



**Native Vegetation Clearance Proposal:**  
**Bungama Solar**

# Native Vegetation Clearance Proposal: Bungama Solar

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Version 6 - Final

Prepared by EBS Ecology for Bungama Solar 1 Pty Ltd.

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Cover photograph: small patch of *Alectryon oleifolius* (Bullock Bush) over in the Bungama Solar Project area.

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## GLOSSARY AND ABBREVIATION OF TERMS

BAM	Bushland Assessment Method
BDBSA	Biological Database of South Australia (maintained by DEW)
BS	Bungama Solar
DEW	Department of Environment and Water (formerly Department of Environment, Water and Natural Resources (DEWNR))
EBS	EBS Ecology
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
IBRA	Interim Biogeographical Regionalisation of Australia
NatureMaps	Initiative of DEW that provides a common access point to maps and geographic information about South Australia's natural resources in an interactive online mapping format
NPW Act	<i>National Parks and Wildlife Act 1972</i>
NV Act	<i>Native Vegetation Act 1991</i>
NVC	Native Vegetation Council
Project	The proposed development of a solar farm at Bungama
Project area	The land where Bungama Solar is proposed to be constructed
SEB	Significant Environmental Benefit (under the <i>Native Vegetation Act 1991</i> )
spp.	Species (plural)
ssp.	Subspecies
STAM	Rangelands Assessment Method
TEC	Threatened Ecological Community

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# 1 APPLICATION INFORMATION

The native vegetation clearance application information for Bungama Solar (BS) is provided in Table 1.

**Table 1. Native vegetation clearance application information for the proposed Bungama Solar.**

Applicant:	Bungama Solar 1 Pty Ltd		
Key contact:	<div> <div></div> <div>Phone: <div></div></div> <div>Email: <div></div>@amp.energy</div> </div>		
Landowner:	<div> <div></div> <div></div> <div></div> <div>Tiller AG PTY LTD</div> </div>		
Site address:	Lot 52 Augusta Highway, Warnertown SA 5540		
Local Government Area:	Port Pirie	Hundreds:	Pirie (241000), Napperby (240800)
Certificate of title:	- CT 5949/272 - CT 5954/187 - CT 6217/5 - CT 6037/29	Section/Allotment:	- A4 - A52 - A558 - A20
<b>Summary of application</b>			
Proposed clearance area:	Project Area: This application is for clearance of up to 22.01 ha of native vegetation and 2 trees within Bungama Solar.  Updated Project Area (easement, Substation, Powerline and Battery - Figure 2): 5.67 ha of Native vegetation		
Applicable regulation and purpose of the clearance:	Regulation 16—Clearance for other activities Clearance required for the development of a solar farm.		
Level of risk:	4		
Proposed SEB offset:	The proponent intends to provide an offset benefit by; Payment into the Native Vegetation Fund		

## 2 BACKGROUND

### 2.1 Purpose of the proposal

EBS Ecology (EBS) was engaged by AMP Energy (previously EPS Energy) to conduct a native vegetation clearance field assessment for the proposed development of a solar farm at Bungama, South Australia. AMP Energy provides relevant expertise for the planning and development of solar and wind projects in Australia.

In order to fulfil obligations under the *Native Vegetation Act 1991* (NV Act), this report summarises the findings of the native vegetation clearance field assessment, including the location and score of bushland and scattered trees existing in the Project area, and indications of the significant environmental benefit (SEB) offset requirements in the event of clearance approval being granted.

### 2.2 Project area

The Project area is located near Bungama, which is approximately 5 km east of Port Pirie and 200 km north of Adelaide, South Australia. The proposed Project area is located east and north-east of the existing substation, and consists of approximately 500 ha across four land parcels with multiple land owners (Table 1). A general location map that outlines the extent of the Project area is provided in Figure 1. An easement linking the Project area with the exiting substation has also been proposed (Figure 2). The current and surrounding land use of the Project area is agriculture.

#### 2.2.1 Administrative boundaries

The Project area is located in the Northern and Yorke Landscape Region and Lower and Mid North Landscape District. The Project area is also located within the County of Victoria and the Pirie (to the west) and Napperby (to the east) Hundreds.

### 2.3 IBRA

The Interim Biogeographical Regionalisation of Australia (IBRA) identifies geographically distinct bioregions based on common climate, geology, landform, native vegetation and species information. The bioregions are further refined into subregions and environmental associations (DEWNR 2011). The Project area is located within the Eyre Yorke Block IBRA Bioregion, the St Vincent IBRA Subregion and the Nurom (to the southwest) and Glendella (to the northeast) IBRA Environmental Associations.

Native vegetation remnancy figures for IBRA subregions are useful for setting regional landscape targets. Approximately 8% (87,402 ha) of the St Vincent IBRA Subregion is mapped as remnant vegetation, of which less than 5% (4,732 ha) is formally conserved within National Parks and Wildlife reserves, and private Heritage Agreements under the NV Act. A full summary is provided below in Table 2.

**Table 2. IBRA bioregion, subregion, and environmental association environmental landscape summary.**

<b>Eyre Yorke Block IBRA Bioregion</b>	
Archaeal basement rocks and Proterozoic sandstones overlain by undulating to occasionally hilly calcarenite and calcrete plains and areas of Aeolian quartz sands, with Mallee Woodlands, Shrublands and Heaths on calcareous earths, duplex soils and calcareous to shallow sands, now largely cleared for agriculture.	
<b>St Vincent IBRA Subregion</b>	
Most of this region consists of with calcrete development and shallow reddish earths. The plain is mainly dune free but isolated areas are overlain by low indistinct sand dunes. Near the Mt Lofty Ranges, the plains have a definite westerly gradient and merge eastwards with the alluvial fans from the Mt Lofty Ranges. Moderately deep Red Mallee / Yorrell ( <i>Eucalyptus socialis</i> , <i>E. gracilis</i> ) association occurs throughout the region with some Woodland of <i>E. porosa</i> on the plains or <i>E. odorata</i> on the hills and footslopes. The subregion has been extensively cleared and sown to crops or exotic pastures so little of the natural vegetation remains. What does remain exists on road verges and a few isolated blocks.	
Remnant vegetation	Approximately 8% (87,402 ha) of the subregion is mapped as remnant native vegetation, of which 5% (4,732 ha) is formally conserved.
Landform	Alluvial and littoral plains with NW-SE longitudinal dunes mainly stabilized in isolated areas. Near the Mt Lofty Ranges, the plains have a detritic westerly gradient and merge eastwards with the alluvial fans of the ranges.
Geology	Calcrete development; some variably oriented dunes in north west of unit beyond Port Augusta. Calcareous loams. Clay rich soils, both plastic & cracking varieties.
Soil	Cracking clays, brown calcareous earths, highly calcareous loamy earths, plastic saline clay soils, hard setting loamy soils with red clayey subsoils.
Vegetation	Mixed Chenopod, Samphire or Forblands.
Conservation significance	125 species of threatened fauna, 103 species of threatened flora. 5 wetlands of national significance.
<b>Nurom IBRA Environmental Association</b>	
Remnant vegetation	Approximately 5% (1,740 ha) of the association is mapped as remnant native vegetation, of which 0% (0 ha) is formally conserved.
Landform	Gently undulating calcrete plain with extensive sand sheets or longitudinal dunes.
Geology	Sand and calcrete.
Soil	Crusty red duplex soils and brown calcareous sands.
Vegetation	Open scrub of beaked Red Mallee and Yorrell and Chenopod Shrubland of Saltbush.
Conservation significance	2 species of threatened fauna, 1 species of threatened flora. 1 wetlands of national significance.
<b>Glendella IBRA Environmental Association</b>	
Remnant vegetation	Approximately 28% (12,641 ha) of the association is mapped as remnant native vegetation, of which 13% (1,702 ha) is formally conserved.
Landform	Coalescing alluvial fans, extending from low hills onto a narrow sandy plain with tidal flats on the coastal margin.
Geology	Gravelly alluvium, alluvium, sand and quartzite.
Soil	Hard pedal red duplex soils, red calcareous earths, red friable loams and black non-cracking plastic clays.



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Vegetation	Open scrub of Beaked Red Mallee and Yorrell, Chenopod Shrubland of Saltbush and Bluebush, Chenopod Shrubland of Samphire and Low Woodland of Mangroves.
Conservation significance	28 species of threatened fauna, 25 species of threatened flora. 1 wetlands of national significance.

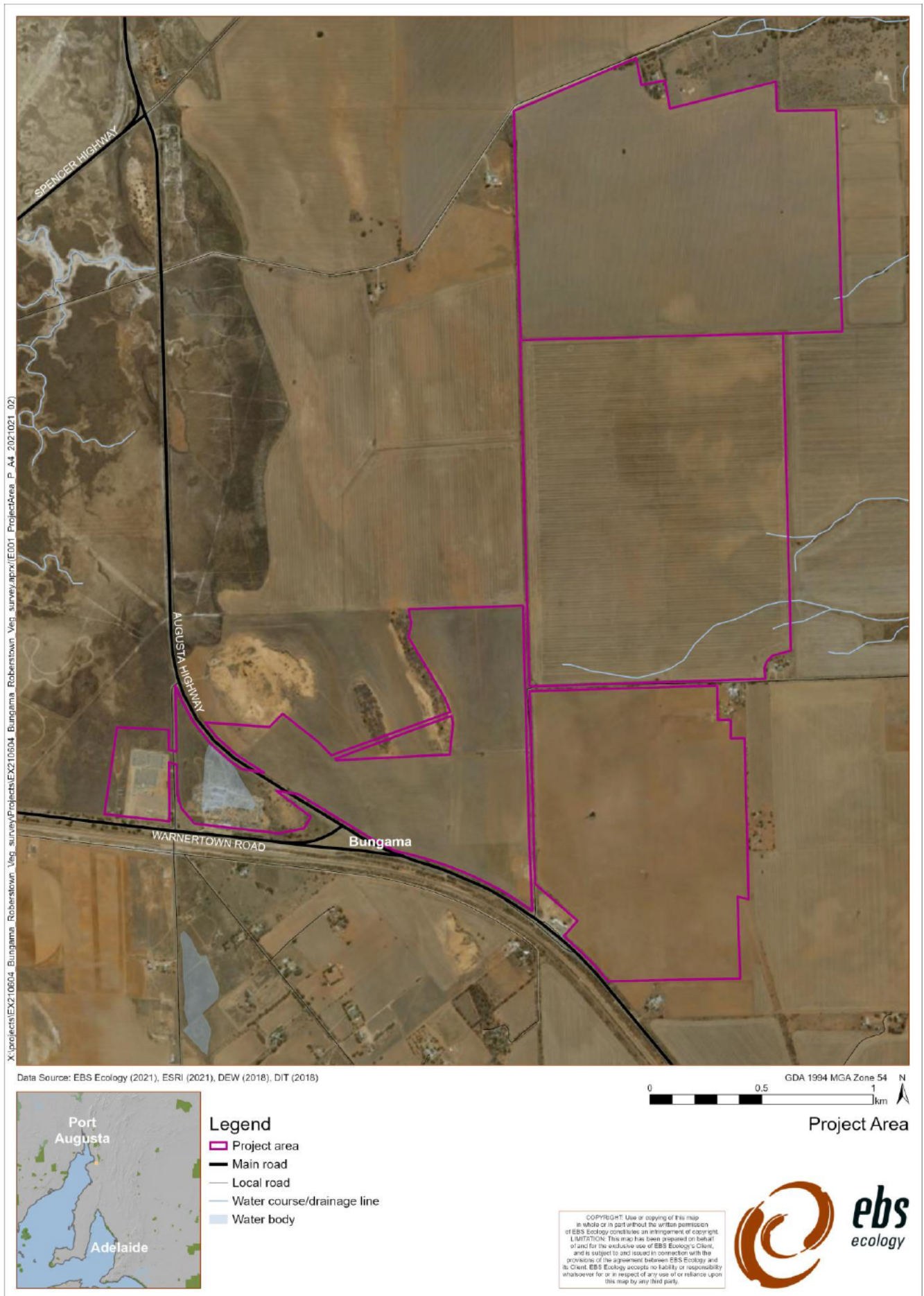


Figure 1. The Project Area.

## 3 METHODS

### 3.1 Desktop assessment

An ecological desktop assessment was completed prior to the field assessment and has been included as an attachment to this report (Attachment 1) (EBS Ecology 2018).

### 3.2 Flora assessment

Threatened ecological communities (TECs) and threatened flora that may occur within the Project area were identified and assessed in the ecological desktop assessment (EBS Ecology 2018).

The field flora assessment was conducted on 8 May 2018 by an EBS consultant (Ilona Weir) and performed in accordance with the Bushland Assessment Method (BAM) (NVC 2017a) and Scattered Tree Assessment Method (STAM) (NVC 2017b). A second field survey was undertaken on the 11<sup>th</sup> of August 2021 by Jesse Carpenter and Paul Drummond, who are accredited under the Native Vegetation Council (NVC). The flora assessment was performed in accordance with the Bushland Assessment Method (BAM) (NVC 2020) Scattered Tree Assessment Method (STAM) (NVC 2020), both devised by the NVC. The BAM for small sites was used to assess narrow and linear areas of vegetation, while the STAM was used to assess individual scattered trees surrounded by introduced pasture or crops.

Two sections of the proposed easement comprising of the roadside vegetation either side of Pirie Blocks Road were assessed using the BAM for small sites; however, access to the entire easement was restricted and the remaining areas require assessment.

The Project area was also extensively searched for the presence of any TECs.

#### 3.2.1 Bushland Assessment Method

The Native Vegetation Council (NVC) Bushland Assessment Method (BAM) is derived from the Nature Conservation Society of South Australia's Bushland Condition Monitoring methodology (Croft *et al.* 2007, 2008a, 2008b, 2009; Milne and Croft 2012; Milne and McCallum 2012). The method is suitable for assessing vegetation located within the agricultural region of South Australia (SA), including within the Eyre Peninsula (EP) Land Management Region (LMR). The BAM is used to assess areas of native vegetation requiring clearance and calculate the Significant Environmental Benefit (SEB) requirements.

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

The Unit Biodiversity Scores (UBS) were calculated from direct observations of flora and direct and historical observations of fauna species of conservation significance. All fauna identified as known to occur in the PMST, and fauna with NatureMaps / AoLA records since 1995 and with a spatial reliability of less than 1 km, within 5 km of the Project Area were included in the BAM scoresheets. However, Marine species were omitted from the scoresheets given the Project Area is terrestrial.

The desktop assessment provides a likelihood of occurrence for each species based on habitat predicted to occur and found to occur on site. Therefore, any species determined as unlikely to occur that is entered into the BAM scoresheets may be removed by the Native Vegetation Branch, if the finding is supported.

### **3.2.2 Scattered Tree Assessment Method**

The Scattered Tree Assessment Method is derived from the *Scattered Tree Clearance Assessment in South Australia: Streamlining, Guidelines for Assessment and Rural Industry Extension* report (Cutten and Hodder, 2002). The STAM is suitable for assessing scattered trees in the following instances:

- Individual scattered trees (i.e., canopy does not overlap). The spatial distribution of trees may vary from approaching what would be considered their original distribution (pre-European) through to single isolated trees in the middle of a paddock; or
- Dead trees (when a dead tree is considered native vegetation); or
- Clumps of trees (contiguous overlapping canopies) if the clump is small (approximately <0.1 ha); and
- For both scattered trees and clumps:
  - The ground layer comprises wholly or largely of introduced species;
  - Some scattered colonising native species may be present, but represent <5% of the ground cover; and
  - The area around the trees consists of introduced pasture or crops.

Details of the STAM are outlined in the *Scattered Tree Assessment Manual* (NVC 2020b).

For this survey the STAM was utilised to provide biodiversity value context to several trees within the Project Area which were recognised as being of high value and recommended to avoid during construction, however they would be considered as part of the BAM for a Native Vegetation Clearance application.

## **3.3 Fauna assessment**

Threatened fauna that may occur or may have suitable habitat occurring within the Project area were identified and assessed in the ecological desktop assessment (EBS Ecology 2018).

The field fauna assessment included recording opportunistic fauna sightings as the Project area was traversed. All fauna species observed, signs of fauna (i.e., scats, burrows, nests and skeletons) and potential habitat for fauna (e.g., hollows) were recorded.

## **3.4 Limitations**

A large amount of the property was cropping land which was inaccessible at the time. Therefore, observations were made from the roadside.

The compiled list of fauna observations does not represent all species expected to occur in the Project area. Factors including low abundance of species, species-specific behaviour (e.g. avoidance, nocturnal etc.), distribution (e.g. isolated home range), movements (e.g. small home ranges), climatic patterns, and prevailing weather conditions can reduce the likelihood of detection.

## 4 ASSESSMENT OUTCOMES

### 4.1 Flora assessment

The dominant landform in the Project area is a plain, which has been extensively cleared for agriculture. Strips of vegetation only occurred along field boundaries and were up to approximately 3 m in width. Consequently, the likelihood of suitable habitat for threatened flora species within the Project area is very low. No threatened flora species or TECs were observed during the flora assessment.

Based off the preliminary solar layout design, a total of 13 vegetation associations were assessed for removal under the BAM (NVC 2020a) and two scattered trees were assessed for removal under the STAM (NVC 2020b). A complete list of flora species observed in the Project area is shown in Appendix 1.

Images and summary of each of the vegetation associations are shown in Section 4.1.1. The associated bushland assessment scoresheets are provided in Attachments 2-14.

Images and summary of the two scattered trees are shown in Appendix 4. Additional Scattered Trees) and the scattered tree scoresheet is provided in Attachment 15.

In calculating the suitability of the scattered trees for threatened fauna species, the two scattered trees assessed were considered to provide suitable roosting habitat for the state Rare, *Falco peregrinus* (Peregrine Falcon).

In calculating the conservation significance score for the bushland assessment scoresheet, the BDBSA search returned records of the eight threatened bird species within 5 km of the Project area in the last 20 years. However, only the state Rare Peregrine Falcon was considered to possibly occur in Block A and Block B.





Figure 2. Vegetation association in CT 5949/272, CT 5972/304, CT 5978/766 of the Project area.

#### 4.1.1 Vegetation Associations

The Project Area was split into four blocks (A, B, C and D), within those blocks different vegetation occurred resulting in different sites (Table 3). A total of 13 vegetation associations (VAs) were assessed within the Project Area. However, this report only reflects the four VAs (total of 5.67 ha) that are being impacted by the easement, Substation, Powerline and Battery (Figure 2), these areas are highlighted in Table 3 and describe below. All other vegetation associations and scattered trees can be found in Appendix 3. Additional Vegetation Associations) and Appendix 4. Additional Scattered Trees)

Table 3. Vegetation associations across the Project Area.

Block	Site	Vegetation description	Size (ha)
A	1	<i>Acacia</i> spp. +/- <i>Senna artemisioides</i> spp. <i>petiolaris</i> over <i>Maireana brevifolia</i> +/- <i>Atriplex</i> spp. Low Shrubland	0.43
A	2	<i>Acacia salicina</i> Tall Shrubland over <i>Maireana brevifolia</i>	0.02
A	3	<i>Alectryon oleifolius</i> over <i>Enchylaena tomentosa</i>	0.04
A	4	<i>Typha domingensis</i> Small Wetland	0.07
A	5	<i>Eremophila longifolia</i> / <i>Acacia ligulata</i> Tall Shrubland	0.14
B	1	<i>Acacia ligulata</i> +/- <i>Dodonea viscosa</i> Tall Shrubland over native grasses	0.16
B	2	<i>Eucalyptus porosa</i> Open Mallee over <i>Acacia ligulata</i>	2.29
B	3	<i>Acacia ligulata</i> Tall Open Shrubland over <i>Rhagodia</i> ssp. +/- <i>Maireana brevifolia</i>	0.51
C	1	<i>Atriplex paludosa</i> ssp. <i>Paludosa</i> shrubland over <i>Avena</i> sp. and <i>Ehrharta longiflora</i> .	1.87
C	2	<i>Nitraria billardierei</i> shrubland over <i>Tecticornia</i> sp., <i>Atriplex paludosa</i> ssp. <i>paludosa</i> and <i>Avena</i> sp.	0.60
C	3	<i>Eucalyptus leptophylla</i> Open Mallee over <i>Acacia ligulata</i> and <i>Pittosporum angustifolium</i>	2.93
D	1	<i>Tecticornia pergranulata</i> / <i>Maireana brevifolia</i> Low Shrubland over <i>Avena barbata</i>	1.34
D	2	<i>Atriplex stipitata</i> / <i>Maireana brevifolia</i> +/- <i>Nitraria billardierei</i> Low shrubland over <i>Carpobrotus rossii</i> , <i>Osteocarpum dipterocarpum</i> and <i>Avena barbata</i>	3.31
Total			13.71

#### Block A

##### Vegetation Association 1 (Site A1) – *Acacia* spp. +/- *Senna artemisioides* spp. *petiolaris* over *Maireana brevifolia*+/- *Atriplex* spp. Low Shrubland

This association occurred along most of the roadside and was up to approximately 3 m in width (Figure 2, Figure 3, Figure 4 and Figure 5). The association was patchy and variable in condition. In many locations along the field boundary, overstorey was reduced or absent. Those areas in the poorest condition occasionally contained scattered *Maireana brevifolia* (Short-leaf Bluebush) and/or scattered native grasses. Declared weeds that occurred within vegetation association 1 included *Cenchrus ciliaris* (Buffel Grass) and *Lycium ferocissimum* (African Boxthorn). Environmental weed (native or exotic species that invade and degrade native vegetation) *Galenia pubescens* (Coastal Galenia) was frequent within much of the association. *Schinus molle* (Peppertree) was occasional in the association. In many sections around the field boundary, no native species were present. These areas comprised of either bare ground adjacent to cropping, or weeds. A summary and image of Association 1 are shown in Table 4 and the scoresheet is available in Attachment 2.



To avoid impacts of the proposed works on native vegetation, it is recommended that a buffer of at least 3 m is included around the field boundary. If vegetation needs to be cleared (e.g., for access routes), it is recommended that these are located (where possible) where there is no, or very poor, native vegetation present. As Association 1 was patchy and variable in condition, there may be many suitable access locations around the property boundary which contain no, or very poor native vegetation.

**Table 4. Scoresheet summary for Vegetation Association 1 – *Acacia* spp. +/- *Senna artemisioides* spp. *petiolaris* over *Maireana brevifolia*+/- *Atriplex* spp. Low Shrubland.**

Area (ha)	0.43
Native Flora species (#)	19
Introduced flora species (#)	10
Native plant life form	All strata of vegetation impacted with limited structural diversity, largely uniform age classes and reduced vegetation cover
Native plant species diversity	21-30%
Regeneration	Regeneration present, consisting of multiple individual juvenile plants but a limited number of species
Landscape context score	1.17
Vegetation condition score	20.00
Conservation significance score	1.10
Unit biodiversity score	25.74
<b>Total biodiversity score</b>	<b>11.07</b>



**Vegetation Association 2 (Site C2) – *Nitraria billardi* shrubland over *Tecticornia* sp., *Atriplex paludosa* ssp. *paludosa* and *Avena* sp.**

Site C2 was a small coastal plains shrubland subject to flooding (Figure 2). The shrubland appeared to be in moderate condition, with a greater number of native species present such as, *Nitraria billardi* (Nitre-bush), *Tecticornia* sp. (Samphire) and *Atriplex paludosa* ssp. *paludosa* (Marsh Saltbush). Two declared weeds were located within this association include, *Lycium ferocissimum* (African Boxthorn) and *Echium plantagineum* (Salvation Jane). A summary and image of the association are shown in Table 5 and the scoresheet is available in Attachment 11.

**Table 5. Scoresheet summary for Vegetation Association 2 – *Nitraria billardi* shrubland over *Tecticornia* sp., *Atriplex paludosa* ssp. *paludosa* and *Avena* sp.**

Area (ha)	0.60
Flora species (#)	9
Introduced flora species (#)	7
Native plant life form	Limited impact on strata, community is treeless in its natural state.
Regeneration	No regeneration present
Native: exotic understorey biomass	>20-40
Treeless in its natural state	Yes
Landscape context score	1.16
Vegetation condition score	28.51
Conservation significance score	1.10
Unit biodiversity score	36.38
<b>Total biodiversity score</b>	<b>21.83</b>



**Block D**



**Vegetation Association 1 (Site D1) – *Tecticornia pergranulata* / *Maireana brevifolia* Low Shrubland over *Avena barbata***

Site D1 was a shrubland in moderate condition forming the northern half of Block D (Figure 2). The shrubland consisted of chenopod shrubs such as *Osteocarpum dipterocarpum* (Two-wing Bonefruit) *Atriplex stipitata* (Bitter Saltbush) and various *Tecticornia* species. A summary and image of the association are shown in Table 6 and the scoresheet is available in Attachment 13.

**Table 6. Scoresheet summary for Vegetation Association 1 – *Tecticornia pergranulata* / *Maireana brevifolia* Low Shrubland over *Avena barbata*.**

Area (ha)	1.34
Flora species (#)	10
Introduced flora species (#)	5
Native plant life form	Strata of vegetation intact
Native: exotic understorey biomass	>80%
Regeneration	No regeneration present
Treeless in its natural state	Yes
Landscape context score	1.22
Vegetation condition score	38.18
Conservation significance score	1.10
Unit biodiversity score	51.24
<b>Total biodiversity score</b>	<b>68.67</b>





**Vegetation Association 2 (Site D2) – *Atriplex stipitata* / *Maireana brevifolia* +/- *Nitraria billarderei*  
Low shrubland over *Carpobrotus rossii*, *Osteocarpum dipterocarpum* and *Avena barbata***

Site D2 was a large patch of shrubland located to the south of Block D (Figure 2). The shrubland consisted of mainly chenopod species such as *Atriplex* sp. (Saltbush) and *Rhagodia spinescens* (Spiny Saltbush), with ground coverings from *Carpobrotus rossii* (Native Pigface). A small number of exotic species were also present throughout this association, with one of those being declared *Lycium ferocissimum* (African Boxthorn). A summary and image of the association are shown in Table 7 and the scoresheet is available in Attachment 14.

**Table 7. Scoresheet summary for Vegetation Association 2 – *Atriplex stipitata* / *Maireana brevifolia* +/- *Nitraria billarderei* Low shrubland over *Carpobrotus rossii*, *Osteocarpum dipterocarpum* and *Avena barbata*.**

Area (ha)	3.31
Flora species (#)	8
Introduced flora species (#)	5
Native plant life form	Strata of vegetation intact
Native: exotic understorey biomass	>80%
Regeneration	No regeneration present
Treeless in its natural state	Yes
Landscape context score	1.22
Vegetation condition score	29.77
Conservation significance score	1.10
Unit biodiversity score	39.95
<b>Total biodiversity score</b>	<b>132.22</b>



## 4.2 Fauna assessment

17 bird species and one mammal species were opportunistically observed during the flora assessment (2018 and 2021). One of these are listed as threatened under the NPW Act, the Elegant Parrot (*Neophema elegans*) was observed utilising vegetation association B2 (*Acacia ligulata* Tall Open Shrubland over *Rhagodia ssp.* +/- *Maireana brevifolia*). The Elegant Parrot inhabits a wide range of habitat, and can be found in grasslands, woodlands, mallee, bluebush plains, saltmarsh, and farmland (Birdlife Australia 2021). Therefore, this species is likely to utilise most of the vegetation association located within this Project Area.

Based on the spatial and temporal distribution of threatened fauna BDBSA records identified in the ecological desktop assessment (EBS Ecology 2018) and field ground truthing, the Project area was considered to potentially provide suitable roosting habitat for the state Rare Peregrine Falcon, especially Tree no 1 & 2. The Peregrine falcon is arboreal, foraging over plains, vegetated areas, wetlands, beaches, dunes, and farmland, from a height or close to the ground, for small vertebrates, invertebrates, and occasionally fruit. The species is known to roost on dead limbs, cliffs, and broadcasting pylons (Pizzey and Knight 2014).

Table 8. Fauna species observed in the project area during the field survey.

Scientific name	Common name	Introduced	State Listing
<b>AVES</b>	<b>Birds</b>		
<i>Acrocephalus australis</i>	Australian Reed Warbler		
<i>Columba livia</i>	Feral Pigeon	*	
<i>Coracina novaehollandiae</i>	Black-faced Cuckooshrike		
<i>Corvus mellori</i>	Little Raven		
<i>Elanus axillaris</i>	Black-shouldered Kite		
<i>Epthianura albifrons</i>	White-fronted Chat		
<i>Falco berigora</i>	Brown Falcon		
<i>Falco cenchroides</i>	Nankeen Kestrel		
<i>Gavicalis virescens</i>	Singing Honeyeater		
<i>Grallina cyanoleuca</i>	Magpie-lark		
<i>Gymnorhina tibicen</i>	Australian Magpie		
<i>Haliastur spheonurus</i>	Whistling Kite		
<i>Malurus leucopterus</i>	White-winged Fairy-wren		
<i>Megalurus cruralis</i>	Brown Songlark		
<i>Neophema elegans</i>	Elegant Parrot		Rare
<i>Pomatostomus superciliosus</i>	White-browed Babbler		
<i>Rhipidura leucophrys</i>	Willie Wagtail		
<b>MAMMALIA</b>	<b>Mammals</b>		
<i>Oryctolagus cuniculus</i> *	European Rabbit	*	

### 4.3 Requirements of the regulation

#### 4.3.1 *Regulation under which the clearance is applicable*

An assessment against the Native Vegetation Clearance Principles is not required as the clearance associated with the project complies with the following regulation:

#### **Part 3—Permitted clearance of native vegetation**

#### **Division 5—Risk assessment**

#### **16—Clearance for other activities**

- (1) Clearance of native vegetation for the purposes of activities of a kind specified in Schedule 1 Part 6 is permitted only if it is undertaken in accordance with—
  - (a) the written approval of the Council; or
  - (b) a standard operating procedure determined or approved by the Council for the purposes of this provision.
- (2) Authorisation to clear native vegetation under subregulation (1) is subject to—
  - (a) a condition—
    - (i) that the clearance of native vegetation is to be undertaken in accordance with a management plan, approved by the Council for implementation, that results in a significant environmental benefit; or
    - (ii) that the person undertaking the operations is to make a payment into the Fund of an amount considered by the Council to be sufficient to achieve a significant environmental benefit in the manner contemplated by section 21(6) or (6a) of the Act,as determined by the Council; and
  - (b) such other conditions as the Council thinks fit.
- (3) Clearance of native vegetation for the purposes of activities of a kind specified in Schedule 1 Part 6 is permitted only if any conditions that apply to the approval are complied with.

The requirements of the proponent to undertake clearance for other activities include:

- Application to the NVC in accordance with a NCV approved Standard Operating Procedure;
- Provision of sufficient information for the NVC to assess the level of risk to biodiversity;
- Development of a SEB Management Plan to be approved by the NVC; and
- Provision of a SEB in accordance with the Management Plan or payment into the Native Vegetation Fund.

#### 4.3.2 *Risk assessment*

The proposed Project involves level 4 clearance as the Total Biodiversity Score is 233.79.

## **4.4 Mitigation hierarchy**

### **4.4.1 Avoidance**

Given the current land use in the Project area is agricultural and areas of native vegetation and scattered trees along boundaries have been excluded from the design footprint, every effort has been made to avoid the unnecessary clearance of vegetation to construct the proposed solar farm. Furthermore, there is an existing substation adjacent to the Project area and there are existing access roads to and within the Project area.

### **4.4.2 Minimisation**

There may be flexibility in the solar design layout to reduce the level of clearance required. At the time of writing, EPS were still considering the options regarding Vegetation Association 1.

The method of clearance must be chosen so as to have minimum impact on the site and on adjoining native vegetation. Weed and pathogen hygiene measures will be employed as part of the removal process to ensure that no new weeds or other pathogens are introduced to existing native vegetation.

### **4.4.3 Rehabilitation or restoration**

Rehabilitation or restoration is not appropriate in area within the solar design layout since the proposed solar infrastructure will be permanent. There is however the opportunity for restoration in areas surrounding solar design layout, including planting screening vegetation.

### **4.4.4 Offset**

Any adverse impact on native vegetation or ecosystems that cannot be avoided or minimised should be offset by implementing an SEB that outweighs that impact. Biodiversity offsets address any residual impacts after prevention and mitigation measures have been implemented.

The NVC will only approve clearances if these steps have been fulfilled. Offsetting is only considered by the NVC when a proponent has identified and documented appropriate measures to avoid and minimise negative impacts (direct or indirect) on biodiversity. Biodiversity offsets are only appropriate for projects that have rigorously applied the Mitigation Hierarchy to the fullest extent. Offsets must never be used to circumvent responsibilities to avoid and minimise damage to biodiversity and the NVC will consider this when determining whether the clearance can proceed.

## 5 SIGNIFICANT ENVIRONMENTAL BENEFIT (SEB)

An 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.

### 5.1 Determination of the SEB obligation

Four vegetation associations were assessed within the Project Area. The SEB requirements calculated in the bushland and scattered tree assessment scoresheets are summarised in Table 9. Impacts are calculated on the attached vegetation datasheets (refer 'Impact', 'Summary' and 'Native Vegetation Summary' tabs on the datasheet).

The Native Vegetation SEB Requirement for clearance 5.68 ha of native vegetation under this application is 245.48 SEB points or a payment of **\$119,800.79** into the Native Vegetation Fund.

**Table 9. Summary of the SEB requirements for the vegetation association sites in the updated Project area (Figure 2).**

Assessment for clearance	Site A1	Site C2	Site D1	Site D2	Total
Area of clearance (ha)	0.43	0.60	1.34	3.31	5.68
SEB points required	11.62	22.92	72.1	138.84	245.48
Mean annual rainfall for the site (mm)	355	355	355	355	
Payment into the Native Vegetation Fund	\$5,441.76	\$10,640.47	\$33,379.51	\$64,093.51	\$113,555.25
Administration fee	\$299.30	\$585.23	\$1,835.87	\$3,525.14	\$6,245.54
<b>Total</b>	<b>\$5,741.06</b>	<b>\$391.03</b>	<b>\$556.08</b>	<b>\$583.79</b>	<b>\$119,800.79</b>



## 5.2 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:*

AMP Energy Pty Ltd proposes to achieve the SEB by paying into the Native Vegetation Fund. The total SEB payment required for the clearance of 5.68 ha of native vegetation is **\$119,800.79** which includes an administration fee of **\$6,245.54** (Table 9).

## 6 REFERENCES

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<https://data.environment.sa.gov.au/NatureMaps/Pages/default.aspx> [Accessed 15 May 2018]

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EBS Ecology (2018) Bungama Solar Desktop Ecological Assessment. Report to Bungama Solar 1 Pty Ltd. EBS Ecology, Adelaide.

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Native Vegetation Council (NVC) (2020b) Scattered Tree Assessment Manual July 2020. Native Vegetation Council, Adelaide. Available at: <https://www.environment.sa.gov.au/topics/native-vegetation/clearing/vegetation-assessments>.

Pizzey G and Knight F (2014) Birds of Australia. Gibbon Multimedia Pty Ltd. Victoria, Australia.

## 7 APPENDICES

### 7.1 Appendix 1. Complete list of flora species observed in the Project area.

Scientific name	Common name	Introduced
<i>Acacia hakeoides</i>	Hakea Wattle	
<i>Acacia ligulata</i>	Umbrella Bush	
<i>Acacia oswaldii</i>	Umbrella Wattle	
<i>Acacia salicina</i>	Willow Wattle	
<i>Acacia sp.</i>	Wattle	
<i>Acacia victoriae ssp. victoriae</i>	Elegant Wattle	
<i>Alectryon oleifolius spp. canescens</i>	Bullock Bush	
<i>Arctotheca calendula</i>	Cape Weed	*
<i>Asphodelus fistulosus</i>	Onion Weed	*
<i>Atriplex lindleyi ssp.</i>	Baldoo	
<i>Atriplex nummularia ssp. nummularia</i>	Old-man Saltbush	
<i>Atriplex paludosa ssp. paludosa</i>	Marsh Saltbush	
<i>Atriplex sp.</i>	Saltbush	
<i>Atriplex stipitata</i>	Bitter Saltbush	
<i>Atriplex vesicaria</i>	Bladder Saltbush	
<i>Austrostipa elegantissima</i>	Feather Spear-grass	
<i>Austrostipa scabra ssp. scabra</i>	Rough Spear-grass	
<i>Austrostipa sp.</i>	Spear-grass	
<i>Avena sp.</i>	Oat	*
<i>Bromus diandrus</i>	Great Brome	*
<i>Carpobrotus rossii</i>	Native Pigface	
<i>Carthamus lanatus</i>	Saffron Thistle	*
<i>Cenchrus ciliaris</i>	Buffel Grass	*
<i>Cenchrus setaceus</i>	Fountain Grass	
<i>Chenopodium album</i>	Fat Hen	*
<i>Chloris truncata</i>	Windmill Grass	
<i>Citrullus lanatus</i>	Bitter Melon	*
<i>Convolvulus remotus</i>	Grassy Bindweed	
<i>Convolvulus sp.</i>	Bindweed	
<i>Conyza bonariensis</i>	Flax-leaf Fleabane	*
<i>Conyza sp.</i>	Fleabane	*
<i>Cynodon dactylon</i>	Couch	*
<i>Dissocarpus paradoxus</i>	Ball Bindyi	
<i>Dodonaea viscosa spp. angustissima</i>	Narrow-leaf Hop-bush	
<i>Dodonaea viscosa ssp.</i>	Sticky Hop-bush	
<i>Echium plantagineum</i>	Salvation Jane	*
<i>Enchylaena tomentosa</i>	Ruby Saltbush	
<i>Enneapogon nigricans</i>	Black-head Grass	
<i>Enteropogon ramosus</i>	Umbrella Grass	
<i>Eragrostis mexicana</i>	Mexican Love-grass	*
<i>Eremophila longifolia</i>	Weeping Emubush	
<i>Eucalyptus camaldulensis</i>	River Red Gum	
<i>Eucalyptus gracilis</i>	Yorrell	

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<i>Eucalyptus leptophylla</i>	Narrow-leaf Red Mallee	
<i>Eucalyptus porosa</i>	Mallee Box	
<i>Exocarpos aphyllus</i>	Leafless Cherry	
<i>Galenia pubescens</i> var. <i>pubescens</i>	Coastal Galenia	*
<i>Heliotropium europaeum</i>	Common Heliotrope	
<i>Hypochaeris glabra</i>	Smooth Cat's Ear	
<i>Lycium ferocissimum</i>	African Boxthorn	*
<i>Maireana brevifolia</i>	Short-leaf Bluebush	
<i>Medicago minima</i>	Little Medic	*
<i>Mesembryanthemum</i> sp.	Iceplant	*
<i>Myoporum platycarpum</i> ssp. <i>platycarpum</i>	False Sandalwood	
<i>Nitraria billardierei</i>	Nitre-bush	
<i>Osteocarpum dipterothecum</i>	Two-wing Bonefruit	
<i>Oxalis pes-caprae</i>	Soursob	*
<i>Pimelea microcephala</i> ssp. <i>microcephala</i>	Shrubby Riceflower	
<i>Pimelea</i> sp.	Riceflower	
<i>Pittosporum angustifolium</i>	Native Apricot	
<i>Rhagodia parabolica</i>	Mealy Saltbush	
<i>Rhagodia</i> sp.	Saltbush	
<i>Rhagodia spinescens</i>	Spiny Saltbush	
<i>Rytidosperma caespitosum</i>	Common Wallaby-grass	
<i>Salsola australis</i>	Buckbush	
<i>Salvia</i> sp.	Sage	*
<i>Santalum acuminatum</i>	Quandong	
<i>Scaevola spinescens</i>	Spiny Fanflower	
<i>Schinus molle</i>	Pepper-tree	*
<i>Sclerolaena diacantha</i>	Grey Bindyi	
<i>Senna artemisioides</i> spp. <i>petiolaris</i>		
<i>Senna</i> sp.	Senna	
<i>Sisymbrium</i> sp.	Wild Mustard	*
<i>Solanum elaeagnifolium</i>	Silver-leaf Nightshade	*
<i>Sonchus oleraceus</i>	Common Sow-thistle	*
<i>Tecticornia indica</i> ssp.	Brown-head Samphire	
<i>Tecticornia pergranulata</i> ssp.	Black-seed Samphire	
<i>Tecticornia</i> sp.	Samphire	
<i>Typha domingensis</i>	Narrow-leaf Bulrush	
<i>Urtica urens</i>	Small Nettle	*
<i>Vittadinia</i> sp.	New Holland daisy	
<i>Zygophyllum aurantiacum/eremaeum</i>	Shrubby Twinleaf	

## **7.2 Appendix 2. Additional Project Area Maps**





Figure 3. Vegetation association and scattered tree locations in CT 6037/29 of the Project area.



Figure 4. Vegetation association in CT 6127/5 of the Project area.



Figure 5. Vegetation association locations in CT 5954/187 the Project area.



### 7.3 Appendix 3. Additional Vegetation Associations

#### Vegetation Association 2 (Site A2) – *Acacia salicina* Tall Shrubland over *Maireana brevifolia*

This association consisted of a small patch of *Acacia salicina* (Willow Wattle) in cropping land (Figure 3). The understorey was mainly Willow Wattle suckers with Short-leaf Bluebush. The declared weed *Lycium ferocissimum* (African Boxthorn) was present in the understorey in addition to *Galenia pubescens* (Coastal Galenia) (environmental weed). A summary and image of the association are shown in Table 10 and the scoresheet is available in Attachment 3.

**Table 10. Scoresheet summary for Vegetation Association 2 – *Acacia salicina* Tall Shrubland over *Maireana brevifolia*.**

Area (ha)	0.02
Flora species (#)	4
Introduced flora species (#)	1
Native plant life form	At least strata of vegetation impacted, with reduced structural diversity, elements may be missing and reduced vegetation cover
Native plant species diversity	21-30%
Regeneration	Regeneration present, consisting of multiple individual juvenile plants but a limited number of species
Landscape context score	1.17
Vegetation condition score	29.29
Conservation significance score	1.10
Unit biodiversity score	37.69
<b>Total biodiversity score</b>	<b>0.75</b>



**Vegetation Association 3 (Site A3) – *Alectryon oleifolius* over *Enchylaena tomentosa***

Site A3 was a small patch of native vegetation, which comprised one mature *Alectryon oleifolius* (Bullock Bush) over scattered native species including *Enchylaena tomentosa* (Ruby Saltbush), in the middle of cropping land (Figure 3). The mature Bullock Bush was approximately 6 m in height. It was a multi-stem tree and had an average trunk diameter of approximately 35 cm. A summary and image of the association are shown in Table 11 and the scoresheet is available in Attachment 4.

**Table 11. Scoresheet summary for Vegetation Association 3 – *Alectryon oleifolius* over *Enchylaena tomentosa*.**

Area (ha)	0.04
Flora species (#)	2
Introduced flora species (#)	3
Native plant life form	All strata of vegetation impacted with limited structural diversity, largely uniform age classes and reduced vegetation cover
Native plant species diversity	11-20%
Regeneration	Very low regeneration, consisting of highly scattered juvenile plants of a limited number of species
Landscape context score	1.17
Vegetation condition score	20.83
Conservation significance score	1.10
Unit biodiversity score	26.80
<b>Total biodiversity score</b>	<b>1.07</b>





#### **Vegetation Association 4 (Site A4) – *Typha domingensis* Small Wetland**

Site A4 was a small wetland area vegetated by *Typha domingensis* (Narrow-leaf Bulrush) (Figure 5). Some scattered *Salsola australis* (Buckbush) was noted at the edge, no other native species were present. The wetland area is likely to have formed as a result of a leaking pipe. Fauna recorded in this association were *Acrocephalus australis* (White-fronted Chat) and *Epthianura albifrons* (Australian Reed Warbler).

A summary and image of the association are shown in Table 12 and the scoresheet is available in Attachment 5. However, this information is expected to be irrelevant since the clearance of Common Reeds and Bulrushes is exempt under the NV Act, through Regulation 5(1)(zj), provided that the following guideline is complied with:

1. Subject to any other Act or Regulation, *Phragmites australis* and *Typha domingensis* may be cleared where the clearance is of regrowth or colonising growth at: existing boat ramps, pumping sites or other existing lawfully established sites where access to open water is essential for the functioning of those sites; artificial channels lawfully established for water diversion or flood mitigation purposes where the clearance is necessary to maintain the design function of the channel; and constructed farm dams where reed or rush species have become established over time.
2. In all cases the clearance of regrowth or colonising growth must be kept to the minimum needed for the designated operation of the site and must not go beyond the boundaries of the area initially cleared at the site. Any proposed clearance in excess of 100 square metres must be referred to the NVC Secretariat and is not to:
  - Proceed under this guideline unless endorsed by the Secretariat;
  - The method of clearance must be chosen so as to have minimum impact on the site and on adjoining native vegetation; and
  - Any clearance of these species outside of the sites as designated above, or any clearance of other species associated with *Phragmites australis* or *Typha domingensis*, must be discussed with the Native Vegetation Council Secretariat and is likely to require the consent of the Native Vegetation Council by means of a clearance application.

**Table 12. Scoresheet summary for Vegetation Association 4 – *Typha domingensis* Small Wetland.**

Area (ha)	0.07
Flora species (#)	2
Introduced flora species (#)	0
Native plant life form	All strata of vegetation heavily impacted and native vegetation represented by only scattered plants
Native plant species diversity	5-10%
Regeneration	Regeneration present, consisting of multiple individual juvenile plants but a limited number of species
Treeless in its natural state	Yes
Landscape context score	1.17
Vegetation condition score	12.49
Conservation significance score	1.10
Unit biodiversity score	16.08
<b>Total biodiversity score</b>	<b>1.13</b>



**Vegetation Association 5 (Site A5) – *Eremophila longifolia* / *Acacia ligulata* Tall Shrubland**

Site A5 was roadside shrubland vegetation on both the northern and southern side of the road (Figure 5). The shrubland contained large diversity of mid-storey species such as three *Acacia* sp. (Wattles), *Santalum acuminatum* (Quandong) and *Eremophila longifolia* (Weeping Emubush). Upper storey included species of *Exocarpos cupressiformis* (Native Cherry), however lacked other upper storey such as *Eucalyptus* sp. Ground cover and grasses were also lacking and this stratum was dominated mainly by exotic forbs and grasses such as *Oxalis pes-caprae* (Soursob), *Avena* sp., (Oat) and *Sonchus oleraceus* (Common Sow-thistle). Declared Weed *Lycium ferocissimum* (African Boxthorn) was present within this vegetation association. A summary and image of the association are shown in Table 13 and the scoresheet is available in Attachment 6.

**Table 13. Scoresheet summary for Vegetation Association 5 – *Eremophila longifolia* / *Acacia ligulata* Tall Shrubland**

Area (ha)	0.14
Flora species (#)	16
Introduced flora species (#)	9
Native plant life form	Most of the strata of vegetation heavily impacted and native vegetation represented only by mid-storey species such as <i>Acacia</i> , <i>Pimelea</i> etc.
Native: exotic understorey biomass	>10-20%
Regeneration	Moderate amounts of regeneration, consisting of highly scattered juvenile plants of a three species ( <i>Rhagodia</i> , <i>Acacia</i> sp.)
Landscape context score	1.15
Vegetation condition score	11.16
Conservation significance score	1.10
Unit biodiversity score	14.11
<b>Total biodiversity score</b>	<b>1.98</b>





**Block B****Vegetation Association 1 (Site B1) – *Acacia ligulata* +/- *Dodonea viscosa* Tall Shrubland over native grasses**

Site B1 was a large area of degraded vegetation located within a large area of cropping land (Figure 2). The site contained a mixture of shrubs, grasses and a vine species, however this vegetation association was lacking larger upper storey species. Dominance was present from *Acacia ligulata* (Umbrella Bush) with scattered *Dodonea viscosa* (Sticky Hopbush) shrubs. Small amounts of regeneration from *Pimelea microcephala* (Shrubby Riceflower) and two declared weeds were present, this included *Lycium ferocissimum* (African Boxthorn) and *Cenchrus ciliaris* (Buffel Grass). A summary and image of the association are shown in Table 14 and the scoresheet is available in Attachment 7.

**Table 14. Scoresheet summary for Vegetation Association 1 – *Acacia ligulata* +/- *Dodonea viscosa* Tall Shrubland over native grasses**

Area (ha)	0.16
Flora species (#)	11
Introduced flora species (#)	11
Native plant life form	Upper strata of vegetation heavily impacted and native vegetation represented only by mid-storey and understorey species.
Native: exotic understorey biomass	>10-20%
Regeneration	Very low regeneration, consisting of highly scattered juvenile plants of a only one species
Landscape context score	1.16
Vegetation condition score	14.09
Conservation significance score	1.10
Unit biodiversity score	17.98
<b>Total biodiversity score</b>	<b>2.88</b>





**Vegetation Association 2 (Site B2) – *Eucalyptus porosa* Open Mallee over *Acacia ligulata***

Site B2 was a large area of degraded open Mallee (Figure 2). The site contained *Eucalyptus porosa* (Mallee Box) trees in poor condition with a midstorey of *Acacia ligulata* (Umbrella Bush) and chenopod shrubs such as *Maireana brevifolia* (Short-leaf Bluebush) and *Rhagodia parabolica* (Mealy Saltbush). Small clusters of native *Austrostipa elegantissima* (Feather Spear-grass) understorey were scattered throughout the area. No regeneration is present, and this vegetation contains very limited understorey species (less than 5-10 %) and contained mostly exotic forb species such as *Oxalis pes-caprae* (Soursob) and *Avena sp.* (Oat Grass). Two declared weeds were located within this association including, *Lycium ferocissimum* (African Boxthorn) and *Echium plantagineum* (Salvation Jane). A summary and image of the association are shown in Table 15 and the scoresheet is available in Attachment 8.

**Table 15. Scoresheet summary for Vegetation Association 2 – *Eucalyptus porosa* Open Mallee over *Acacia ligulata***

Area (ha)	2.29
Flora species (#)	6
Introduced flora species (#)	7
Native plant life form	Upper strata of vegetation present, but in poor condition, native vegetation present in all strata but limited number of species.
Native: exotic understorey biomass	5-10%
Regeneration	No regeneration present
Landscape context score	1.13
Vegetation condition score	5.51
Conservation significance score	1.10
Unit biodiversity score	6.85
<b>Total biodiversity score</b>	<b>15.69</b>



**Vegetation Association 3 (Site B3) – *Acacia ligulata* Tall Open Shrubland over *Rhagodia* ssp. +/- *Maireana brevifolia***

Site B3 was a large area of degraded vegetation located within a large area of cleared cropping land (Figure 2). The site contained a limited number of native species (5). Dominance was present from *Acacia ligulata* (Umbrella Bush) with scattered chenopod species such as *Rhagodia* ssp. and *Maireana brevifolia* (Short-leaf Bluebush) shrubs. This area contains very limited understorey species (less than 5 %) and contained mostly exotic forb species such as *Oxalis pes-caprae* (Soursoy) and *Asphodelus fistulosus* (Onion Weed). Two declared weeds were located within this association include, *Lycium ferocissimum* (African Boxthorn) and *Echium plantagineum* (Salvation Jane). The State Rare Elegant Parrot (*Neophema elegans*) was observed in this vegetation association (see 4.2 for more information). A summary and image of the association are shown in Table 16 and the scoresheet is available in Attachment 9.

**Table 16. Scoresheet summary for Vegetation Association 3 – *Acacia ligulata* Tall Open Shrubland over *Rhagodia* ssp. +/- *Maireana brevifolia***

Area (ha)	0.51
Flora species (#)	6
Introduced flora species (#)	9
Native plant life form	Upper strata of vegetation heavily impacted and native vegetation represented only by mid-storey and understorey species.
Native: exotic understorey biomass	<5%
Regeneration	No regeneration
Landscape context score	1.16
Vegetation condition score	3.83
Conservation significance score	1.10
Unit biodiversity score	4.88
<b>Total biodiversity score</b>	<b>2.49</b>



**Block C****Vegetation Association 1 (Site C1) – *Atriplex paludosa* ssp. *paludosa* shrubland over *Avena* sp. and *Ehrharta longiflora*.**

Site C1 was a large shrubland in moderate condition, which covered the northern segment of Block C (Figure 2). *Atriplex paludosa* ssp. *paludosa* (Marsh Saltbush) and *Enchylaena tomentosa* var *tomentosa* (Ruby Saltbush), were dominant within this association with multiple juvenile individuals scattered throughout. Other native species included *Enneapogon nigricans* (Black-head Grass) was the dominant species, with *Chloris truncata* (Windmill Grass) and *Enteropogon ramosus* (Umbrella Grass) also observed. A summary and image of the association are shown in Table 17 and the scoresheet is available in Attachment 10.

**Table 17. Scoresheet summary for Vegetation Association 1 – *Atriplex paludosa* ssp. *paludosa* shrubland over *Avena* sp. and *Ehrharta longifolia*.**

Area (ha)	1.63
Flora species (#)	7
Introduced flora species (#)	6
Native plant life form	Limited species
Native: exotic understorey biomass	>10-20%
Regeneration	Very low regeneration, consisting of highly scattered juvenile plants of a limited number of species
Treeless in its natural state	Yes
Landscape context score	1.16
Vegetation condition score	20.15
Conservation significance score	1.10
Unit biodiversity score	25.71
<b>Total biodiversity score</b>	<b>41.91</b>





**Vegetation Association 3 (Site C3) – *Eucalyptus leptophylla* / *Eucalyptus gracilis* Open Mallee over *Acacia ligulata* and *Pittosporum angustifolium***

Site C3 was area of open mallee in poor condition located to the southeast of Block C which formed the roadside (Figure 2). The uppers storey consisted of species such as, *Pittosporum angustifolium* (Native Apricot), *Rhagodia parabolica* (Mealy Saltbush) and *Acacia ligulata* (Umbrella Bush), with scattered *Eucalyptus gracilis* (Yorrell) and *Eucalyptus leptophylla* (Narrow-lead Red Mallee) trees. Exotic forbs that dominant in the understorey and consisted of *Medicago sp.* (Medic). Two declared weeds were located within this association include, *Lycium ferocissimum* (African Boxthorn) and *Echium plantagineum* (Salvation Jane). A summary and image of the association are shown in Table 18 and the scoresheet is available in Attachment 12.

**Table 18. Scoresheet summary for Vegetation Association 3 – *Eucalyptus leptophylla* / *Eucalyptus gracilis* Open Mallee over *Acacia ligulata* and *Pittosporum angustifolium*.**

Area (ha)	2.93
Flora species (#)	16
Introduced flora species (#)	8
Native plant life form	Vegetation from each strata present
Regeneration	Regeneration present, consisting of highly scattered juvenile plants of a limited number of species
Native:exotic understorey biomass	>20-40
Treeless in its natural state	No
Landscape context score	1.15
Vegetation condition score	30.75
Conservation significance score	1.10
Unit biodiversity score	38.90
<b>Total biodiversity score</b>	<b>113.97</b>





## 7.4 Appendix 4. Additional Scattered Trees

A summary and image of the scattered trees are shown in Table 19 and SEB is available in Attachment 15.

Table 19. Tree 1 – *Eucalyptus camaldulensis* var. *camaldulensis* (see Figure 2).

Tree no.	Height (m)	Trunk diameter (cm)	Dieback (%)	Hollows			Fauna habitat score	Threatened flora score	Biodiversity score	SEB points req.
				S	M	L				
1	12	50	20	0	0	0	1.4	0	1.09	1.14



**Table 20. Tree 2 – *Eucalyptus camaldulensis* var. *camaldulensis* (Figure 3).**

Tree no.	Height (m)	Trunk diameter (cm)	Dieback (%)	Hollows			Fauna habitat score	Threatened flora score	Biodiversity score	SEB points req.
				S	M	L				
2	12	60	20	0	0	0	1.4	0	1.22	1.28



## 7.5 Appendix 5. Additional Vegetation Associations

**Table 21. Summary of the SEB requirements for the vegetation association sites in Block A in the Project area.**

Assessment for clearance	Site A1	Site A2	Site A3	Site A4	Site A5	Total	Total (excluding A4)
Area of clearance (ha)	0.43	0.02	0.04	0.07	0.14	0.70	0.63
SEB points required	11.62	0.79	1.13	1.18	2.07	16.79	16.61
Mean annual rainfall for the site (mm)	355	355	355	355	355		
Payment into the Native Vegetation Fund	\$5,441.76	\$370.64	\$527.09	\$553.36	\$963.19	\$7,856.04	\$7,302.68
Administration fee	\$299.30	\$20.39	\$28.99	\$30.43	\$52.98	\$432.09	\$401.66
<b>Total</b>	<b>\$5,741.06</b>	<b>\$391.03</b>	<b>\$556.08</b>	<b>\$583.79</b>	<b>\$1,016.17</b>	<b>\$8,288.13</b>	<b>\$7,704.34</b>

**Table 22. Summary of the SEB requirements for the vegetation association sites in Block B in the Project area.**

Assessment for clearance	Site B1	Site B2	Site B3	Total
Area of clearance (ha)	0.16	2.29	0.51	2.96
SEB points required	3.02	16.48	2.61	22.11
Mean annual rainfall for the site (mm)	355	355	355	
Payment into the Native Vegetation Fund	\$1,414.68	\$7,714.68	\$1,223.81	\$10,353.17
Administration fee	\$77.81	\$424.31	\$67.31	\$569.43
<b>Total</b>	<b>\$1,492.49</b>	<b>\$8,138.99</b>	<b>\$1,291.12</b>	<b>\$10,922.60</b>

**Table 23. Summary of the SEB requirements for the vegetation association sites in Block C in the Project area.**

Assessment for clearance	Site C1	Site C2	Site C3	Total
Area of clearance (ha)	1.87	0.60	2.93	5.40
SEB points required	50.48	22.92	119.67	193.07
Mean annual rainfall for the site (mm)	355	355	355	
Payment into the Native Vegetation Fund	\$23,636.91	\$10,640.47	\$55,562.28	\$89,839.66
Administration fee	\$1,300.13	\$585.23	\$3,055.93	\$4,941.29
<b>Total</b>	<b>\$24,937.04</b>	<b>\$11,225.70</b>	<b>\$58,618.21</b>	<b>\$94,780.95</b>

**Table 24. Summary of the SEB requirements for the vegetation association sites in Block D in the Project area.**

Assessment for clearance	Site D1	Site D2	Total
Area of clearance (ha)	1.34	3.31	4.69
SEB points required	72.10	138.84	213.09
Mean annual rainfall for the site (mm)	351	350	
Payment into the Native Vegetation Fund	\$33,379.51	\$64,093.51	\$97,473.02
Administration fee	\$1,835.87	\$3,525.14	\$5,361.01
<b>Total</b>	<b>\$35,215.38</b>	<b>\$67,618.65</b>	<b>\$102,834.03</b>

**Table 25. Summary of the SEB requirements for the two scattered trees in the Project area.**

Tree species	Number of trees	Total Tree Score	Total SEB points required	Hectares required	Payment into the Native Vegetation Fund	Administration fee
<i>Eucalyptus camaldulensis</i> var. <i>camaldulensis</i>	2	2.48	2.61	0.326	\$1,156.06	\$57.80
				<b>TOTAL</b>	<b>\$1,213.86</b>	

## **8 ATTACHMENTS**

- 8.1 Attachment 1 - EBS Ecology Bungama Solar: Desktop Ecological Assessment**
- 8.2 Attachment 2 - Bushland Scoresheet – A1**
- 8.3 Attachment 3 - Bushland Scoresheet – A2**
- 8.4 Attachment 4 - Bushland Scoresheet – A3**
- 8.5 Attachment 5 - Bushland Scoresheet – A4**
- 8.6 Attachment 6 - Bushland Scoresheet – A5**
- 8.7 Attachment 7 - Bushland Scoresheet – B1**
- 8.8 Attachment 8 - Bushland Scoresheet – B2**
- 8.9 Attachment 9 - Bushland Scoresheet – B3**
- 8.10 Attachment 10 - Bushland Scoresheet – C1**
- 8.11 Attachment 11- Bushland Scoresheet – C2**
- 8.12 Attachment 12- Bushland Scoresheet – C3**
- 8.13 Attachment 13 - Bushland Scoresheet – D1**
- 8.14 Attachment 14 - Bushland Scoresheet – D2**
- 8.15 Attachment 15 – Scattered Trees Scoresheet**





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