitable quantities of suitable material.

The District Council of Tumby Bay maintains approximately 1000km of unsealed roads in accordance with its Infrastructure Asset Management Plan. Expenditure on unsealed roads is a large percentage of the Council budget and controlling costs of this work is critical to ensuring the financial viability of the Council. Historically, local road re-sheeting materials have been sourced from as close as possible to the worksite with carting distances up to 10km but typically less than 5km. In recent times a greater focus has been necessary on sourcing better quality materials that can meet the increasing load demands of modern transport. This has driven a significant increase in road maintenance costs. In the case of the Ungarra Yeelanna Road, at the time of the last resheeting works in 2004 the cost per km was \$11,000. In the current financial year a budget allocation of \$33,300 per km has been made, representing an increase of over 300% in 17 years. This increased expenditure allows for the sourcing and carting of material from a suitable source within an approximate 25km radius. The Council has assessed a number of options within this radius and have identified 2 x existing borrow pits which are considered to have potential to supply both the volume and quality of material required for this job. The expansion of both borrow pits would require vegetation clearance, but no suitable alternative that does not require clearance has been identified.

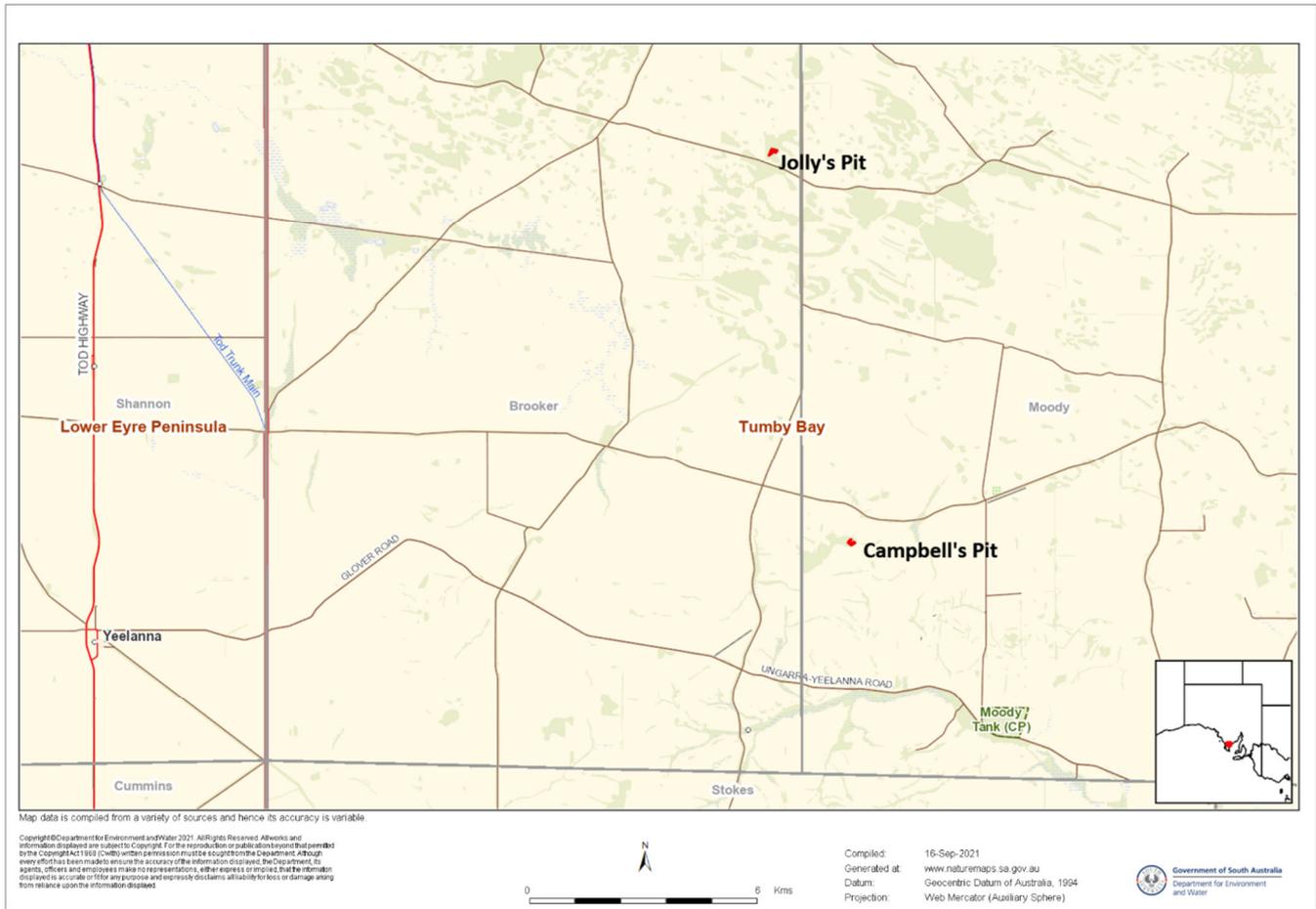
A quotation was sourced from a commercial quarry located just outside of the Council boundary for the supply and delivery of material for this job. The cost for supply and delivery was \$36,750 per km, compared with a budget availability for this component of \$23,500 per km. The total cost impact to the project would be in the order of \$240,000 or approximately 40% of the project budget. It is not financially viable for the Council to consider cost increases of this magnitude in road maintenance and renewal costs.



Map 2. Showing the location of borrow pits the Council has access over decades which formed the basis for investigating material sources (supplied by D. Windsor, DC Tumby Bay).

2.3 General location map

The general location of Campbell’s Pit site, as well as the alternative site, Jolly’s Pit, is shown in Map 3. A detailed map of the site is provided in Section 4, Map 4.



Map 3. Showing the general location of Campbell's Pit and the alternative site (Jolly's Pit), the township of Ungarra is obscured by the inset map.

2.4 Details of the proposal

While the Council will seek to avoid the financial and environmental costs of vegetation clearance wherever possible, no suitable alternative has been found for supply of suitable material. The site where the clearance is proposed has an existing private quarry "Campbell's Pit" (Figure 1). Google Earth Pro imagery history indicates that the quarry has been open since 1985 and does not appear to have been expanded during that time. The quarry is located on the edge of a block of native vegetation surrounded by cropping land. The native vegetation and quarry areas are not fenced from the surrounding cropping land and appear not to have been grazed for many years, or if they have been grazed, grazing could only occur between harvest and seeding. No stock were observed on the property and examination of aerial photography indicates that all surrounding farmland is used for cropping (i.e. no pastures).

The proposed expansion area of Campbell's Pit will be to the south, east and west of the existing borrow pit (Map 4), on the uphill side of the quarry. Expansion to the north is not considered suitable as the land elevation drops and the rock disappears to the point where the land becomes arable.

Subject to sourcing a suitably approved fencing contractor, broombush plants will first be harvested from the clearance area for use in brush fencing to avoid waste of the cleared material and reduce pressure on other broombush areas.

Surface material will be stockpiled to be spread over the site on closure of the pit (see Section 4.4). The area of clearance will then be quarried to a nominal depth of 3 m. On completion the land surface will be smoothed and surface material spread back over the site.

No expansion of the quarry is proposed in the foreseeable future and on completion of the project the site will be rehabilitated. The location where the road re-surfacing will occur will not require any clearance of native vegetation.



Figure 1: Photograph (IMG_4674) of the existing quarry, taken from the northeastern corner looking southwest.

2.5 Approvals required or obtained

Section 294 of the Local Government Act provides powers for Councils to access land for extraction of materials, and 294(7) expressly removes the requirement for any authorisation under the mining act.

The Council holds tenement number DC88 over the area of the District Council of Tumby Bay, and this is used for reporting purposes to the Department of Energy and Mining.

No further approvals are required.

2.6 Development Application information (if applicable)

Not applicable – borrow pits are accessed in accordance with the provisions of the Local Government Act 1999.

3. Method

3.1 Flora assessment

The clearance areas were assessed by Catherine Miles using the NVC's Bushland Assessment Methodology on the 30th August 2021. The methodology for small sites was used for two of the vegetation associations (B2 and B4) because the total area of these vegetation associations is less than 0.5 ha. The total amount of time taken for the assessment was approximately 4 hours in the field. Map 4 shows the GPS recorded track of the flora survey.

A database search for potential threatened flora was undertaken using Naturemaps (5 km radius, records including and since 1995) and the Protected Matters Search Tool. These lists were taken into the field with a sheet of photographs of these species for quick identification.

3.2 Fauna assessment

A database search for potential threatened flora was undertaken using Naturemaps (5 km radius, records including and since 1995) and the Protected Matters Search Tool (PMST). This database search resulted in no records of threatened fauna recorded within 5 kms of the site in the Biological Database of South Australia (BDBSA), however an examination of the location of fauna records showed no "Fauna site locations" in proximity, and only a small number of records in the Fauna Super Table (Public). The PMST also did not identify any nationally threatened fauna species with habitat known to occur within the area.

Fauna species observed during the flora survey were noted, however only common species were observed (i.e. kangaroo dung, digging possibly an echidna, Magpies) and few birds were heard singing.

Due to the database searches not indicating the likely presence of a threatened species listed under the EPBC Act or NP&W Act.

4. Assessment Outcomes

4.1 Vegetation Assessment

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

The site is located on the upper slopes of a gently rise with a northeast aspect. The site has shallow, gravelly sandy loam soil with red clayey subsoils, with ironstones the predominant rock and quartz rock also present.

Four vegetation associations were identified around the existing quarry, however following the field visit the applicant confirmed that the area covered by association B1 would not require clearance. The remaining vegetation associations are Broombush shrublands in various level of condition with a groundlayer dominated by Stalked Stinkweed (*Opercularia scabrida*). The highest elevation vegetation association (B3) is in good condition and considered to be naturally treeless, while the remaining two are likely degraded representatives of a gradation from Ridge-fruited Mallee (*Eucalyptus incrassata*) and Peppermint Box (*E. odorata*) mallee to Broombush Shrubland. None of the vegetation associations are considered representative of rare or threatened vegetation associations.

The proposed area of clearance is located at the north-eastern end of a block of remnant vegetation of approximately 54 hectares. The vegetation on the northeastern side of the quarry is degraded mallee with an understorey dominated by exotic grasses. The block of vegetation is surrounded by cleared cropping land and, while there are good quality remnants of native vegetation along watercourses and roadsides, it is one of the few large blocks of native vegetation in an area that has been heavily cleared. The nearest protected areas is Moody Tank Conservation Park, 5.5 kms to the south east.

There was shallow water present in the quarry at the time of the assessment, however this was not considered a wetland as it is artificial, only likely to have water for short periods following rain and does not contain any aquatic or riparian vegetation.

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

Vegetation Association	B2: Broombush (<i>Melaleuca uncinata</i>) very open shrubland over Stalked Stinkweed (<i>Opercularia scabra</i>) and annual grasses				
					
Representative photo of B2 (B2_IMG_4706, E587211, N6224351, 45 ^o)					
General description	<p>The vegetation is a low open shrubland with scattered Broombush, Dune Tea-tree (<i>Leptospermum coriaceum</i>) Terete-leaf Bush-pea (<i>Pultenaea teretifolia</i> var. <i>teretifolia</i>) over a diverse groundlayer dominated by Stalked Stinkweed, Spear-grasses (<i>Austrostipa</i> spp.) and exotic annual grasses. Although the vegetation is significantly impacted, with only sparse middle and upperstorey vegetation, the groundlayer vegetation was diverse, resulting in a total of 29 native flora species being observed. Although the adjacent vegetation association (B3) is considered naturally treeless, association B2 is not as there are mallees immediately adjacent (north) to the site and there are also scattered mallees in the adjacent cropping area at similar elevation. The vegetation association is entirely within the proposed clearance area. Common herbaceous and annual grass weeds were relatively low (approximately 40% cover), and there was a small amount of the high threat declared weed Western Bridal Creeper (<i>Asparagus asparagoides</i>).</p>				
Threatened species or community	No threatened flora or fauna were observed. The association is not considered representative of a threatened community. The association is not considered likely to provide habitat for threatened fauna.				
Landscape context score	1.11	Vegetation Condition Score	29.49	Conservation significance score	1.00
Unit biodiversity Score	32.74	Area (ha)	0.4872	Total biodiversity Score	15.95

Vegetation Association	B3: Broombush (<i>Melaleuca uncinata</i>) tall shrubland over Stalked Stinkweed (<i>Opercularia scabra</i>)
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Representative photo of B3 (B3_IMG_4724, E587093 N6224369 130°), note the area selected for the photo is more open than much of the association otherwise the photo would be only branches.

General description	<p>Broombush form a mono-specific overstorey over a highly diverse understorey dominated by Stalked Stinkweed, Broadleaf Raspwort (<i>Gonocarpus meizianus</i>) and Wallaby-grass (<i>Rytidosperma</i> spp.). The total perennial species diversity is equivalent to the benchmark vegetation association, and the range of life forms almost equivalent to the benchmark, with life forms including orchids, lilies, sedges, rushes and low shrubs. There is abundant natural regeneration of woody species, but a limited number of species. It should be noted that the assessment area wraps around the existing quarry and includes areas that are outside of the proposed clearance area, and the diversity of species tended to decline towards the edge of this association with B2. The overstorey and groundlayer is considered likely to be similar to intact strata. The vegetation association is considered naturally treeless, although two Narrow-leafed Red Mallee (<i>Eucalyptus leptophylla</i>) were found in the south-western corner of the assessment area.</p> <p>There is a low coverage of weeds, however a small number of Bridal Creeper occur.</p>				
Threatened species or community	<p>No threatened flora or fauna were observed. The association is not considered representative of a threatened community. The association is not considered likely to provide habitat for threatened fauna.</p>				
Landscape context score	1.12*	Vegetation Condition Score	68.63	Conservation significance score	1.00
Unit biodiversity Score	76.86	Area (ha)	0.4035**	Total biodiversity Score	31.01

*This value is different than for associations calculated using the small bushland assessment scoresheet despite all entered values being identical.

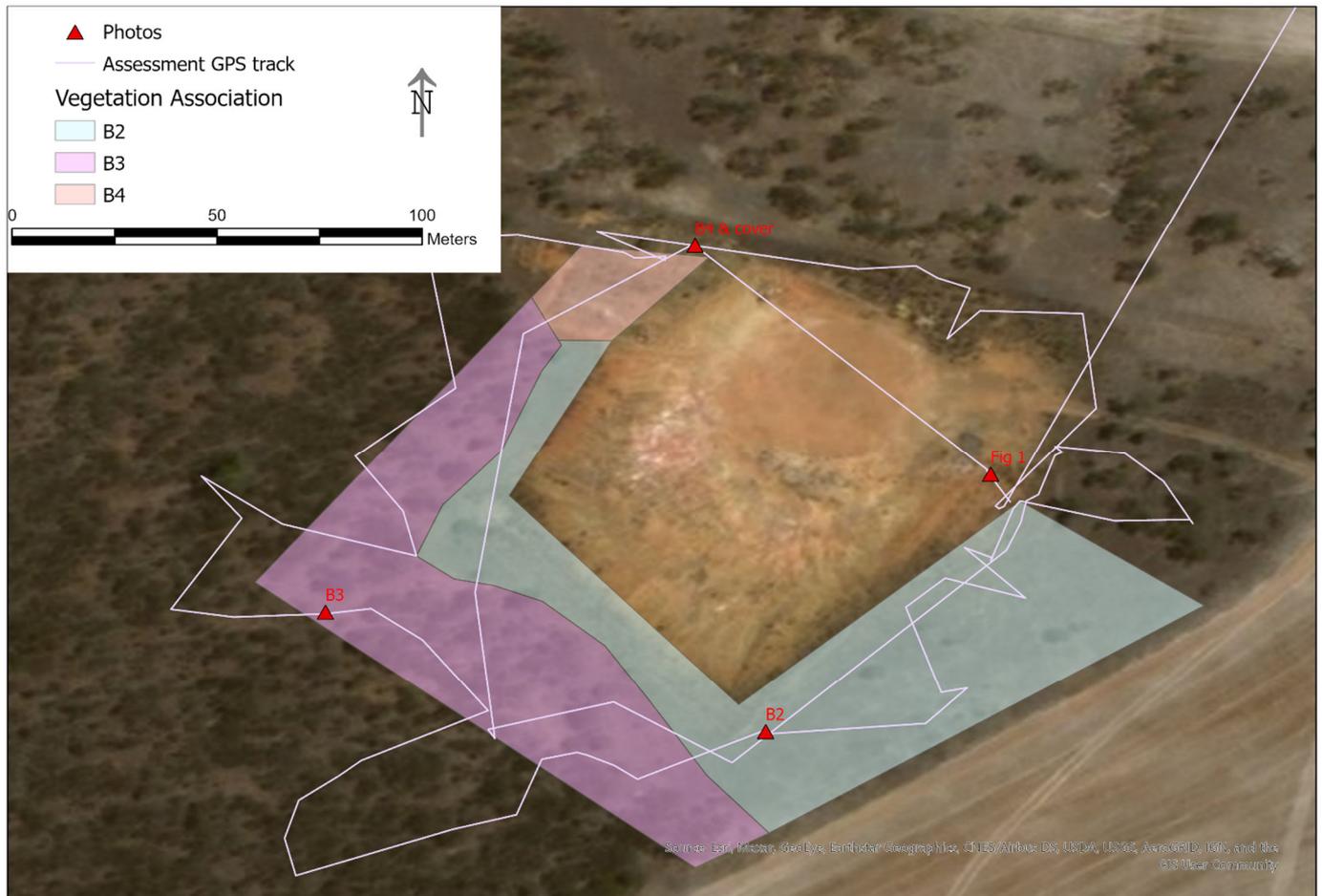
**This area is calculated from mapping supplied by the applicant, the actual area of the association extends to the south and west of the area identified on the map.

Vegetation Association	B4: <i>Melaleuca uncinata</i> and <i>Pultenaea teretifolia</i> var. <i>teretifolia</i> low open shrubland with emergent <i>Eucalyptus odorata</i>
	
Representative photo of B4 (B4_IMG_4679 E587091 N6224442 D210 ⁰)	
General description	<p>The vegetation association is dominated by scattered low shrubs, including young Broombush, Terete-leaf Bush-pea, Spiny Wattle (<i>Acacia spinescens</i>) and Eyre Peninsula Bitter-pea (<i>Daviesia asperula</i> ssp. <i>obliqua</i>). The groundlayer is dominated by Stalked Stinkweed with a moderately diverse range of other species and a low coverage of weeds, but Bridal Creeper is present. There is low regeneration of a few species. The single Peppermint Box is relatively young and in poor health.</p> <p>This vegetation association appears to have been historically impacted by operation of the quarry, with a disturbed ground surface including bare areas, and likely deposits of excavated material.</p> <p>This vegetation association extends beyond the area of impact, wrapping around the northern side of the quarry to the fenceline in the north and to an area of Ridge-fruit Mallee to the east. The applicant has indicated this area will not be impacted by the operations.</p>

Threatened species or community	No threatened flora or fauna were observed. The association is not considered representative of a threatened community. The association is not considered likely to provide habitat for threatened fauna.				
Landscape context score	1.11	Vegetation Condition Score	30.94	Conservation significance score	1.00
Unit biodiversity Score	34.34	Area (ha)	0.0507	Total biodiversity Score	1.74

Site map showing areas of proposed impact

A map of the site showing vegetation associations within the area of impact, the GPS field track log of the assessment survey, and the location of photos presented in this report is provided in Map 4.



Map 4 showing the location of the vegetation associations to be impacted.

Photo log

Photographs of the associations and their location details are provided in this report, Map 4 and the attached shapefile.

4.2 Threatened Species assessment

As noted previously, the database search did not result in the identification of any threatened fauna being recorded in the BDBSA or to have habitat known to occur in the area according to the PMST. Furthermore, no threatened fauna were observed and the site was considered to have low level of habitat features beyond the shrub vegetation itself.

The flora search identified a small number of threatened species recorded in the BDBSA within 5 kms of the site (Appendix 2). These species were specifically searched for but not found within the site, however several nationally endangered Fat-leaf Wattle (*Acacia pinguifolia*) were found growing along the verge of Brooker Road and around the access way to the property. This was discussed with the applicant who confirmed that there would be no need for road widening or expansion of the site access point. It is therefore concluded that the proposal is not likely to impact threatened species.

4.3 Presence of Substantially Intact Vegetation

If the vegetation is considered to represent a substantially intact stratum, the NVC cannot approve clearance, unless for the purpose of harvesting native vegetation (section 27(3)).

Provide information on whether the native vegetation constitutes a continuous intact stratum.

Vegetation associations B2 and B4 are not considered likely to contain intact strata of vegetation as they appear to have been historically cleared and disturbed and the vegetation present appears to be in a state of re-growth. However, the Broombush tall shrublayer in association B3 is meets all the criteria for an intact stratum of vegetation:

- The plants within the stratum are growing at original (pre-European) density for that community
- It contains a diversity of species similar to original (pre-European) vegetation of that community
- It is part of a contiguous area of vegetation consisting of the stratum, including on adjacent properties, that is at least one hectare in area, and
- Does not contain introduced perennial species occupying greater than 20% cover within that stratum.

Provide information on whether the native vegetation has been subject to degradation within the past 20 years.

The only type of vegetation degradation likely to have occurred in vegetation association B3 in the past 20 years is grazing by sheep, however due to the size of the Broombush plants they are too tall to be grazed. There is regeneration of this species, and the site does not appear to have been grazed in recent years.

Provide a key finding on whether any or all of the area of impact could be considered as substantially intact.

It is concluded that the Broombush shrublayer in vegetation association in vegetation association B3 could be considered a substantially intact stratum of vegetation.

As discussed below (Section 4.5), whilst this site includes an intact stratum of vegetation and the alternative site does not, this site was preferentially selected because clearance at would have the lowest native vegetation impact because approximately half the site is degraded and the site is less likely to provide habitat for threatened fauna (see below).

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

If the clearance is seriously at variance with one or more of the principles, the NVC cannot approve clearance, however, the Act provides the NVC with a degree of discretion in certain situations

Principle of Clearance	Considerations			
Principle 1a - it comprises a high level of diversity of plant species	<u>Relevant information</u>			
	Vegetation association	Native species diversity (minus herbaceous annuals)	Exotic species diversity	Bushland plant diversity score
	B2	24	8	27
	B3	31	7	30
	B4	23	6	24

	<p><u>Assessment against the principles</u> <u>Seriously at Variance</u> - All associations</p>												
	<p><u>Moderating factors that may be considered by the NVC</u> The area to be cleared comprises 2 % of the total block of native vegetation of which it is a part.</p>												
Principle 1b - significance as a habitat for wildlife	<p><u>Relevant information</u> The vegetation associations are not considered likely to provide habitat for threatened fauna.</p>												
	<table border="1"> <thead> <tr> <th>Vegetation association</th> <th>Threatened Fauna Score</th> <th>Unit biodiversity Score</th> </tr> </thead> <tbody> <tr> <td>B2</td> <td>0</td> <td>32.74</td> </tr> <tr> <td>B3</td> <td>0</td> <td>76.86</td> </tr> <tr> <td>B4</td> <td>0</td> <td>34.34</td> </tr> </tbody> </table>	Vegetation association	Threatened Fauna Score	Unit biodiversity Score	B2	0	32.74	B3	0	76.86	B4	0	34.34
	Vegetation association	Threatened Fauna Score	Unit biodiversity Score										
	B2	0	32.74										
B3	0	76.86											
B4	0	34.34											
<p><u>Assessment against the principles</u> <u>Seriously at Variance</u> - Vegetation association B3</p>													
<p><u>At Variance –</u> - none</p>													
	<p><u>Moderating factors that may be considered by the NVC</u> Although vegetation association B3 has a high unit biodiversity score, the threatened species assessment has found that no threatened fauna are likely to occur.</p>												
Principle 1c - plants of a rare, vulnerable or endangered species	<p><u>Relevant information</u> No threatened flora were found on the site. As the survey was undertaken in early spring and several (non-threatened) orchids were found flowering, it is not considered likely that any threatened species were undetected.</p>												
	<p>Threatened Flora Score(s) – all associations 0</p>												
	<p><u>Assessment against the principles</u> <u>Seriously at Variance</u> - none</p>												
	<p><u>At Variance –</u> - none</p>												
	<p><u>Moderating factors that may be considered by the NVC - NA</u></p>												
Principle 1d - the vegetation comprises the whole or part of a plant community that is Rare, Vulnerable or endangered:	<p><u>Relevant information</u> No threatened communities under the EPBC Act or threatened ecosystems under the DEW Provisional list of threatened ecosystems are present</p>												
	<p>Threatened Community Score – All associations 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 - NA</u></p>												
Principle 1e - it is significant as a remnant of vegetation in an area which has been	<p><u>Relevant information</u> IBRA Association remnancy: 20% (Yalunda) IBRA subregion remnancy: 29% (Eyre Hills)</p>												
	<p>Vegetation association B3 is in good health and under the current management regime is likely to remain stable in the future. Vegetation associations B2 and B4 are moderately healthy but</p>												

extensively cleared.	likely to improve over time under current management, although they are subject to edge effects and may not recover to the same condition as B3. It is possible that grazing could increase in the vegetation if the adjacent cropping areas are grazed and if so the vegetation health of all associations would decline.
	Total Biodiversity Score – 48.7
	<u>Assessment against the principles</u> At Variance
	<u>Moderating factors that may be considered by the NVC - NA</u>
Principle 1f - it is growing in, or in association with, a wetland environment.	<u>Relevant information</u> Whilst the quarry holds some water it is not considered to be a wetland because there is no wetland vegetation, it is not a natural landform and is not likely to hold water for long enough to alter the soil characteristics.
	<u>Assessment against the principles</u> <u>Seriously at Variance</u> - none
	<u>At Variance –</u> - none
	<u>Moderating factors that may be considered by the NVC - None</u>
Principle 1g - it contributes significantly to the amenity of the area in which it is growing or is situated.	<u>Relevant information</u> The vegetation is some distance from the road, and not located in an area frequented by the public other than local residents. It has no known cultural or historical values and clearance of the vegetation would be unlikely to effect the landscape character.
	N/A
	<u>Moderating factors that may be considered by the NVC - NA</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.

4.5 Address the Mitigation Hierarchy

The Native Vegetation Council will consider if the applicant has avoided and minimized the clearance of native vegetation as much as practically possible.

a) Avoidance

The Council have undertaken an extensive examination of potential sites within their Council area. The Council target known quarries as the costs of undertaking the geological examination to identify a new site are prohibitive for the Council. A key feature for a suitable quarry site is that suitable rock is located near to the land surface, these sites therefore tend to be unarable and consequently are not cleared of native vegetation. Even expanding quarries into adjacent cropped land is not considered viable as expensive drilling is still required in areas that are unlikely to yield sufficient quantities of material and Council is generally unable to obtain landholder agreements for impacting arable areas.

Map 1 shows the location of sites that the Council has accessed over decades and formed the basis of the investigation for sites for accessing materials. Many of the pits are now exhausted or require native vegetation clearance to access the required material. Of these sites, only Jolly's Pit and Campbells Pit were considered suitable, having sufficient material of the right type and within close enough proximity to the site where it is to be used and therefore cartage costs are not prohibitive. Both sites require clearance of native vegetation, with Campbells Pit recommended as the preferred borrow pit for expansion by the authors to minimize the impacts of clearance (see below).

From the Council's assessment, the only options to avoid clearance of native vegetation are:

- a) Not re-surface the road, or
- b) Import road material.

Neither of these options are considered to meet the Council's obligation to its ratepayers as the Council is required to maintain its roads in a suitable condition and to spend its constituents money wisely. Therefore, the Council cannot avoid the need to undertake the clearance and has worked through the measures outlined below to minimize the impacts of the clearance.

b) Minimization

Following the process (above and in Section 2.2) that resulted in the identification of two sites, Jolly's Pit (A) and Campbell's Pit (B) (shown on Map 3) an assessment was made of both sites. Campbell's Pit was selected as the preferred site because the impact of clearance was minimal compared to Jolly's Pit which has:

- Higher diversity and better condition across the entire area of impact, and
- Better quality habitat for threatened fauna – although a fauna survey was not conducted, the database search identified a number of potential species, the site is located close to large conservation areas and contains a range of habitat features; furthermore many birds were seen and heard during the vegetation assessment.

At the Campbell's Pit, approximately half the area impacted is in an already degraded condition. The scoresheets and database search results for the Jolly's Pit site can be supplied on request to demonstrate application of the Mitigation Hierarchy.

The impacts of clearance at Campbell's Pit will also be partly compensated for by making the site available for harvesting of Broombush. This will replace the harvesting of Broombush elsewhere and ensure the material on the site is not wasted.

c) Rehabilitation or restoration

The DC of Tumby Bay will implement the following measures to rehabilitate and restore the site:

- Prior to quarrying
 - scrape off and stockpile surface soil and plant material,
- On completion of quarrying (likely by March 2022):
 - Smooth over the quarried surface,
 - Spread the stockpiled surface material back over the site.

The stockpiled material will contain seeds, tubers and roots of the cleared vegetation and this will be allowed to naturally regenerate.

The SEB calculations have been made using the rehabilitation reduction score 0.5. If these rehabilitation measures are found to be insufficient for this level of reduction the SEB will need to be re-calculated using the supplied scoresheets.

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

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

The impacts on native vegetation that cannot be avoided or further minimized will be offset by achieving a significant environmental benefit through a payment to the Native Vegetation Fund, as detailed in Section 6.

4.6 Risk Assessment

Determine the level of risk associated with the application

Total clearance	No. of trees	NA
	Area (ha)	0.9
	Total biodiversity Score	
Seriously at variance with principle 1(b), 1(c) or 1 (d)		1(b)
Risk assessment outcome		Level 4

The application is assigned a Level 4 risk because association 3(b) has a UBS>50, however as presented in Section 4.2, it is not considered likely that the site provides habitat for threatened fauna and therefore the application may be downgraded to Level 3.

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
B	2	27	1	0	0	32.74	0.4872	15.95	1		0.5	8.37	\$4638.89	255.14
B	3	30	1	0	0	76.86	0.4035	31.01	1		0.5	16.28	\$9020.2	496.11
B	4	24	1	0	0	34.34	0.0507	1.74	1		0.5	0.99	\$506.37	27.85
						Total	0.9414	48.7				25.64	\$14,165.46	\$779.10

Totals summary table

	Total Biodiversity score	Total SEB points required	SEB Payment	Admin Fee	Total Payment
Application	48.7	25.64	\$14,165.46	\$779.10	\$ 14,944.56

Economies of Scale Factor	0.5
Rainfall (mm)	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. Provide the SEB Credit Ref. No. _____
- Apply to have SEB Credit assigned from another person or body. The [application form](#) needs to be submitted with this Data Report.
- Apply to have an SEB to be delivered by a Third Party. The [application form](#) needs to be submitted with this Data Report.

✓ **Pay into the Native Vegetation Fund.**

PAYMENT SEB

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

The proponent will pay the calculated fee of \$14,944.56 as a single payment.

7. Appendices

Appendix 1. Bushland Assessment Scoresheets associated with the proposed clearance

Submitted in Excel format

Appendix 2. Flora Species List

Association B2 Flora species list

Plant Species Recorded (Native and Introduced)		Threatened Sp.		Introduced Species
Species	Common Name	EPBC	SA	
<i>Acacia spinescens</i>	Spiny Wattle			
<i>Astroloma humifusum</i>	Cranberry Heath			
<i>Austrostipa scabra</i> group	Falcate-awn Spear-grass			
<i>Austrostipa</i> sp.	Spear-grass			
<i>Blennospora drummondii</i>	Dwarf Button-flower			
<i>Chamaescilla corymbosa</i> var. <i>corymbosa</i>	Blue Squill			
<i>Crassula</i> sp.	Crassula/Stonecrop			
<i>Drosera macrantha</i> ssp. <i>planchonii</i>	Climbing Sundew			
<i>Enchylaena tomentosa</i> var.	Ruby Saltbush			
<i>Gonocarpus mezianus</i>	Broad-leaf Raspwort			
<i>Goodenia robusta</i>	Woolly Goodenia			
<i>Hakea cycloptera</i>	Elm-seed Hakea			
<i>Hibbertia</i> sp.	Guinea-flower			
<i>Hybanthus floribundus</i> ssp. <i>floribundus</i>	Shrub Violet			
<i>Hysterobaeckea behrii</i>	Silver Broombush			
<i>Lepidosperma</i> sp.	Sword-sedge/Rapier-sedge			
<i>Leptospermum coriaceum</i>	Dune Tea-tree			
<i>Lomandra collina</i>	Sand Mat-rush			
<i>Lomandra micrantha</i> ssp.	Small-flower Mat-rush			
<i>Melaleuca uncinata</i>	Broombush			
<i>Neurachne alopecuroidea</i>	Fox-tail Mulga-grass			
<i>Opercularia scabrada</i>	Stalked Stinkweed			
<i>Pheladenia deformis</i>	Bluebeard Orchid			
<i>Pultenaea teretifolia</i> var. <i>teretifolia</i>	Terete-leaf Bush-pea			
<i>Rinzia orientalis</i>	Desert Heath-myrtle			
<i>Rytidosperma</i> sp.	Wallaby-grass			
<i>Schoenus nanus</i>	Little Bog-rush			
<i>Stackhousia</i> sp.	Candles			
<i>Vittadinia gracilis</i>	Woolly New Holland Daisy			
<i>Arctotheca calendula</i>	Cape Weed			*
<i>Asparagus asparagoides</i> f.	Bridal Creeper			*
<i>Conyza</i> sp.	Fleabane			*
<i>Ehrharta longiflora</i>	Annual Veldt Grass			*
<i>Erodium botrys</i>	Long Heron's-bill			*
<i>Gramineae</i> sp.	Grass Family			*
<i>Hypochaeris</i> sp.	Cat's Ear			*

<i>Romulea sp.</i>	Onion-grass			*
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Association B3 Flora species list

Plant Species Recorded (Native and Introduced)		Listed Species			Natives only		Introduced Species
Species	Common Name	EPB C	SA	Not in quadrat	Regen	Annual Herbs Spring survey	
<i>Acacia spinescens</i>	Spiny Wattle				Yes		
<i>Acrotriche affinis</i>	Ridged Ground-berry						
<i>Astroloma humifusum</i>	Cranberry Heath						
<i>Austrostipa scabra ssp. falcata</i>	Slender Spear-grass						
<i>Austrostipa sp.</i>	Spear-grass						
<i>Blennospora drummondii</i>	Dwarf Button-flower					Yes	
<i>Caladenia capillata</i>	Wispy Spider-orchid					Yes	
<i>Caladenia septuosa</i>	Eyre Peninsula Spider-orchid					Yes	
<i>Calytrix tetragona</i>	Common Fringe-myrtle						
<i>Chamaescilla corymbosa var. corymbosa</i>	Blue Squill					Yes	
<i>Comesperma scoparium</i>	Broom Milkwort						
<i>Diuris pardina</i>	Spotted Donkey-orchid				Yes	Yes	
<i>Drosera macrantha ssp. planchonii</i>	Climbing Sundew					Yes	
<i>Eucalyptus leptophylla</i>	Narrow-leaf Red Mallee						
<i>Gonocarpus mezianus</i>	Broad-leaf Raspwort						
<i>Goodenia robusta</i>	Woolly Goodenia						
<i>Hibbertia sp.</i>	Guinea-flower						
<i>Hyalosperma demissum</i>	Dwarf Sunray					Yes	
<i>Hybanthus floribundus ssp. floribundus</i>	Shrub Violet						
<i>Hysterobaeckea behrii</i>	Silver Broombush						
<i>Lepidosperma viscidum</i>	Sticky Sword-sedge						
<i>Lomandra collina</i>	Sand Mat-rush						
<i>Melaleuca uncinata</i>	Broombush				Yes		
<i>Neurachne alopecuroidea</i>	Fox-tail Mulga-grass						
<i>Olearia sp.</i>	Daisy-bush						
<i>Opercularia scabrida</i>	Stalked Stinkweed						
<i>Phebalium bullatum</i>	Silvery Phebalium						
<i>Pheladenia deformis</i>	Bluebeard Orchid					Yes	
<i>Pimelea stricta</i>	Erect Riceflower						
<i>Prostanthera serpyllifolia ssp. serpyllifolia</i>	Thyme Mintbush						
<i>Pterostylis sanguinea</i>	Blood Greenhood					Yes	
<i>Pultenaea teretifolia var. teretifolia</i>	Terete-leaf Bush-pea						
<i>Rinzia orientalis</i>	Desert Heath-myrtle						
<i>Rytidosperma sp.</i>	Wallaby-grass						
<i>Schoenus nanus</i>	Little Bog-rush						
<i>Stenanthemum leucophractum</i>	White Cryptandra						
<i>Thelymitra sp.</i>	Sun-orchid						
<i>Thryptomene micrantha</i>	Ribbed Thryptomene						
<i>Thysanotus patersonii</i>	Twining Fringe-lily					Yes	
<i>Vittadinia gracilis</i>	Woolly New Holland Daisy						
<i>Wurmbea dioica ssp.</i>	Early Nancy					Yes	
<i>Arctotheca calendula</i>	Cape Weed						*

<i>Asparagus asparagoides f. asparagoides</i>	Bridal Creeper					*
<i>Cerastium sp.</i>	Chickweed					*
<i>Ehrharta longiflora</i>	Annual Veldt Grass					*
<i>Gramineae sp.</i>	Grass Family					*
<i>Hypochaeris sp.</i>	Cat's Ear					*
<i>Solanum nigrum</i>	Black Nightshade					*

Association B4 Flora species list

Plant Species Recorded (Native and Introduced)		Threatened Sp.		Introduced Species
Species	Common Name	EPBC	SA	
<i>Acacia nematophylla</i>	Coast Wallowa			
<i>Acacia spinescens</i>	Spiny Wattle			
<i>Astroloma humifusum</i>	Cranberry Heath			
<i>Austrostipa scabra ssp. falcata</i>	Slender Spear-grass			
<i>Austrostipa sp.</i>	Spear-grass			
<i>Clematis microphylla</i>	Old Man's Beard			
<i>Comesperma scoparium</i>	Broom Milkwort			
<i>Daviesia asperula ssp. obliqua</i>	Eyre Peninsula Bitter-pea			
<i>Drosera macrantha ssp. planchonii</i>	Climbing Sundew			
<i>Eucalyptus odorata</i>	Peppermint Box			
<i>Gonocarpus mezianus</i>	Broad-leaf Raspwort			
<i>Hibbertia devitata</i>	Smooth Guinea-flower			
<i>Hysterobaeckea behrii</i>	Silver Broombush			
<i>Lepidosperma viscidum</i>	Sticky Sword-sedge			
<i>Lomandra collina</i>	Sand Mat-rush			
<i>Melaleuca uncinata</i>	Broombush			
<i>Neurachne alopecuroidea</i>	Fox-tail Mulga-grass			
<i>Opercularia scabrata</i>	Stalked Stinkweed			
<i>Oxalis perennans</i>	Native Sorrel			
<i>Pultenaea teretifolia var. teretifolia</i>	Terete-leaf Bush-pea			
<i>Rytidosperma sp.</i>	Wallaby-grass			
<i>Schoenus nanus</i>	Little Bog-rush			
<i>Stenanthemum leucophractum</i>	White Cryptandra			
<i>Stenathera conostephioides</i>	Flame Heath			
<i>Vittadinia gracilis</i>	Woolly New Holland Daisy			
<i>Arctotheca calendula</i>	Cape Weed			*
<i>Asparagus asparagoides f. asparagoides</i>	Bridal Creeper			*
<i>Ehrharta longiflora</i>	Annual Veldt Grass			*
<i>Gramineae sp.</i>	Grass Family			*
<i>Hypochaeris sp.</i>	Cat's Ear			*
<i>Romulea sp.</i>	Onion-grass			*

Threatened flora recorded within 5 km of the site

Species	Common Name	National Rating	State Rating	Number Of Records	Date Of Last Record	Source*
<i>Acacia imbricata</i>	Feathery Wattle		R	12	24-Oct-2000	1
<i>Daviesia pectinata</i>	Zig-zag Bitter-pea		R	1	12-Oct-1995	1
<i>Levenhookia stipitata</i>	Common Stylewort		R	1	12-Oct-1995	1
<i>Acacia pinguifolia</i>	Fat-leaf Wattle	EN	E	19	10-Jan-2002	1, 2
<i>Haloragis eyreana</i>	Prickly Raspwort	EN	E	7	10-Dec-2003	1, 2

*1 = BDBSA, 2 = PMST