Aurora Energy Project – Stage 1

Native Vegetation Clearance

Data Report

Clearance under the *Native Vegetation Regulations 2017*

21 April 2023

Prepared by Jesse Carpenter – EBS Ecology (NVC Accredited Consultant)

Aurora Energy Project - Native Vegetation Clearance Data Report

21 April 2023

Version 2.1

Prepared by EBS Ecology for 1414 Degrees

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Cover photograph: *Solanum aridicola* was a common small shrub in the Project Area.

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Glossary and abbreviations

AEP	Aurora Energy Project
AOO	Area of occupancy
BAM	Bushland Assessment Method
BDBSA	Biological Database of South Australia (maintained by DEW)
BESS	Battery Energy Storage System
CEMP	Construction Environmental Management plan
CSP	Concentrating Solar Thermal Power
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DEW	Department for Environment and Water
EBS	Environment and Biodiversity Services Pty Ltd (trading as EBS Ecology)
EPBC Act	*Environmental Protection and Biodiversity Conservation Act 1999*
GDA2020	Geocentric Datum of Australia 2020
ha	Hectare(s)
IBRA	Interim Biogeographical Regionalisation of Australia
Impact Area	The area of native vegetation, or development footprint, impacted by the BESS and VS1.
km	Kilometre(s)
kV	Kilovolt
m	Metre(s)
MGA2020	Map Grid of Australia 2020
MW	Megawatt
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	*National Parks and Wildlife Act 1972*
NV Act	*Native Vegetation Act 1991*
NVC	Native Vegetation Council
OEMP	Operational Environmental Management Plan

PDI Act	Planning, Development and Infrastructure Act 2016
PMST	Protected Matters Search Tool (under the EPBC Act; maintained by DAWE)
Project	Stage 1 of the Aurora Energy Project, comprising the BESS and VS1
Project Area	The area to be developed as the Aurora Energy Project, including all stages of the development.
PV	Photovoltaic
RAM	Rangelands Assessment Method
SA	South Australia(n)
Search Area	50 km buffer of the Project Area considered in the desktop assessment database searches
SEB	Significant Environmental Benefit
Silicon	Silicon Aurora Pty Ltd
sp.	Species
spp.	Species (plural)
ssp.	Sub-species
STAM	Scattered Tree Assessment Method
TEC	Threatened Ecological Community
TESS	Thermal Energy Storage System
var.	Variety (a taxonomic rank below that of species and subspecies, but above that of form)

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1. Application information

The details of this native vegetation clearance application are summarised in Table 1. The nature of the clearance, including extent of clearing, mitigation measures and Significant Environmental Benefit (SEB) obligations, is summarised in Table 2.

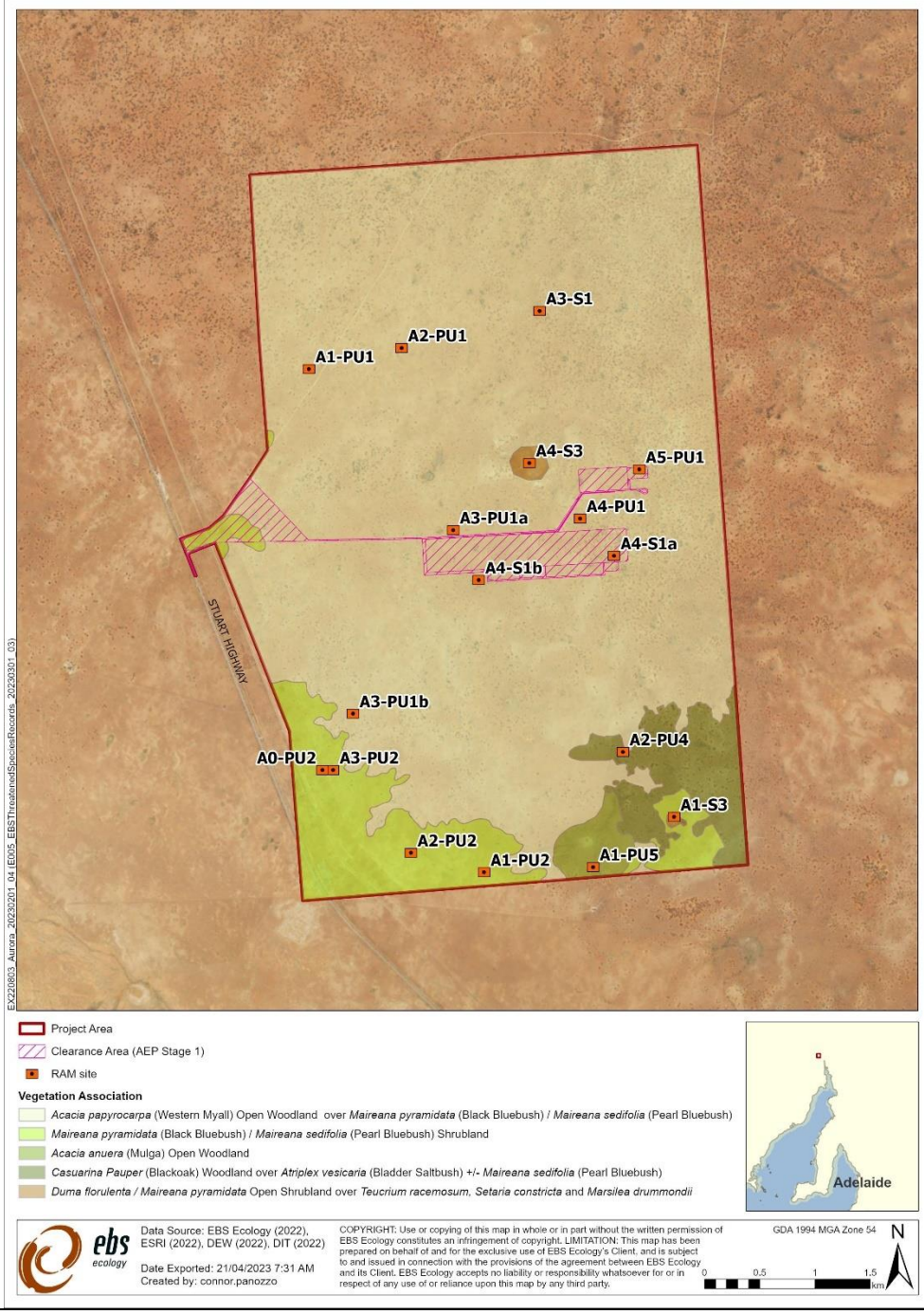
Table 1. Application details.

Applicant:	Silicon Aurora Pty Ltd		
Key contact:	Lachlan Roberts		
Landowner:	Refer to **Attachment 1**		
Site Address:	Stuart Highway, Carriewerloo		
Local Government Area:	Pastoral Unincorporated Area	**Hundred:**	Castine
Title ID:	CL6181/119	**Parcel ID**	H540100 S2

Table 2. Summary of the proposed clearance.

Purpose of clearance:	Clearance required for the construction and operation of the Aurora Energy Project (AEP) renewable energy facility and solar methanol plant (SMP).
Native Vegetation Regulation:	Schedule 1 *Regulation 12 (33) – New dwelling or building* (solar methanol plant) Schedule 1 *Regulation 12 (34) – Infrastructure* (solar power plant and associated infrastructure).
Description of the vegetation under application:	103.81 hectares (ha) of *Acacia papyrocarpa* Open Woodland over *Maireana pyramidata / Maireana sedifolia.* 12.25 ha of *Maireana pyramidata / Maireana sedifolia* Shrubland. The vegetation under application is generally in good condition, although is impacted by grazing of domestic stock (sheep). No scattered trees are impacted.
Total proposed clearance – area (ha) and/or number of trees:	116.06 ha
Level of clearance:	Level 4
Overlay (Planning and Design Code):	Native Vegetation Overlay

Map of proposed clearance area:



Mitigation Hierarchy:

<u>Avoidance</u>

- The project has been designed to avoid vegetation in the best condition, located in the north-east of the Project Area.

<u>Minimisation</u>

- Minimum possible buffer between facility and surrounding uncleared areas will be cleared.
- As far as is possible, existing access tracks will be used. New access tracks will be limited to 10m width, including batters.
- Cable runs will be cleared to a maximum of 5m width.
- Common user infrastructure will be utilised, i.e. single shared access road for all plant as far as is possible.
- Stockpile topsoil and cleared vegetation for respread following completion of construction.

	• Machinery and vehicles accessing the construction area and completed facility will be subject to biosecurity procedures (e.g. weed washdowns). • The Project Area will be de-stocked which will benefit remaining vegetation over time. • A Construction Environmental Management Plan and Operational Environmental Management Plan will be developed and incorporate elements discussed in Section 4.4. **<u>Rehabilitation</u>** Most clearance will be permanent. However, areas between the heliostats will be rehabilitated to control dust: • A rehabilitation plan will be developed. • Following construction, topsoil and cleared vegetation will be spread in rehabilitation and other degraded areas. • Rehabilitated area will be monitored for weeds, with control actions implemented as required.
SEB Offset proposal	Payment of $757,906 (including administration fee of $39,511.71)

2. Purpose of Clearance

2.1. Description

In June 2022 Vast Solar formed a joint venture with 1414 Degrees, acquiring 50% of Silicon Aurora Pty Ltd (Silicon). Silicon holds several agreements and approvals (including the development approval) for the Aurora Energy Project (AEP). The AEP (located 25 kilometres (km) north of Port Augusta) is to be constructed over several phases, and includes:

- 140 Megawatts (MW) battery energy storage system (BESS).
- 30 MW steam turbine generator, powered by eight solar arrays with molten salt thermal storage system (VS1).
- 70 MW of photovoltaic (PV) array.
- 150 MW of concentrating solar thermal power (CSP).
- Thermal Energy Storage System (TESS).
- Substation built adjacent to the existing termination tower for the Hill to Hill 275 kilovolt (kV) transmission line.
- Associated access tracks and infrastructure, including (if it proves feasible) a water supply pipeline.

Silicon is proposing to develop the AEP in stages, with the first stage (Stage 1) comprising the BESS and VS1.

This report represents the native vegetation clearance application for the BESS and VS1, referred to from here on as the Project. A more detailed description of the BESS and VS1 is given in Section 2.4.

The operation of the AEP requires the use of water for dust suppression and operation of the solar technology. It is planned that for Stage 1, water will be trucked to the site. Long-term, the feasibility of developing a water pipeline from Port Augusta is being researched. However, this has not been considered in the overall impact of the Project.

2.2. General location map

The Project is located on Carriewerloo Station, approximately 30 km north of Port Augusta. The area proposed for development of the AEP (the Project Area) is located adjacent to the Stuart Highway between the Australian Rail Track Corporation corridor in the west and an existing transmission line easement to the east. The location of the Project Area is shown on the map in Figure 1.

The Search Area was defined by a 50 km buffer around the Project Area. The Search Area was used to inform the desktop component of the native vegetation assessment, as described in Section 3 of the report. The Search Area is shown in Figure 1.

The Clearance Area refers to the extent of native vegetation impacted by the BESS and VS1 and subject to this clearance application.

2.3. Background

2.3.1. Previous clearance applications

The development in its entirety has development approval. A native vegetation clearance application was first lodged in June 2017, with clearance approval (2017/3123/010) granted in July 2018 following updated project design. This application included the following reports prepared by EBS Ecology:

- *Aurora Solar Energy Project Flora and Fauna Report* (EBS Ecology, 2018a)
- *Aurora Solar Energy Project Native Vegetation Clearance Report* (EBS Ecology, 2018b).
- *Aurora Solar Energy Project Flora and Fauna Assessment* (EBS Ecology, 2017).

These reports can be provided on request.

As clearance has not yet commenced, Silicon sought to extend clearance approval beyond the expiration date for a further two to three years. In response to that request, the Department for Environment and Water (Native Vegetation Branch) indicated that an updated Native Vegetation Clearance Data Report be lodged to account for changes in assessment methods, available new data (particularly records of threatened species) and project design changes resulting in differences in the impact footprint.

2.3.2. Current and historical land use

The Project Area is located on Carriewerloo Station. Carriewerloo Station is a sheep grazing property that covers approximately 150,000 ha and runs up to 25,000 sheep. The Project Area has a long history of grazing, with sheep present at the time of the field survey in September 2022.

2.3.3. Pastoral grazing gradient

The pastoral grazing gradient is determined by the location of natural waters and artificial watering points and the arrangements of paddocks in the landscape. Landscape topography is also considered to account for variable movement of stock in different parts of the landscape. The distance from a watering point within a paddock is used as a predictor of grazing impacts and therefore vegetation condition (Native Vegetation Council, 2020a).

The south-western corner of the Project Area is within the road and rail corridors and is outside the pastoral lease area. It is not covered by grazing gradient mapping.

The Impact Area occurs across four gradients, as shown in Figure 2.

2.3.4. Interim Biogeographical Regionalisation of Australia (IBRA)

The Interim Biogeographical Regionalisation of Australia (IBRA) is a landscape-based approach to classifying the land surface across a range of environmental attributes, which is used to assess and plan for the protection of biodiversity (Department of Climate Change, Energy, the Environment and Water, 2023a). Land is classified into bioregions, which is further divided into subregions, and then environmental associations.

The Project Area falls within the Gawler Lakes subregion of the Gawler Bioregion. This subregion is characterised by a landscape of undulating plains vegetated with *Acacia* spp. and *Casuarina pauper* woodlands and Maireana spp. shrublands.

2.3.5. Landform types

The Project Area consists mainly of undulating plains, flatter in the west with some higher, sandy rises in the south-east. While there are no watercourses or floodouts, some low-lying, run-on areas with clay soils form swamp depressions. These areas were dry at the time of the field survey but had recently held water.

Two landform types were therefore recognised in the Project Area – undulating plains and swamps. The Clearance Area mostly consists of undulating plains, although there is one small swamp area present, as shown in Figure 3.

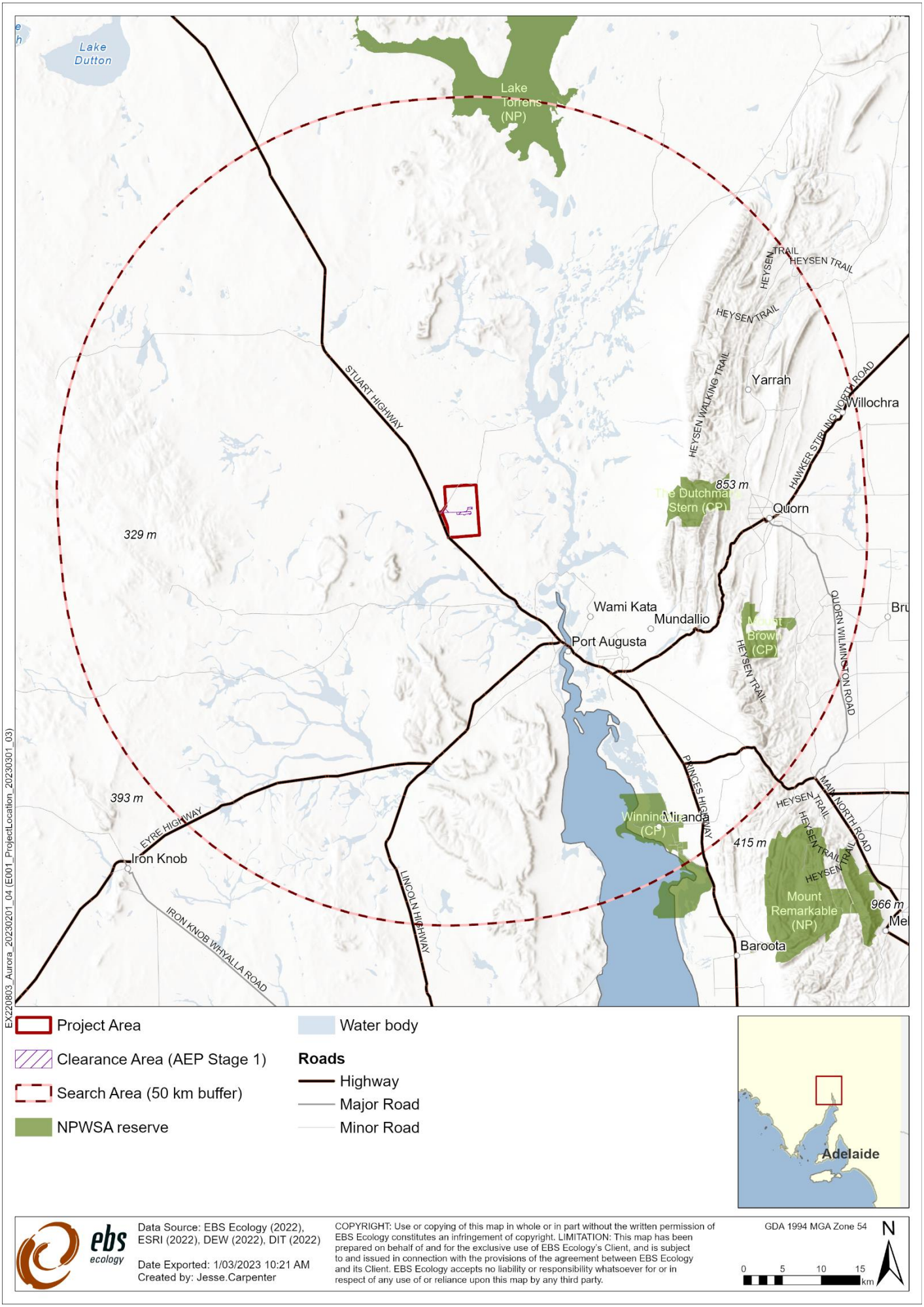


Figure 1. Location of the Project, Clearance and Search Areas.

Figure 2. Pastoral grazing gradient mapping for the Project Area (Department for Environment and Water, 2023b).

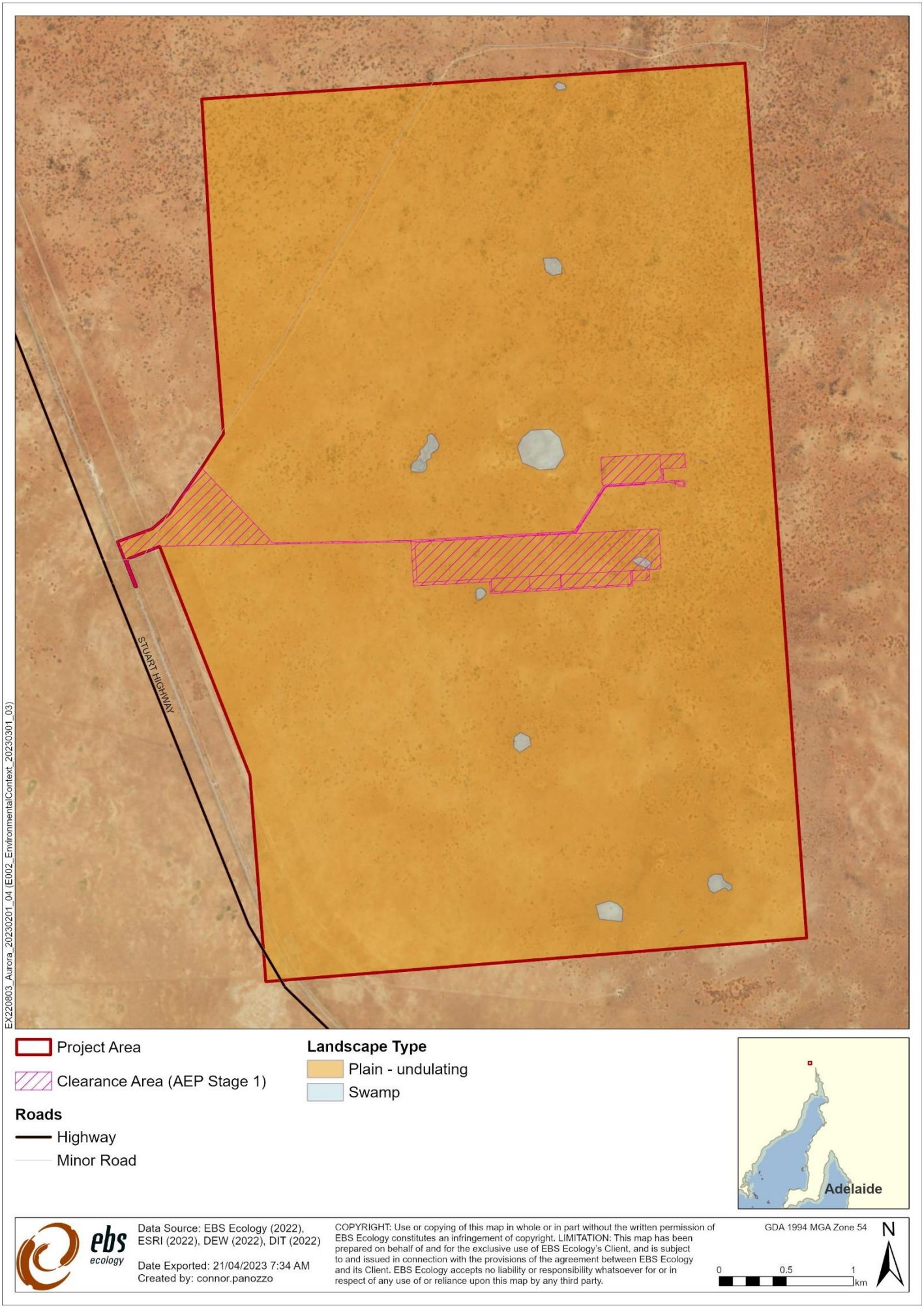


Figure 3. Landform types in the Project Area.

2.4. Details of the proposal

The AEP is planned as a multi-stage renewable energy development utilising thermal energy storage and concentrated solar thermal power. The development will occur in two stages, as described in Table 3. The planned design drawings of the AEP are shown on the map in Figure 4.

Stage 1 requires a construction footprint of 116.06 ha, as shown in Table 3. The Clearance Area includes a 10 m buffer around all infrastructure to account for over-clearance and fire protection buffers. Access roads, including batters, will be constructed to a width of 10 m, with cable runs cleared to a width of 5 m to allow access for trenching machinery.

The access point from the Stuart Highway and level crossing over the Adelaide – Tarcoola railway has not yet been designed. Silicon is applying for clearance of 32 ha adjacent to the Stuart Highway to allow for future design of the level crossing and highway access (Figure 5). Actual clearance will be considerably less, with a corridor of only 10 m width being cleared.

Table 3. Details of the proposed AEP development.

Stage	Plant	Infrastructure	Impact Area (ha)
Stage 1	Battery Energy Storage System (BESS)	• BESS plant, including office • Internal access road, including parking • Internal transmission line / cable runs • Perimeter fence • Construction laydown / stockpile site • Fire / over clearance buffers	9.05
	(VS1)	• Internal access roads, including parking • 30 MW Steam turbine generator • Molten salt thermal storage plant • PV array • Perimeter fence • Construction laydown / stockpile site • Fire / over clearance buffers	54.57
	Substation	• Substation • Connection to existing 275 kiloVolt (kV) transmission line	1.91
	Operations	• Office • Workshop • Warehouse • Laydowns	2.21
	Evaporation pond	• Evaporation pond	0.99
	Access roads	• External access roads • Railway level crossing	35.02
	Underground cable run	• Cable runs between PV, plant, BESS and substation.	0.41
	Solar methanol plant	• Plant	2.86
	Construction laydown area	• Laydown area	5.29
	Additional clearance buffer	• Clearance buffer to account for future additions and construccction	3.75
		Total Clearance Stage 1	**116.06**
Stage 2	CSP (VS3), including PV array.	• Internal and external access roads. • Construction laydown / stockpile sites. • Plant.	440.65

Stage	Plant	Infrastructure	Impact Area (ha)
	TESS plant	• Solar PV array. • Perimeter fencing. • Internal transmission lines / cable runs. • Fire / over clearance buffers.	202.64
	Access road	• Access road between Stage 1 and Stage 2.	0.40
		Total Clearance Stage 2	**643.69**

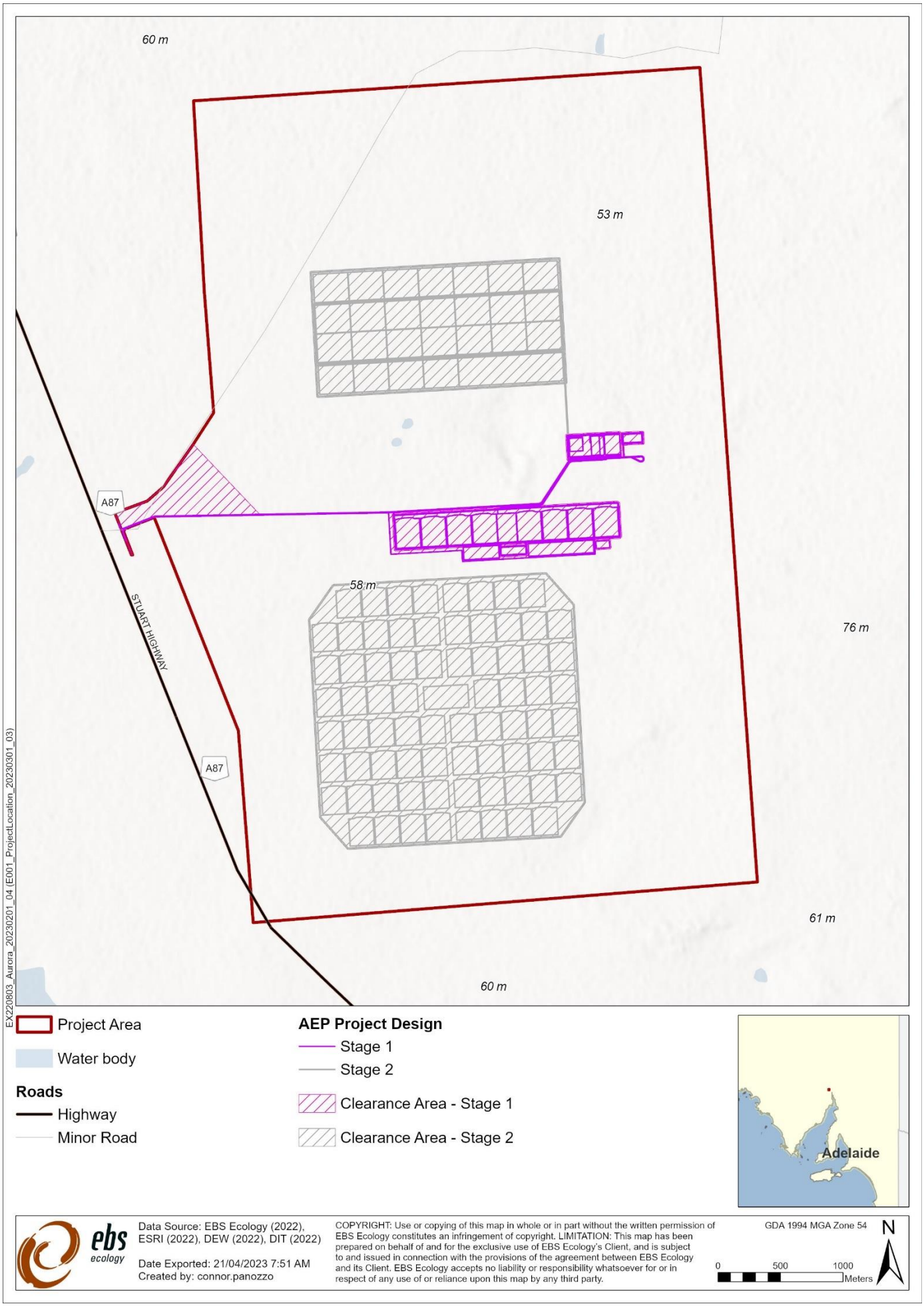


Figure 4. The Aurora Energy Project (AEP), showing the proposed layout of Stage 1 and Stage 2 of the development.

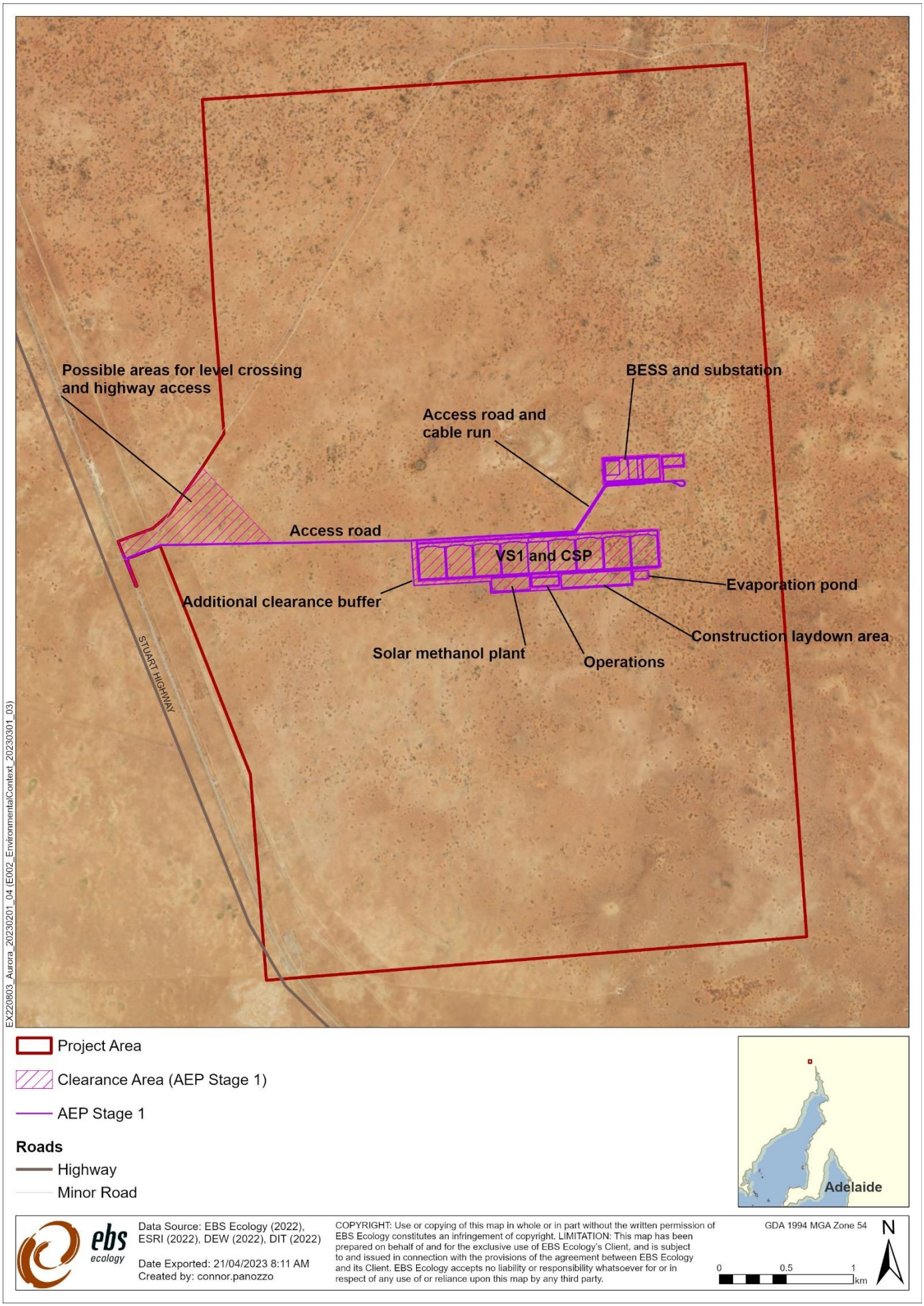


Figure 5. AEP Stage 1 project design, as supplied to EBS Ecology by Silicon.

2.5. Approvals required *or* obtained

2.5.1. Native Vegetation Act 1991 (NV Act)

Clearing of native vegetation is required for the development of the proposal. This requires approval under the NV Act.

A Clearance application was first lodged and approved in July 2018 (2017/3123/010). To extend the approval beyond its expiration date, an updated vegetation clearance data report completed according to current methods is required (this report).

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

Matters of National Environmental Significance (MNES) are protected under the Commonwealth EPBC Act. The nine MNES are listed below:

- World Heritage properties.
- National heritage places.
- Wetlands of international importance.
- Nationally threatened species and ecological communities.
- Migratory species.
- Commonwealth marine areas.
- The Great Barrier Reef Marine Park.
- Nuclear actions.
- A water resource, in relation to coal seam gas development and large coal mining development.

Two nationally threatened species are known to occur in the Project Area and are potentially impacted by the AEP development.

EBS Ecology recommends that potential impact is assessed against EPBC Act significant impact guidelines. Should impact be deemed significant, the project will require referral to the Minister for the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW).

2.5.3. Planning, Development and Infrastructure Act 2016 (PDI Act)

The Project required approval under the PDI Act. A Development Application (DA) has been lodged and approved:

- DA 010/V061/17

2.5.4. National Parks and Wildlife Act 1972 (NPW Act)

Field surveys undertaken to assess the clearance were carried out by EBS Ecology under the following scientific research permit:

- K25613-22

2.6. Native Vegetation Regulation

The proposed clearance is suggested to be assessed under the following Native Vegetation Regulations listed in Table 4.

Table 4. Native Vegetation Regulations under which the proposal will be assessed.

Development	Native Vegetation Regulation
Solar methanol plant	Schedule 1 *Regulation 12 (34) – New dwelling or building.* ***33 – New dwelling or building*** *(1) Clearance of vegetation required in order to erect a building or structure or other facility that is ancillary to a building, provided that any development authorisation required by or under the Development Act 1993* has been obtained.*
Solar arrays, BES, CSP and all associated infrastructure	Schedule 1 *Regulation 12 (34) – Infrastructure.* ***34 – Infrastructure*** *(1) Clearance of vegetation—* *(a) incidental to the construction or expansion of a building or infrastructure where the Minister has, by instrument in writing, declared that the Minister is satisfied that the clearance is in the public interest; or* *(b) required in connection with the provision of infrastructure or services to a building or proposed building, or to any place, provided that any development authorisation required by or under the Development Act 1993* has been obtained.*

******The Development Act 1993* **has been repealed and replaced by the** ***Planning, Development and infrastructure Act 2016*** **(PDI Act).**

2.7. Development Application information (if applicable)

Development application information (DA 010/V061/17) is shown in Table 5.

Table 5. Development Application information.

Hundred	Castine
Plan Parcel	H540100 S2
Title	CL6181/119
Zone	Remote Areas
Overlays	Hazards (Bushfire – Outback Hazards (Bushfire – Regional Hazards (Flooding – Evidence Required) Key Outback and Rural Routes Native Vegetation Water resources

3. Method

3.1. Flora assessment

The flora assessment was undertaken by NVC Accredited Consultant J. Carpenter and ecologist N. Piscioneri from 26 to 27 October 2022. The assessment was undertaken in accordance with the Rangelands Assessment Method (RAM) (Native Vegetation Council, 2020a), as described below.

3.1.1. Rangelands Assessment Method

The RAM was developed by the Native Vegetation Management Unit for the purpose of assessing areas of native vegetation requiring clearance and to calculate the Significant Environmental Benefit (SEB) requirements in the arid zone of South Australia.

The RAM aligns with the methods used for the assessment of land and vegetation condition developed by Natural Resources South Australia Arid Lands, requiring quantitative on ground and desktop assessment of landscape, native vegetation and ecological values.

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 *Rangelands Assessment Manual* (Native Vegetation Council, 2020a).

The Conservation Significance Scores were calculated from direct and historical observations of flora and fauna species of conservation significance. All fauna identified as known to occur in the Protected Matters Search Tool (PMST), and fauna with Biological Database of South Australia (BDBSA) records since 1995 and with a spatial reliability of less than 1 km, within 50 km of the Project Area, were included in the RAM scoresheets. Species determined as unlikely to occur within the Project Area will be removed by the Native Vegetation Branch if the finding is supported. Marine and/or wetland species were omitted from the scoresheets given the Project Area impacts terrestrial habitats only.

In the case of newly listed threatened species that do not appear as such in the RAM scoresheets, a species of equivalent conservation status has been entered to provide an accurate Conservation Significance Score.

3.1.2. Targeted survey for threatened plant species

The Impact Area was searched for *Santalum spicatum* (Sandalwood) trees, listed as Vulnerable under the NPW Act. Two observers walked parallel transects spaced approximately 25 metres apart through the proposed VS1 and BESS impact footprints.

The NPW Act Vulnerable small tree *Citrus glauca* (Desert Lime) was recorded in the Project Area prior to 1995. The location of this record was visited during the survey to observe if the species was still present at the site.

3.2. Fauna assessment

A desktop assessment was undertaken to determine the potential for any threatened fauna species and Threatened Ecological Communities (TECs) (both Commonwealth and State listed) to occur within the Project Area. This was achieved by undertaking database searches using a 50 km buffer of the Project Area (Search Area).

3.2.1. Protected Matters Search Tool report

A Protected Matters Search Tool (PMST) report was generated on 20/10/2022 to identify nationally threatened flora and fauna, migratory fauna and TECs under the EPBC Act relevant to the Project Area (Department of Agriculture, Water and the Environment, 2022). Only species and TECs identified in the PMST report that are known to occur within the Search Area were assessed for their likelihood of occurrence within the Project Area.

3.2.2. BDBSA data extract

A data extract from the Biological Database of South Australia (BDBSA) was obtained on 28/10/2022, Recordset number DEWNRBDBSA221028-2 (Department for Environment and Water, 2023a). The BDBSA is comprised of an integrated collection of species records from the South Australian Museum, conservation organisations, private consultancies, Birds SA, Birdlife Australia and the Australasian Wader Study Group, which meet the Department for Environment and Water's (DEW) standards for data quality, integrity and maintenance. Only species with records collected since 1995 and with a spatial reliability of less than 1 km were assessed for their likelihood of occurrence.

3.2.3. Previous ecological surveys

The results of previous ecological surveys undertaken in the Project Area were used to inform the outcomes of this assessment. These surveys are documented in the following reports, that are available on request:

- *Aurora Solar Energy Project Flora and Fauna Report* (EBS Ecology, 2018a).
- *Aurora Solar Energy Project Native Vegetation Clearance Report* (EBS Ecology, 2018b).
- *Aurora Solar Energy Project Flora and Fauna Assessment* (EBS Ecology, 2017).

3.2.4. Field survey

Dedicated bird surveys were undertaken at each RAM site during the survey. The area search method was used, with a 2-ha search area surveyed for 20 minutes by one observer. Each site was surveyed only once. While undertaking the vegetation survey, observers opportunistically recorded fauna observed on the site, including scats, tracks and other signs.

Targeted surveys for Western Grasswren (*Amytornis textilis myall*) were undertaken at four locations near the Impact Area, although habitat for this species was deemed marginal at best. Call broadcast methods were used, since this species is well-known to respond quickly to this method, being consistently detected if present. Surveys occurred once only, prior to 10 am and were undertaken according to the *Survey Guidelines for Australia's Threatened Birds* (Magrath, Weston, Olsen, & Antos, 2010), as summarised below:

- After arriving at the survey site, the observer searched and listened for Western Grasswren calls while stationary for a period of 5 minutes.
- Calls were broadcast for a period of 30 seconds, followed by a period of 60 seconds listening for the call response or appearance of Western Grasswren.
- The call broadcast / listening sequence was repeated up to five times at each survey site, with broadcasting ceasing at the point the species was detected.
- After the fifth broadcast / listening sequence, if no birds were detected, the area was actively searched for Western Grasswrens that may have been attracted by the call broadcast but had not responded.

Two Wedge-tailed Eagle (*Aquila audax*) nests were recorded in the southern Project Area during previous surveys. Both nests were visited to monitor for breeding activity or current use by Wedge-tailed Eagles.

3.2.5. Likelihood of occurrence

The criteria for the likelihood of occurrence of threatened species within the Project Area are described in Table 6.

Table 6. Criteria for the likelihood of occurrence of threatened species within the Project Area.

Likelihood	Criteria
Highly Likely/Known	Recorded in the last 10 years, the species does not have highly specific niche requirements, the habitat is present and falls within the known range of the species distribution or; The species was recorded as part of field surveys.
Likely	Recorded within the previous 20 years, the area falls within the known distribution of the species and the area provides habitat or feeding resources for the species.
Possible	Recorded within the previous 20 years, the area falls inside the known distribution of the species, but the area provide limited habitat or feeding resources for the species. Recorded within 20 -40 years, survey effort is considered adequate, habitat and feeding resources present, and species of similar habitat needs have been recorded in the area.
Unlikely	Recorded within the previous 20 years, but the area provides no habitat or feeding resources for the species, including perching, roosting or nesting opportunities, corridor for movement or shelter. Recorded within 20 -40 years; however, suitable habitat does not occur, and species of similar habitat requirements have not been recorded in the area. No records despite adequate survey effort.

3.3. Limitations

3.3.1. Assessment limitations

At the time the survey was undertaken, not all plant species may have been visibly present. Some species such as native orchids and lilies are particularly hard to detect when not in flower. It is possible that some flora species were present but not detected. However, the survey was undertaken in spring following good winter rainfall to maximise the opportunity to detect annual and seasonal plants.

It is not possible to detect all terrestrial animals that may use the site without carrying out intensive trapping and targeted surveys and 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.

As many bird species in the arid zone are transient or nomadic, the bird species recorded during the field survey would not represent the complete bird community that would occur in the Project Area.

The assessment considers the results of previous field surveys in the Project Area and historical records of flora and fauna held in Government databases, together with data collected during this field survey, to determine the likelihood of threatened species occurring in the Project Area. This is limited by the information available at the time of writing, noting that new records may occur over time and that the conservation status of species is periodically updated.

3.3.2. Spatial data limitations

All spatial data has been captured or converted to the following coordinate reference system.

Datum: Geocentric Datum of Australia 2020 (GDA2020).

Projection: Map Grid of Australia 2020 (MGA2020), Zone 53H.

All location coordinates listed in this report are expressed using this system. Spatial data converted from other coordinate reference systems may have accuracy limitations.

3.3.3. Legislative changes to conservation status

This assessment includes species and communities that were listed as threatened under the EPBC Act and NPW Act at the time of writing. It does not account for legislative changes that elevate species or communities to a threatened status following lodgement of this clearance application.

In this instance, several species that occur in South Australia were listed as threatened under the EPBC Act in the time between undertaking database searches and submitting this application. This includes two species relevant to the AEP:

- Southern Whiteface (*Aphelocephala leucopsis*).
- Blue-winged Parrot (*Neophema chrysostoma*).

Both these species were listed as Vulnerable under the EPBC Act on March 31, 2023.

4. Assessment Outcomes

4.1. Vegetation assessment

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

Five Vegetation Associations have been mapped across the entire Project Area:

- *Acacia aneura* Open Woodland.
- *Acacia papyrocarpa* Open Woodland over *Maireana pyramidata / Maireana sedifolia*.
- *Casuarina pauper* Woodland over *Atriplex vesicaria +/- Maireana sedifolia*.
- *Duma florulenta / Maireana pyramidata* Open Shrubland over *Teucrium racemosum, Setaria constricta* and *Marsilea drummondii*.
- *Maireana pyramidata / Maireana sedifolia* Shrubland.

These associations are mapped in Figure 9. Two associations occur in the Clearance Area:

None of the Vegetation Associations mapped forms the whole or part of a Threatened Ecological Community, either listed under the EPBC Act or on the Department for Environment and Water's *Provisional list of threatened ecosystems* (Department for Environment and Heritage, 2005).

The impacted vegetation is in good condition, although grazing occurs throughout. While overstorey and taller mid storey is generally not impacted by grazing activities, smaller shrubs and under storey vegetation is modified by grazing, with little to no grass, low shrub and forb cover present. Highly palatable shrubs were heavily utilised by stock, as shown in Figure 6. Despite recent rains having stimulated abundant new growth on established shrubs, this grazing impact was still easily observed Figure 7.

Previous assessments have indicated that vegetation in the north-east of the Project Area is in better condition than elsewhere. This is generally consistent with the pastoral grazing gradient mapping and distance from waterpoints. The north-eastern Project Area is furthest from water points and is in the 3001-4000 and 4001-5000 grazing gradient bands.

Vegetation had responded to recent winter and spring rains, with several species of annual forbs recorded and grasses flowering and seeding during the survey.

There is evidence of over storey recruitment occurring in woodlands, with young *Acacia papyrocarpa* present throughout the Impact Area. These are generally heavily grazed however, with young plants eaten to near ground level, as shown in Figure 8.

The field survey recorded a total of 86 plant species across the Project Area. These are listed in Appendix 1 and included 19 introduced species, or weeds. All weeds were widespread throughout the Project Area, although cover was generally very sparse to low. There was a higher cover of weeds present in and near swamps and watering points. Weed species recorded included three species declared under the *Landscape South Australia Act 2016* (LSA Act), as listed in Table 7. All other weed species are listed in Appendix 1.

It should be noted that there are legal requirements for landholders to manage the spread of Declared plants. Landholder responsibilities for each of the Declared plants recorded in the Project Area are listed in Table 7.

Table 7. Plants declared under the LSA Act that were recorded during the survey.

Scientific Name	Common Name	LSA Act Declared	Legal Requirements (South Australian Arid Lands)
Emex australis	Three-corner Jack	Yes	• Must not be sold or traded in any way, including as a contaminant of anything. • Must not be transported on a public road, including as a contaminant of anything.
Marrubium vulgare	Horehound	Yes	• Must not be sold or traded in any way, including as a contaminant of anything. • Must not be transported on a public road, including as a contaminant of anything.
Tribulus terrestris	Caltrop	Yes	• Land owners to take reasonable steps to kill plants and prevent their spread. • Must not be sold or traded in any way, including as a contaminant of anything. • Must not be transported on a public road, including as a contaminant of anything.

Figure 6. *Pimelea microcephala* is a highly palatable shrub, generally over utilised by sheep grazing in the Project Area.

Figure 7. *Maireana pyramidata* was also heavily grazed by sheep. Although recent rains had stimulated abundant new growth, impact of grazing was still obvious.

Figure 8. Young *Acacia papyrocarpa* reduced to a procumbent habit by heavy grazing pressure.

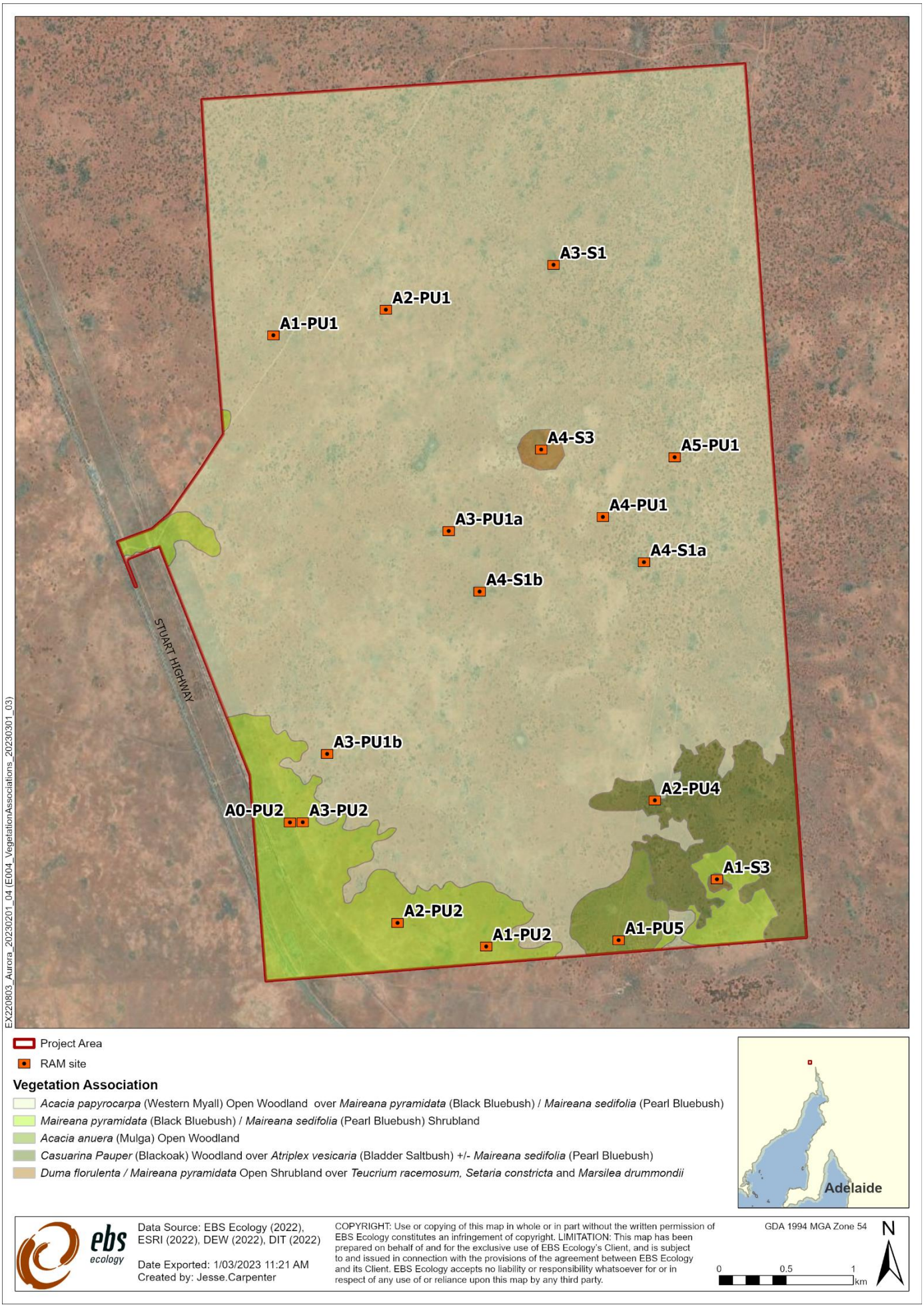


Figure 9. Vegetation Associations of the Project Area, showing the RAM survey sites.

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

Two Vegetation Associations are impacted by the Project:

- *Acacia papyrocarpa* Open Woodland over *Maireana pyramidata / Maireana sedifolia*.
- *Maireana pyramidata / Maireana sedifolia* Shrubland

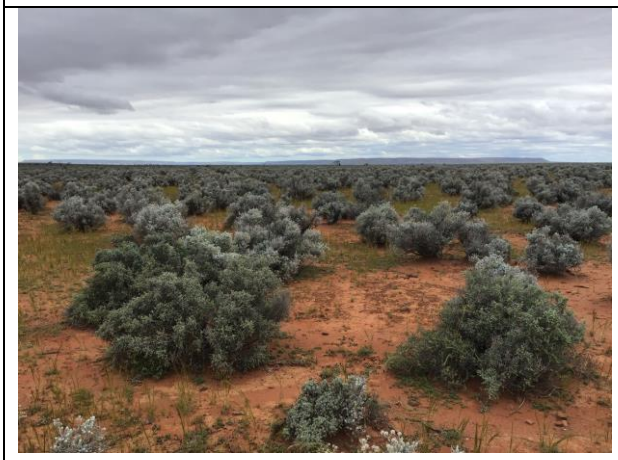
These associations are described in Table 8 and Table 9 respectively.

Table 8. Description of *Acacia papyrocarpa* Open Woodland over *Maireana pyramidata / Maireana sedifolia*.

Vegetation Association	*Acacia papyrocarpa* Open Woodland over *Maireana pyramidata / Maireana sedifolia*.
RAM Survey Sites	A1-PU1, A2-PU1, A3-PU1a, A3-PU1b, A4-PU1, A5-PU1, A4-S1a
 **A1-PU1**	 **A2-PU1**
 **A3-PU1a**	 **A3-PU1b**
 **A4-PU1**	 **A5-PU1**
 **A4-S1a**	
General description	Sparse to open woodland dominated by an over storey of *Acacia papyrocarpa* with *Myoporum platycarpum* and *Alectryon oleifolius* also present in some areas. The mid storey consists of an open Chenopod shrub layer consisting of mainly *Maireana pyramidata* and *Maireana sedifolia* but also with low shrubs of *Rhagodia* spp., *Lycium australe* and *Atriplex vesicaria*. Understorey is sparse, mainly consisting of annual forbs such as *Tetragonia implexicoma* and *Rhodanthe* spp. and sparse tussock of *Austrostipa nitida*. The association occurs on clay loam to loamy red soils of undulating plains, including low lying areas subject to infrequent flooding. Grazing impacts are high in some areas, with stock over utilising highly palatable midstorey shrubs and grasses. Weeds are sparse but widespread, including species such as *Schismus barbata*, *Carrichtera annua*, *Medicago polymorpha*, *Tribulus terrestris* and *Sisymbrium* sp.

<table>
<tr><td>Vegetation Association</td><td colspan="5">Acacia papyrocarpa Open Woodland over Maireana pyramidata / Maireana sedifolia.</td></tr>
<tr><td rowspan="2"></td><td colspan="5">Larger, old trees contain small hollows, dead timber and mistletoes that provide important fauna habitat. Regeneration of overstorey species is present, although impacted by grazing, but regeneration of midstorey shrubs was observed at only some of the survey sites.</td></tr>
<tr><td colspan="2">Overstorey</td><td colspan="2">Midstorey</td><td>Understorey</td></tr>
<tr><td colspan="2">Acacia papyrocarpa
Myoporum platycarpum
Alectryon oleifolius</td><td colspan="2">Maireana pyramidata
Maireana sedifolia
Acacia burkittii
Enchylaena tomentosa
Lycium australe
Rhagodia parabolica
Rhagodia spinescens
Atriplex vesicaria
Dissocarpus paradoxus</td><td>Austrostipa nitida
Schismus barbata
Pterocaulon sphacelatum
Dysphania pumilio
Rhodanthe sturtianum
Rhodanthe uniflora
Tetragonia implexicoma
Calotis hispidula</td></tr>
<tr><td>Threatened species or community</td><td colspan="5">The community is not a Threatened Ecological Community.
No threatened species were recorded in this Vegetation Association during the field survey. However, the association provides potential habitat for threatened species as listed in Section 4.2.3.</td></tr>
<tr><td>Landscape context score</td><td>1.15</td><td>Vegetation Condition Score</td><td>Range: 50.65 – 63.18
Average: 58.17</td><td>Conservation significance score</td><td>1.26</td></tr>
<tr><td>Unit biodiversity Score</td><td>Range: 73.40 – 91.54
Average: 84.29</td><td>Area (ha)</td><td>103.81</td><td>Total biodiversity Score</td><td>8749.77</td></tr>
</table>

Table 9. Description of *Maireana pyramidata / Maireana sedifolia* Shrubland.

<table>
<tr><td>Vegetation Association</td><td colspan="5">Maireana pyramidata / Maireana sedifolia Shrubland</td></tr>
<tr><td>RAM Survey Sites</td><td colspan="5">A0-PU2, A1-PU2, A2-PU2, A3-PU2</td></tr>
<tr><td colspan="6"> 
A0-PU2</td></tr>
<tr><td colspan="6"> 
A1-PU2</td></tr>
<tr><td colspan="6"> 
A2-PU2</td></tr>
<tr><td colspan="6"> 
A3-PU2</td></tr>
<tr><td>General description</td><td colspan="5">Shrubland to open shrubland dominated by Maireana spp. on clay loam to loam soils of undulating plains. An open midstorey of low shrubs such as Ptilotus obovatus, Dissocarpus paradoxus and Sclerolaena spp. is present over a sparse grass/forb understorey. This includes species such as Austrostipa nitida, Portulaca oleracea and annual forbs, such as Rhodanthe spp.
Weeds are sparse but widespread, including species such as Schismus barbata and Carrichtera annua.
Palatable shrubs are heavily impacted by grazing at some sites, although there is some regeneration of chenopod shrubs in the mid and overstorey.
Overstorey | Midstorey | Understorey
Maireana pyramidata
Maireana sedifolia | Ptilotus obovatus
Dissocarpus paradoxus
Sclerolaena diacantha
Sclerolaena obliquicuspis | Austrostipa nitida
Carrichtera annua
Rhodanthe moschata
Portulaca oleracea
Tetragonia sp.
Atriplex holocarpa
Schismus barbata</td></tr>
<tr><td>Threatened species or community</td><td colspan="5">The community is not a Threatened Ecological Community.
No threatened species were recorded in this Vegetation Association during the field survey. However, the association provides potential habitat for threatened species as listed in Section 4.2.3.</td></tr>
<tr><td>Landscape context score</td><td>1.15</td><td>Vegetation Condition Score</td><td>Range: 46.54 – 64.27
Average: 52.70</td><td>Conservation significance score</td><td>1.26</td></tr>
<tr><td>Unit biodiversity Score</td><td>Range: 67.44 – 93.13
Average: 76.37</td><td>Area (ha)</td><td>12.25</td><td>Total biodiversity Score</td><td>935.49</td></tr>
</table>

4.1.3. Site map showing areas of proposed impact

A site map showing the proposed impact to Vegetation Associations (Clearance Area) is provided as Figure 10.

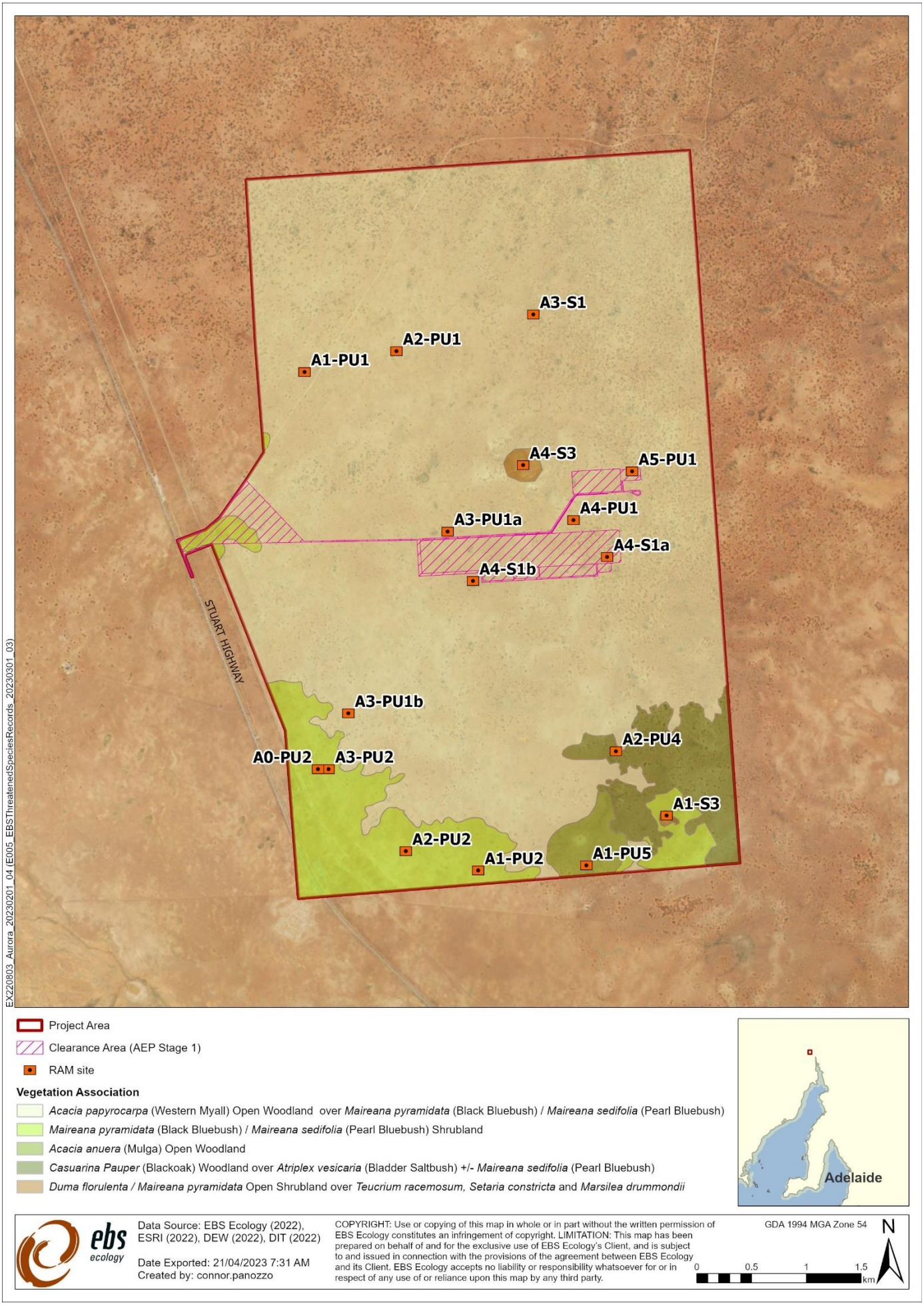


Figure 10. Site map showing the Impact Area, indicated by Stage 1 on the map above.

4.2. Threatened species assessment

4.2.1. Threatened flora species recorded by field survey

One threatened plant species was recorded during the survey:

- *Gratwickia monochaeta* (One-bristle Everlasting).

This species is listed as Rare under the NPW Act but is not listed as threatened under the EPBC Act. *Gratwickia monochaeta* is an annual forb that grows in sand following winter rains. The plant was widespread in the south-east of the Project Area on sandy rises in *Acacia aneura* Woodland and *Casuarina pauper* Woodland over *Atriplex vesicaria +/- Maireana sedifolia*. It was not found in the areas likely to be impacted by the Project, as shown on the map in Figure 13.

Despite searching impact areas for *Santalum spicatum* (Sandalwood). None were recorded during this or previous surveys, however it is possible that some trees occur in difficult to access areas. Similarly, the site of old records of *Citrus glauca* (Desert Lime) was visited (Figure 13). However, the trees could not be found. The species was last recorded in the Project Area in 1993. It is possible the trees were old (having also been recorded in 1965) and have since died, with no recruitment having occurred.

4.2.2. Threatened fauna species recorded by field survey

A total of 75 fauna species have been recorded by EBS Ecology in the Project Area, with 49 species recorded during this field survey period (October 2022). Fauna species recorded by EBS Ecology are listed in Appendix 2, with those observed in 2022 indicated. It includes four reptiles, 41 birds and four mammals.

One threatened fauna species was recorded in the Project Area in 2022:

- Southern Whiteface (*Aphelocephala leucopsis*).

The Southern Whiteface was not listed as threatened at the time of the survey but has since been listed as Vulnerable under the EPBC Act. The species was seen at two locations, shown on the map in Figure 13. A total of 11 individuals were counted, six at the southern site and five at the northern location. While the species was not seen elsewhere during the survey, the entire Project Area represents suitable habitat. It is probable the Southern Whiteface is widespread and relatively common throughout the Project Area.

A further three threatened fauna species have been recorded by EBS Ecology in past surveys of the Project Area:

- Blue-winged Parrot (*Neophema chrysostoma*), EPBC Act Vulnerable, NPW Act Vulnerable.
- Elegant Parrot (*Neophema elegans*), NPW Act Rare.
- Slender-billed Thornbill (*Acanthiza iredalei iredalei*), NPW Act Rare.

Since the 2022 survey, the status of the Blue-winged Parrot has been elevated to Vulnerable under the EPBC Act. It is also listed as Vulnerable under the NPW Act but is not threatened under the EPBC Act. It was recorded in surveys undertaken in 2017. The location of this record is shown in Figure 13 in *Maireana pyramidata / Maireana sedifolia* Shrubland. However the entire Project Area probably represents suitable habitat for the species during the winter non-breeding season.

The Elegant Parrot is listed as rare under the NPW Act but is not threatened under the EPBC Act. The species was recorded in surveys undertaken in 2012 at three locations shown in Figure 13 It was observed in *Acacia papyrocarpa* Woodland and *Acacia aneura* Woodland, although all Vegetation Associations in the project Area are considered suitable habitat.

The Slender-billed Thornbill is also listed as Rare under the NPW Act but is not threatened under the EPBC Act. It was recorded in surveys undertaken in 2015 and 2017 south of the Project Area in *Maireana* spp. Shrubland. The location of the record is shown in Figure 13. Although outside the Project Area, habitat is similar and the Project Area is considered suitable habitat for the species.

Despite undertaking targeted call-playback surveys for the Western Grasswren (*Amytornis textilis myall*) in the impact area, none were recorded. Although there are records within the Search Area, the Project Area is not within the known area of occurrence of this species, being too far to the east. Furthermore, shrublands are low and heavily grazed, with a general absence of taller, thick *Maireana pyramidata* patches along drainage lines (Figure 11). Suitable Western Grasswren habitat is typified by taller, more closed shrubland with a more diverse understorey, such as shown in Figure 12. Given the above factors, it is deemed unlikely that this species occurs in the Project Area. Sites surveyed for the Western Grasswren are shown in Figure 13.

The closest historical records of Western Grasswren to the Project Area are over 10 km to the south-west, as shown in Figure 14.

Figure 11. Low, open, grazed *Maireana* spp. shrubland with almost no understorey typical of the Project Area but deemed not typical of Western Grasswren habitat (Photograph taken in the Project Area in 2022 by EBS Ecology).

Figure 12. Western Grasswren habitat near Whyalla showing taller, more closed shrubland with abundant grass/low shrub understorey. Western Grasswren was observed at this site (Photograph by EBS Ecology).

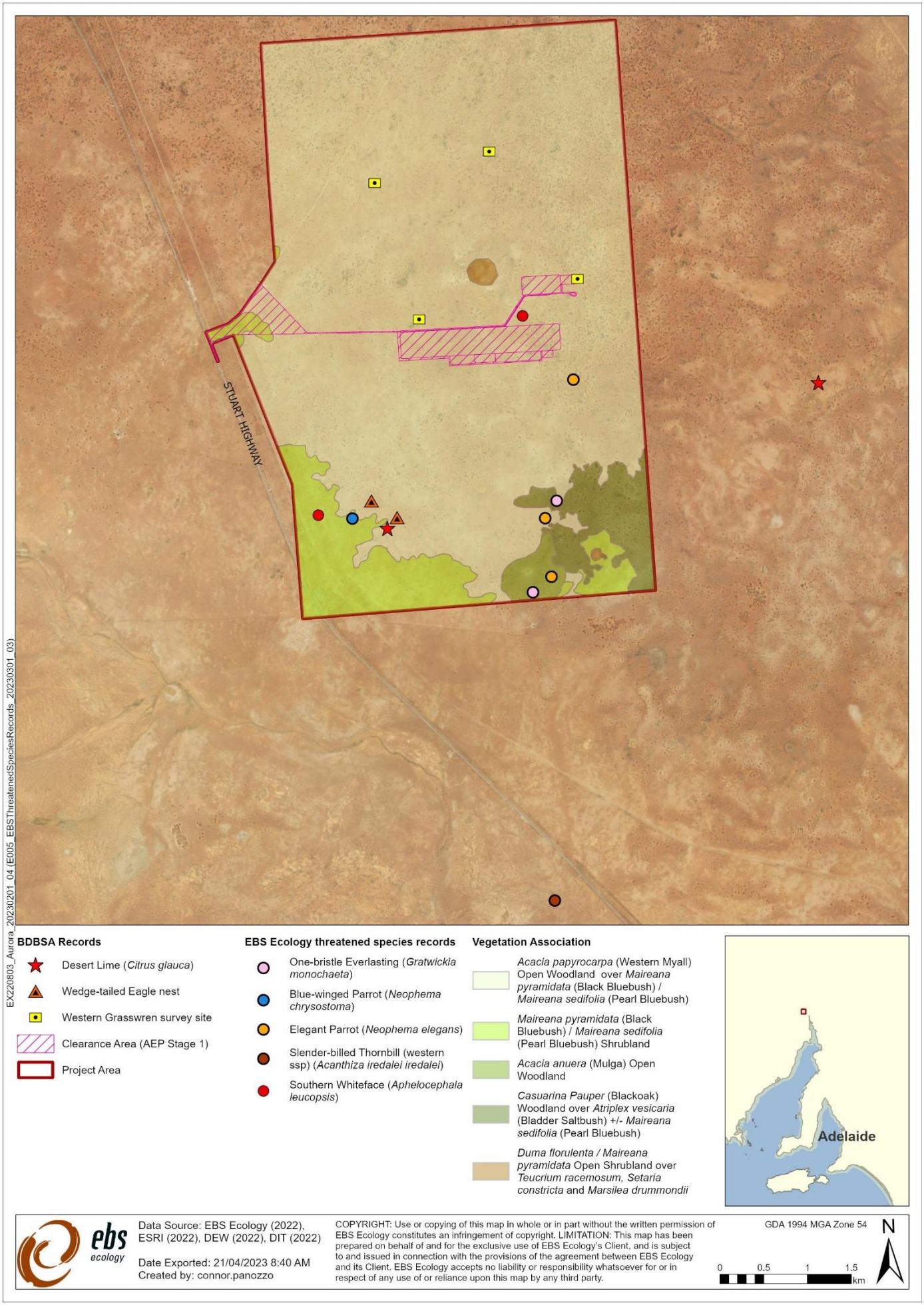


Figure 13. Threatened species recorded in the Project Area by EBS Ecology in previous surveys. The map also indicates sites surveyed for Western Grasswren in 2022, the location of Wedge-tailed Eagle nests and BDBSA *Citrus glauca* records.

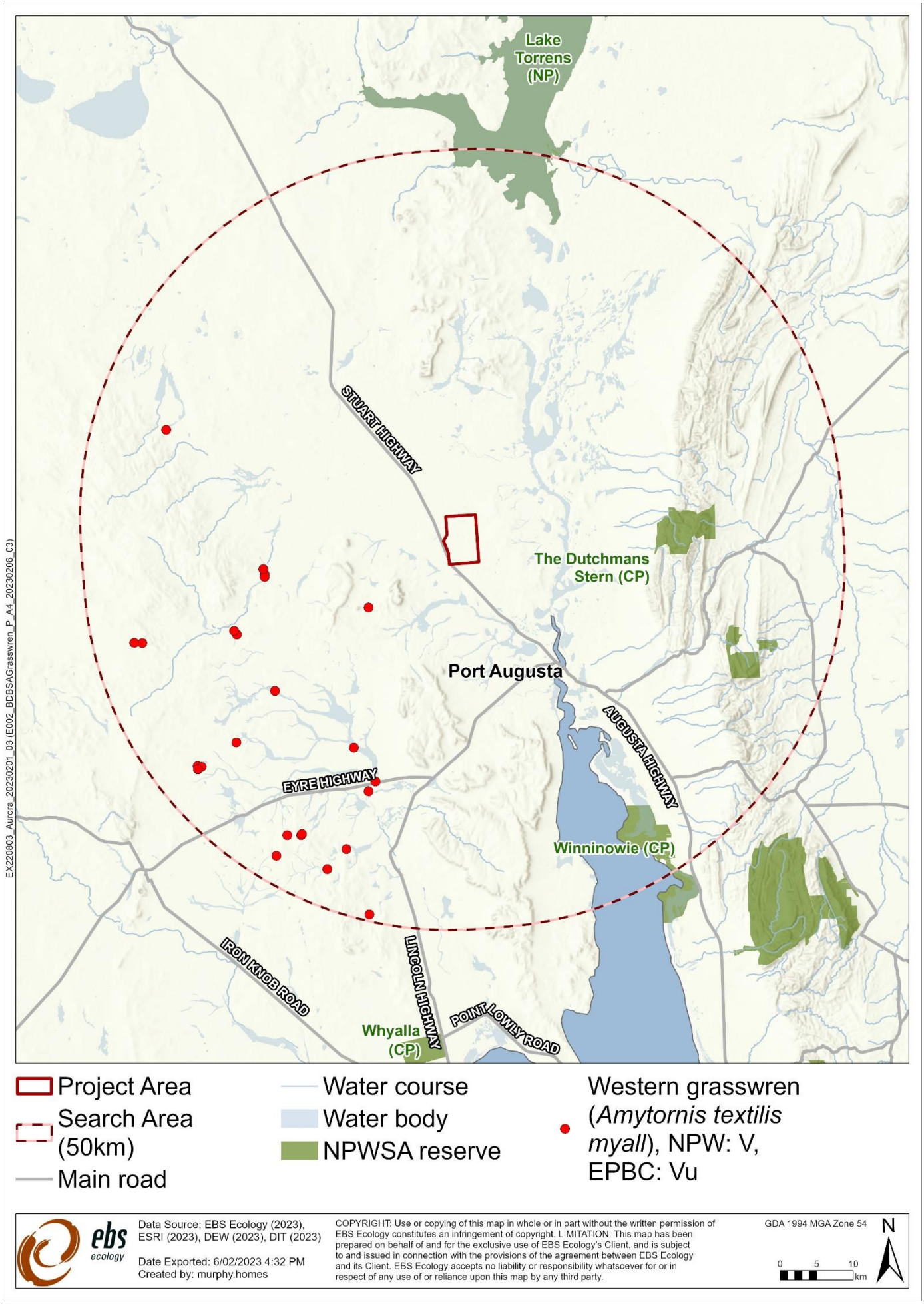


Figure 14. Historical records of Western Grasswren within 50 km of the Project Area (Department for Environment and Water, 2023a).

4.2.3. Likelihood of occurrence assessment for threatened species

Flora

Of the 32 threatened plant species recorded in the Search Area since 1995, seven have been assessed as at least possibly occurring in the Impact Area. These are listed in Table 10, with the locations of historical records indicated on the map in Figure 15. The full results of the database searches and likelihood of occurrence assessments for the remaining 23 species are provided in Appendix 3.

The nine species listed in Table 10 have been entered into RAM scoresheets for the purposes of calculating Conservation Significance Scores and the SEB obligations of the clearance.

Fauna

The database searches indicated that 62 threatened or migratory fauna species have been recorded in the Search Area since 1995 or were identified as known to occur by the PMST report. Of these, 33 are marine or aquatic species and have been excluded from the vegetation clearing assessment. Eighteen species have been assessed as possible, likely of highly likely to occur in the Impact Area and these species are listed in Table 11, with the location of records shown on the map in Figure 16. The likelihood of occurrence assessments for each of the 44 species considered unlikely to occur are provided in Appendix 3.

One species listed as Migratory under the EPBC Act was recorded, the Rainbow Bee-eater (*Merops ornatus*). This species has been recorded during all surveys undertaken by EBS Ecology and is a common species in the semi-arid rangelands of South Australia. Singles or pairs of the species were observed throughout the Project Area.

Excluding marine and aquatic species, all threatened fauna identified by the database searches have been entered into the RAM scoresheets for the purposes of calculating Conservation Significance Scores and the SEB obligations of the clearance. Should the Native Vegetation Assessment Branch agree with the findings of the likelihood assessment, species considered unlikely to occur will be removed from the scoresheets.

The Southern Whiteface was not listed at the time of the database search and is therefore not included in the likelihood assessments below. However, as previously discussed in Section 4.2.2, it is highly likely that the Southern Whiteface occurs throughout the Project Area.

Table 10. Threatened flora species identified by database searches or recorded during the survey that are considered at least possible to occur in the Project Area.

Scientific Name	Common Name	Conservation Status		Date of last record (year)	Data Source	Species known habitat preferences	Likelihood of use for habitat – Comments
		EPBC Act	NPW Act				
Austrostipa breviglumis	Cane Spear-grass	-	R	2003	1	Occurs in hills and on ridges in sandy loam soil (Botanic Gardens of South Australia, 2023).	**Possible.** The most recent record within 50 km of the Project Area is 20 years old and there are no hills or ridge lines in the project Area.
Brachyscome ciliaris var. subintegrifolia		-	R	2005	1	Grasslands, grassy woodlands and shrublands (Royal Botanic Gardens Victoria, 2023).	**Highly likely.** There are records of the species within 20 years and there is suitable habitat in the Project Area.
Cryptandra campanulata	Long-flower Cryptandra	-	R	2020	1	Occurs in shallow soils over rocks, often in *Lomandra* grasslands, heath and shrubland vegetation (Kellermann, 2020).	**Possible.** There are recent records in the 50 km search area, however habitat in the Project Area is unsuitable.
Maireana excavata	Bottle Fissure-plant	-	V	1996	1	Grasslands and shrublands (Royal Botanic Gardens and Domain Trust, 2023).	**Likely.** Habitat is broadly suitable for the species, but records are more than 20 years old.
Malacocera gracilis	Slender Soft-horns	-	V	2016	1	Saline clay soils or gypseous mounds (Department for Environment and Water, 2023c).	**Likely.** There are recent records (<20 years) in the Search Area, but suitable saline or gypseous habitat is limited.
Rumex dumosus	Wiry Dock	-	R	1996	1	Occurs in grasslands and disturbed grassy areas (Royal Botanic Gardens and Domain Trust, 2023).	**Possible.** Open areas in the Project Area may provide suitable habitat, although there are no records of the species in the past 20 years.

Scientific Name	Common Name	Conservation Status		Date of last record (year)	Data Source	Species known habitat preferences	Likelihood of use for habitat – Comments
		EPBC Act	NPW Act				
Sarcozona bicarinata	Ridged Noon-flower	-	V	2008	1	Low open shrubland and dunes bordering saline depressions with *Atriplex, Acacia, Olearia, Carpobrotus* and *Eucalyptus socialis.*	**Possible.** Recorded within the last 20 years in the Search Area, but suitable habitat is limited.

Conservation Status: Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)/National Parks and Wildlife Act 1972 (NPW Act). CR, Critically Endangered. EN/E, Endangered. VU/V, Vulnerable. R, Rare. Mi, Migratory.
Source of record: 1, BDBSA data extract, including Birdlife Australia records. 2, PMST report. 3, EBS Ecology field survey records

Table 11. Threatened fauna species identified by database searches or recorded during the survey that are considered at least possible to occur in the Project Area.

Scientific Name	Common Name	Conservation Status		Date of last record (year)	Data Source	Species known habitat preferences	Likelihood of use for habitat – Comments
		EPBC Act	NPW Act				
Acanthiza iredalei iredalei	Slender-billed Thornbill	-	R	2019	1, 3	Usually occurs in chenopod shrublands that are dominated by samphire or Maireana and Atriplex associations. It occasionally occurs in acacia shrublands and mangroves adjacent to more preferred habitat.	**Highly likely.** Suitable habitat is found throughout the Project Area. The species was recorded by EBS Ecology in 2015.
Ardeotis australis	Australian Bustard	-	V	2019	1	Mainly inhabits tussock and hummock grasslands, though prefers tussock grasses to hummock grasses; also occurs in low shrublands and low open grassy woodlands; occasionally seen in pastoral and cropping country, golf courses and near dams.	**Highly likely.** Recent records of the species (<10 years) in the Search Area. Habitat throughout the Project Area is suitable for the species.
Climacteris affinis	White-browed Treecreeper	-	R	2020	1	Semi-arid and arid inland scrubs, including woodlands of *Acacia* spp., *Eucalyptus* spp. and *Casuarina* spp. (Pizzey & Knight, 2007).	**Highly likely.** Highly likely to occur in *Acacia papyrocarpa woodlands and Casuarina pauper* woodlands in the Project Area.
Corcorax melanorhamphos	White-winged Chough	-	R	2015	1	Woodlands and taller mallee, where it feeds on the ground amongst the leaf-litter. Tend to prefer wetter areas with leaf-litter, for feeding, and available mud for nest building (Pizzey & Knight, 2007).	**Highly likely.** Highly likely to occur in *Acacia papyrocarpa woodlands and Casuarina pauper* woodlands in the Project Area.
Coturnix ypsilophora australis	Brown Quail	-	V	2014	1	Rank grasses near wetlands, bracken and dense vegetation thickets (Pizzey & Knight, 2007).	**Possible.** Habitat may be suitable for the species following rainfall, particularly around swamp areas when inundation causes rank grass growth.
Falco hypoleucos	Grey Falcon	VU	R	2006	1, 2	timbered lowland plains, particularly acacia shrublands that are crossed by tree-lined water courses. The species has been observed hunting in treeless areas and frequents tussock grassland and open woodland, especially in winter (Department of Climate Change, Energy, the Environment and Water, 2023b).	**Highly Likely.** There are recent records of the species in the Search Area (<10 years old), with habitat throughout the Project Area suitable.

Scientific Name	Common Name	Conservation Status		Date of last record (year)	Data Source	Species known habitat preferences	Likelihood of use for habitat – Comments
		EPBC Act	NPW Act				
Falco peregrinus macropus	Peregrine Falcon	-	R	2020	1	Cliffs, gorges, timbered watercourses, plains, open woodlands and urban areas (Pizzey & Knight, 2007).	**Highly likely.** It is highly likely that the species uses the Project Area habitats for foraging, although there is no breeding habitat (cliffs, gorges) present.
Falco subniger	Black Falcon	-	R	2018	1	Tree-lined watercourses, grasslands, over wetlands and woodlands in semi-arid and arid areas.	**Highly likely.** The Project Area provides suitable habitat for the species, with recent records (<10 years old) in the Search Area.
Hamirostra melanosternon	Black-breasted Buzzard	-	R	2011	1	Grasslands, sandhills, gibber deserts; timbered watercourses and waterholes; tropical woodlands (Pizzey & Knight, 2007).	**Likely.** Records in the Search Area are more than 10 years old, however the Project Area provides broadly suitable habitat.
Hieraaetus morphnoides	Little Eagle	-	V	2020	1	Plains, foothills, open forests, woodlands and shrublands. River Red Gums on watercourses and lakes.	**Highly likely.** There are recent records in the Search Area and habitat in the Project Area is broadly suitable for the species.
Lophochroa leadbeateri	Major Mitchell's Cockatoo	-	R	2020	1	Timbered watercourses and surrounding grasslands, shrublands and woodlands, including *Acacia* spp., *Casuarina* and *Eucalyptus* (Pizzey & Knight, 2007).	**Highly likely.** There are recent records in the Search Area and habitat in the Project Area is broadly suitable for the species.
Myiagra inquieta	Restless Flycatcher	-	R	2016	1	Open forests and woodlands (Pizzey & Knight, 2007).	**Highly likely.** There are recent records in the Search Area and habitat in the Project Area is broadly suitable for the species.
Neophema chrysostoma	Blue-winged Parrot	-	V	2016	1, 3	Open woodlands, mallee, chenopod shrublands and wetland margins (Pizzey & Knight, 2007).	**Highly likely.** The Project Area provides suitable habitat, and the species was observed during field surveys in 2015.

Scientific Name	Common Name	Conservation Status		Date of last record (year)	Data Source	Species known habitat preferences	Likelihood of use for habitat – Comments
		EPBC Act	NPW Act				
Neophema elegans elegans	Elegant Parrot	-	R	2020	1	Open forests, woodlands, chenopod shrublands, mallee and saltmarsh habitats (Pizzey & Knight, 2007).	**Highly likely.** There are recent records of the species in the Search Area and the Project Area provides suitable habitat.
Neophema splendida	Scarlet-chested Parrot	-	R	2009	1	Mainly mallee and *Eucalyptus* woodlands. Also *Casuarina* and *Acacia* woodlands and surrounding chenopod shrublands (Pizzey & Knight, 2007).	**Possible.** There is no mallee or *Eucalyptus* woodland habitat in the Project Area. However, there are recent records in the search Area and *Acacia* and *Casuarina* woodlands in the Project Area may provide some habitat.
Petroica boodang boodang	Scarlet Robin	-	R	2013	1	Forests and woodlands, although in winter can be found in more open habitats and shrublands (Pizzey & Knight, 2007).	**Possible.** The Project Area is unlikely to provide habitat for resident Scarlet Robins but may provide wintering habitat.
Phaps histrionica	Flock Bronzewing	-	R	2013	1	This species is highly irruptive in response to climatic conditions, with the species core range in the Northern territory and south-west Queensland in grassland habitat (Peddler & Lynch, 2016). This record probably relates to a breeding event of Flock Bronzewing in central South Australia, documented by Peddler and Lynch, 2016.	**Possible.** The Project Area is not within the core distribution of the species. However, it does provide some suitable habitat although it is only likely to frequent the area during rare population irruptions.
Plectorhyncha lanceolata	Striped Honeyeater	-	R	2015	1	Dry woodlands including mallee, *Casuarina* and *Acacia* (Pizzey & Knight, 2007).	**Likely.** The Project Area provides suitable habitat for the species, with the most recent record in the search Area in 2015.

Conservation Status: Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)/National Parks and Wildlife Act 1972 (NPW Act). CR, Critically Endangered. EN/E, Endangered. VU/V, Vulnerable. R, Rare. Mi, Migratory.
Source of record: 1, BDBSA data extract, including Birdlife Australia records. 2, PMST report. 3, EBS Ecology field survey records

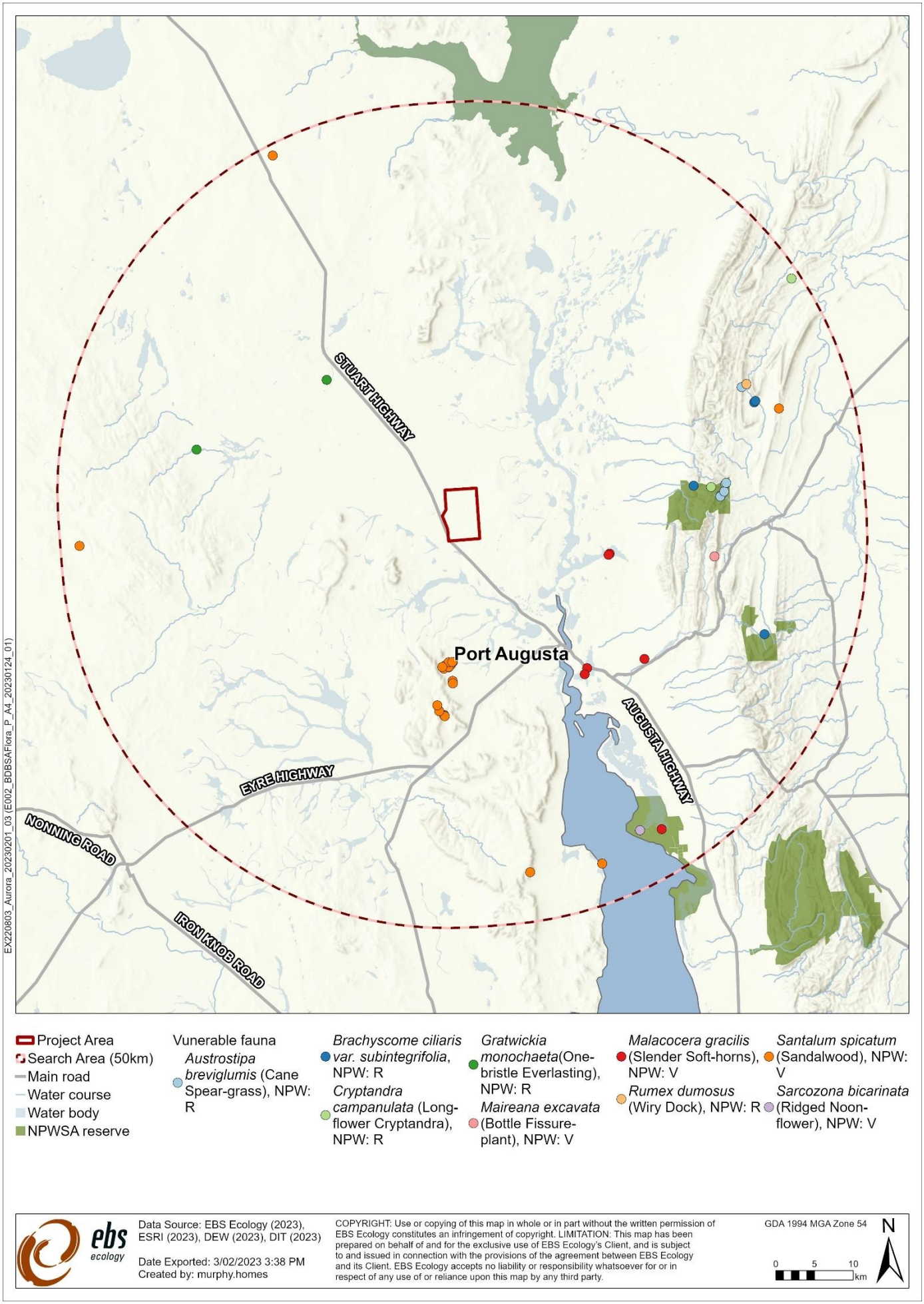


Figure 15. Historical records of threatened flora assessed as possible, likely or highly likely to occur in the Project Area.

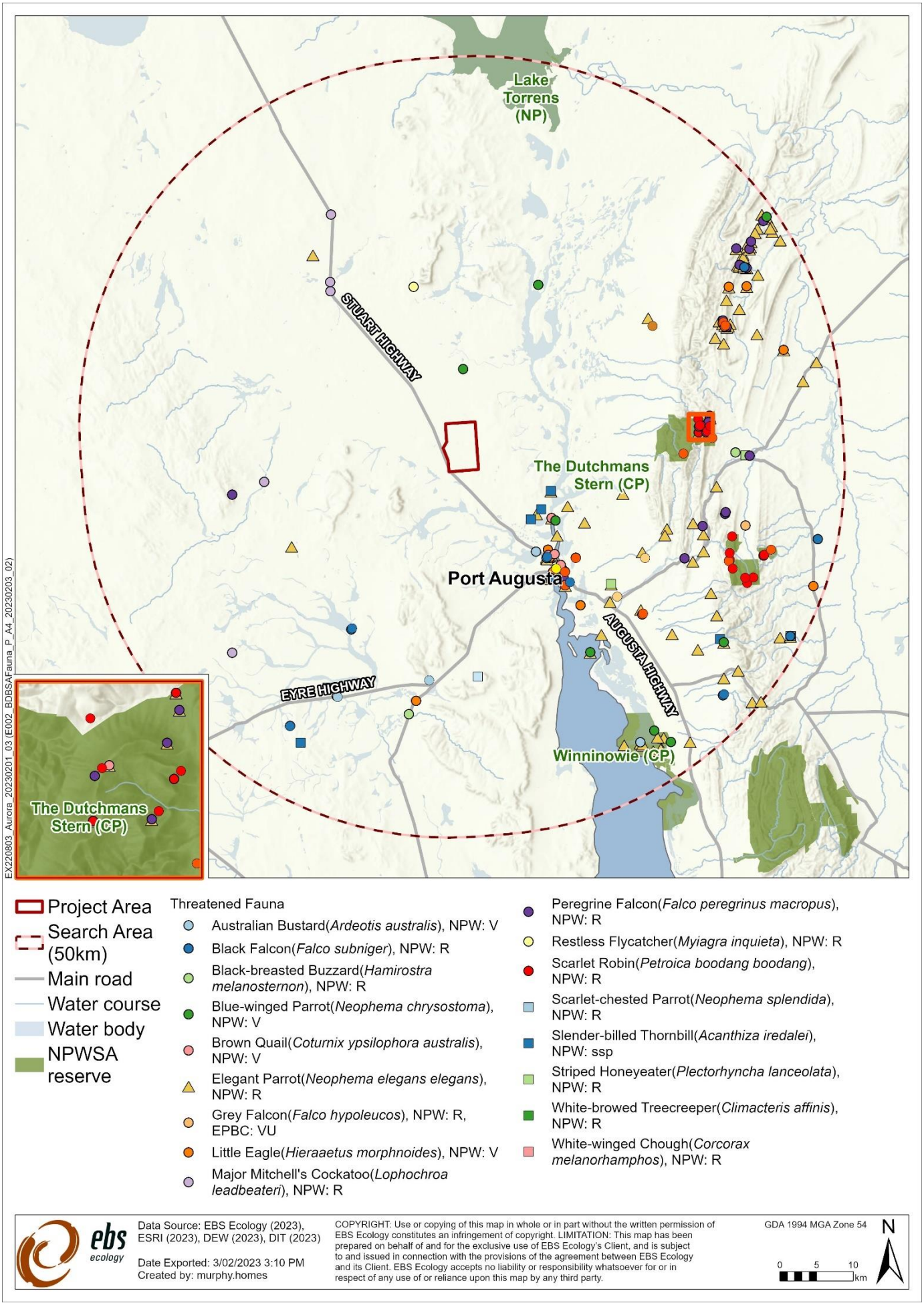


Figure 16. Historical records of threatened fauna assessed as possible, likely or highly likely to occur in the Project Area

4.2.4. Wedge-tailed Eagle nests

Two Wedge-tailed Eagle Nests, first located by EBS Ecology in 2015, are in the southern Project Area (Figure 13 and Table 12). Both occur in taller *Acacia papyrocarpa* trees. Nest 1 was dilapidated and in a very poor condition, as can be seen in Figure 17. This nest had not been active during any EBS Ecology survey. Nest 2, which had been active in the 2015 breeding season (EBS Ecology, 2018a), was intact but is now in poor condition and beginning to fall apart Figure 18. Neither nest had any whitewash or nesting material present and there was no sign of recent use.

Both nests are located approximately 2 km from the BESS and VS1 and are not likely to be impacted by Stage 1 of the AEP.

Table 12. Wedge-tailed Eagle nest observations.

Nest	Location		Height in Tree (m)	Diameter (m)	Depth (m)	Intact/ Dilapidated	Condition	Activity
	Easting	Northing						
1			4	0.8	0.5	Dilapidated	Very poor	Not active
2			5	0.9	0.75	Intact	Poor	Not active

Figure 17. Wedge-tailed Eagle nest 1.

Figure 18. Wedge-tailed Eagle nest 2.

4.3. Assessment of impacts to EPBC listed species

Two EPBC Act listed threatened species have been recorded in the Project Area (Southern Whiteface and Blue-winged Parrot).

One species (Grey Falcon, *Falco hypoleucos*) has been assessed as likely to occur in the Project Area, although it has not been recorded there. This assessment was based on proximity and recency of historical records and habitats available.

Impact significance is a moderating factor used by the NVC when assessing clearance applications. Each species has been assessed against significant impact criteria set out by the NVC in the *Guide for applications to clear native vegetation under the Native Vegetation Act 1991 and Native Vegetation Regulations 2017* (Native Vegetation Council, 2020b) in the following Sections.

This information should not be considered as assessments against the EPBC Act's *Matters of National Environmental Significance – Significant Impact Guidelines 1.1* (Department of the Environment, 2013).

4.3.1. Southern Whiteface

The Southern Whiteface was recorded at two locations in the Project Area in two vegetation associations, as indicated in Table 13. Eleven individuals were observed in total. Despite being observed at only two locations, all vegetation mapped in the Project Area is considered suitable habitat, having characteristics of critical habitat as described in the conservation advice for the species (Department of Climate Change, Energy, the Environment and Water, 2023c):

- Relatively undisturbed open woodlands and shrublands with an understorey of grasses or shrubs or both.
- Habitat with low tree densities and an herbaceous understorey litter cover which provides essential foraging habitat.
- Living and dead trees with hollows and crevices which are essential for roosting and nesting.

From desktop mapping (Department for Environment and Water, 2023b) and aerial imagery, it is estimated that approximately 21,000 ha of similar native vegetation occurs within a 5 km radius of the Project Area.

Table 13. The location of Southern Whiteface records in the Project Area.

Location		Number Observed	Vegetation Association
Easting	Northing		
747676	6420440	5	*Acacia papyrocarpa* Open Woodland over *Maireana pyramidata / Maireana sedifolia.*
745221	6418298	6	*Maireana pyramidata / Maireana sedifolia* Shrubland

The proposed clearance for the AEP has been assessed against the NVCs significant impact criteria as shown in Table 14. The assessment indicates that while some habitat for the Southern Whiteface will be adversely affected, the clearance is not of a sufficient scale to cause the species to decline further.

Table 14. Assessment of impact to the Southern Whiteface.

Guideline	Comments	Assessment
The action will lead to a long-term decrease in the size of a population of a species.	The extent of the clearance is small relative to the extent of intact habitat in the 5 km surrounding the Project Area (0.5% of 21,000 ha). It is possible that the clearance may have a short-term impact on any individual Southern Whiteface that may be in the Clearance Area at the time of construction. However, once construction is complete, there is unlikely to be any further disturbance of the birds. This level of impact in not likely to lead to a long-term decrease in the size of a population.	Impact not significant.
The action will reduce the area of occupancy of the species.	The Area of Occupancy (AOO) of the Southern Whiteface has been estimated at 80,000 km^2. The clearance of 116.81	No impact.

Guideline	Comments	Assessment
	ha represents a negligible proportion of this area. While the clearance may impact individual birds using the impacted area, considerable habitat will remain in the Project Area and its surrounds, with no reduction in the estimated AOO of the species.	
The action will fragment an existing population into two or more populations.	The clearance area is surrounded by suitable intact habitat for Southern Whiteface. The Southern Whiteface, while sedentary, is known to undertake some movements due to climatic conditions (Department of Climate Change, Energy, the Environment and Water, 2023c). The species likely can cross small areas of cleared habitat. While some access roads will be constructed, it is not expected that these would act as a sufficient barrier to prevent dispersal between the Project Area and the surrounding landscape.	No impact.
The action will adversely affect habitat critical to the survival of a species.	Over 100 ha of critical habitat will be cleared, representing 0.5% of potential habitat in a 5 km radius of the Project Area. Considerable intact habitat will remain in the surrounding landscape. Measures outlined in the Construction Environmental Management Plan (CEMP) will minimise the risk of indirect impacts to remaining habitat.	Possible significant impact
The action will modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.	Although some habitat will be removed, the scale of impact is not sufficient to cause a decline in the species, as discussed above.	No impact.
The action results in invasive species that are harmful to a threatened species becoming established in the species' habitat.	Grazing by livestock and feral herbivores is thought to be a contributing factor in the decline of the species (Department of Climate Change, Energy, the Environment and Water, 2023c). The Project has a long history of sheep grazing, with livestock and feral herbivores such as goats and rabbits already established in the Project Area. The construction of the AEP does not include any actions that would lead to additional invasive species becoming established in the Project Area. Construction contractors will follow measures outlined in the CEMP to limit and prevent the introduction and spread of introduced plants and pathogens	No impact
The action interferes significantly with the recovery of the species.	Habitat loss, degradation and fragmentation is recognised as a threat to the species. While some habitat will be lost through clearance for the AEP, the extent is negligible in relation to the overall habitat in the surrounding	Impact not significant.

Guideline	Comments	Assessment
	landscape. The action is therefore not likely to significantly interfere with the recovery of the species.	

4.3.2. Blue-winged Parrot

The Blue-winged Parrot was recorded by EBS Ecology at a single location in 2017. Three individuals were observed in *Maireana pyramidata / Maireana sedifolia* Shrubland at the location shown in Table 15. Critical habitat for the Blue-winged parrot includes the following:

- Foraging and staging habitats found from coastal, sub-coastal and inland areas, right through to semi-arid zones including grasslands, grassy woodlands and semi-arid chenopod shrubland with native and introduced grasses, herbs and shrubs.
- Wetlands both near the coast and in semi-arid zones used for foraging and staging.
- Eucalypt forests and woodlands within the breeding range in Tasmania, coastal south-eastern South Australia and southern Victoria.
- Live and dead trees and stumps with suitable hollows within the breeding range.

Although outside the breeding range of the species, vegetation throughout the Project Area is suitable foraging and staging habitat, including open woodlands and chenopod shrublands with a grassy and herbaceous understorey. The Blue-winged Parrot could occur anywhere in the Project Area during its non-breeding season.

From desktop mapping (Department for Environment and Water, 2023b) and aerial imagery, it is estimated that approximately 21,000 ha of similar native vegetation occurs within a 5 km radius of the Project Area.

Table 15. The location of Blue-winged Parrot records in the Project Area.

Location		Number Observed	Vegetation Association
Easting	Northing		
745607	6418239	3	*Maireana pyramidata / Maireana sedifolia* Shrubland

The proposed clearance for the AEP has been assessed against the NVCs significant impact criteria as shown in Table 16. The assessment indicates that while some habitat for the Southern Whiteface will be adversely affected, the clearance is not of a sufficient scale to cause the species to decline further.

Table 16. Assessment of impact to the Blue-winged Parrot

Guideline	Comments	Assessment
The action will lead to a long-term decrease in the size of a population of a species.	There have been few historical records of the Blue-winged Parrot within 50 km of the Project Area since 1995. It is likely that the birds only occur in the Project Area as non-breeding vagrants, with no permanent population present. The clearance would not therefore cause a long-term decrease in the size of a population.	No impact.
The action will reduce the area of occupancy of the species.	The AOO of the Blue-winged parrot has been estimated at 11,000 km^2 (Department of Climate Change, Enery, the Environment and Water, 2023d).	No impact.

Guideline	Comments	Assessment
	The clearance represents 0.01% of this extent. It is likely that the birds only occur in the Project Area as non-breeding vagrants, with no permanent population present. The clearance would not therefore reduce the AOO of the species.	
The action will fragment an existing population into two or more populations.	The Blue-winged Parrot undertakes annual movement from southern breeding habitat to the northern parts of its distribution. It is able to cross large areas of cleared land and unsuitable habitat to do this. The clearance area is surrounded by intact suitable habitat. While some access roads will be constructed, it is not expected that these would act as a sufficient barrier to prevent dispersal between the Project Area and the surrounding landscape.	No impact.
The action will adversely affect habitat critical to the survival of a species.	The conservation advice for the Blue-winged Parrot indicates that any known or likely habitat for the species should be considered critical habitat. Since the entire Project Area has been assessed as likely habitat and Blue-winged parrots have been recorded there, the clearance adversely affects 116.06 ha of critical habitat.	Possible significant impact.
The action will modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.	In the context of the wider landscape, the clearance impacts only 0.5% of potential habitat in a 5 km radius, in which the species is only likely to occur as a non-breeding vagrant. This level of habitat removal and modification is unlikely to cause the species to decline.	No impact.
The action results in invasive species that are harmful to a threatened species becoming established in the species' habitat.	Grazing by livestock and feral herbivores is thought to be a contributing factor in the decline of the species (Department of Climate Change, Enery, the Environment and Water, 2023d). The Project has a long history of sheep grazing, with livestock and feral herbivores such as goats and rabbits already established in the Project Area. The construction of the AEP does not include any actions that would lead to additional invasive species becoming established in the Project Area. Construction contractors will follow measures outlined in the CEMP to limit and prevent the introduction and spread of introduced plants and pathogens	No impact
The action interferes significantly with the recovery of the species.	Habitat loss, degradation and fragmentation is recognised as a threat to the species. While some habitat will be lost through clearance for the AEP, the extent is negligible in relation to the	No significant impact.

Guideline	Comments	Assessment
	overall habitat in the surrounding landscape. The action is therefore not likely to significantly interfere with the recovery of the species.	

4.3.3. Grey Falcon

The Grey Falcon ahs not been recorded in the Project Area and there are few records of the species in the surrounding 50 km Search Area. However, habitats in the Project Area a broadly suitable for the species and it is likely it may occur occasionally as vagrant individuals.

An assessment of the significance of any impacts to the Grey Falcon is provided in Table 17.

Table 17. Assessment of impact to the Grey Falcon.

Guideline	Comments	Assessment
The action will lead to a long-term decrease in the size of a population of a species.	The Grey Falcon is widespread throughout inland Australia in areas receiving less than 500 mm annual rainfall, with birds wandering widely outside their normal range under certain climatic conditions, such as when drought follow wet years (Threatened Species Scientific Committee, 2020). There is only one historical record of the species within 50 km of the Project Area and Grey Falcon was not recorded during the field survey. It is likely that any birds recorded in the Impact or Project Area would be vagrant birds and that there is no permanent population of the species on the site.	The action is not likely to lead to a long-term decrease in population size.
The action will reduce the area of occupancy of the species.	As stated above, the Grey Falcon is widespread in inland Australia and similar habitat to the Project Area is extensive. Clearing of 116.06 ha of vegetation from the Impact Area would not reduce the area of occupancy of the species.	The action is not likely to reduce the area of occupancy of Grey Falcon.
The action will fragment an existing population into two or more populations.	As described above, there is not likely to be a permanent population of Grey Falcon in the Project Area.	The action will not fragment an existing population.
The action will adversely affect habitat critical to the survival of a species.	Given that the Impact and Project Area are not likely to sustain a permanent population, the area is unlikely to represent critical habitat for the species.	The action will not adversely affect critical habitat.
The action will modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.	Given that the Impact and Project Area are not likely to sustain a permanent population, the clearance is unlikely to decrease the availability of habitat.	The action is not likely to impact the extent of available habitat to a point that causes the species to decline.
The action results in invasive species that are harmful to a threatened species becoming established in the species' habitat.	Cats are known to predate on Grey Falcons (Schoenjahn, 2018). Feral cats are widespread and would already occur in the Impact Area. The Project is unlikely to affect the abundance of cats	The action will not result in the establishment of invasive species in the Impact Area.

Guideline	Comments	Assessment
	or result in the introduction of any other invasive species.	
The action interferes significantly with the recovery of the species.	There is no permanent population of the species or breeding habitat in the Project or Impact Areas.	The action will not interfere with the recovery of the species.

4.4. Cumulative impacts

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

4.4.1. Direct clearance

To calculate the direct impact to native vegetation, that is vegetation cleared for construction, all infrastructure associated with the BESS and VS1 has been mapped in ArcGIS and overlaid onto Vegetation Association mapping. This includes all required access tracks and turnarounds, construction compounds/laydown areas, machinery hardstands, stockpile areas and batter slopes that require vegetation clearing.

In addition, a 10 m buffer has been applied to the outer extent of infrastructure to allow for construction access, stockpiling and required CFS buffers for buildings.

To calculate the area of vegetation clearance required for underground cables, an impact width of 10 m along all cable routes has been used. A width of 10 m has been assumed for the length of all new access tracks required.

A total of 73.42 ha of native vegetation will be required to be cleared, that is directly impacted, by the Project (Stage 1 of the AEP).

4.4.2. Indirect clearance

Construction and operation of the AEP has the potential to cause indirect impacts to native vegetation associated with construction machinery, dust generation, weed spread, herbicide use, altered hydrology and potentially changes to local grazing regimes.

The construction contractor and AEP operator will be required to implement a Construction Environmental Management Plan (CEMP) and Operational Environmental management Plan (OEMP) (respectively) to identify and document potential impacts to flora and fauna. This will include management strategies that will be implemented to avoid, minimise, manage and mitigate potential indirect impacts.

In particular, as part of the CEMP, a *Flora and Fauna Management Plan* and *Dust Management Plan* will be implemented.

4.4.3. Other stages of the AEP development

As discussed previously, the AEP development is planned as a staged development. This native vegetation clearance application concerns the first stage of the AEP, consisting of the BESS and VS1.

The second stage (Stage 2) of the AEP includes the construction and operation of the following:

- 150 MW CSP (referred to as VS3).
- 70 MW PV array.
- TESS

The proposed impact footprint of the above elements of the AEP is shown in Figure 19. This will require additional native vegetation clearance up to 643.70 ha, as quantified in Table 18. This will be the subject of a separate native vegetation clearance application (in prep.).

Stage 2 will impact three of the five mapped Vegetation Associations:

- *Acacia papyrocarpa* Open Woodland over *Maireana pyramidata / Maireana sedifolia* (618.38 ha).
- *Maireana pyramidata / Maireana sedifolia* Shrubland (22.28 ha).
- *Casuarina pauper* Woodland over *Atriplex vesicaria +/- Maireana sedifolia* (3.04 ha).

Table 18. Cumulative Clearance Summary for the AEP Project.

Future Plant	Area of Impact (ha)	Total Biodiversity Score	SEB Points Required	SEB Area required (ha)
CSP and PV	440.65	54,442.31	57,164.42	7,145.55
TESS PV Plant	202.65			
Access road	0.40			

SEB: Significant Environmental Benefit

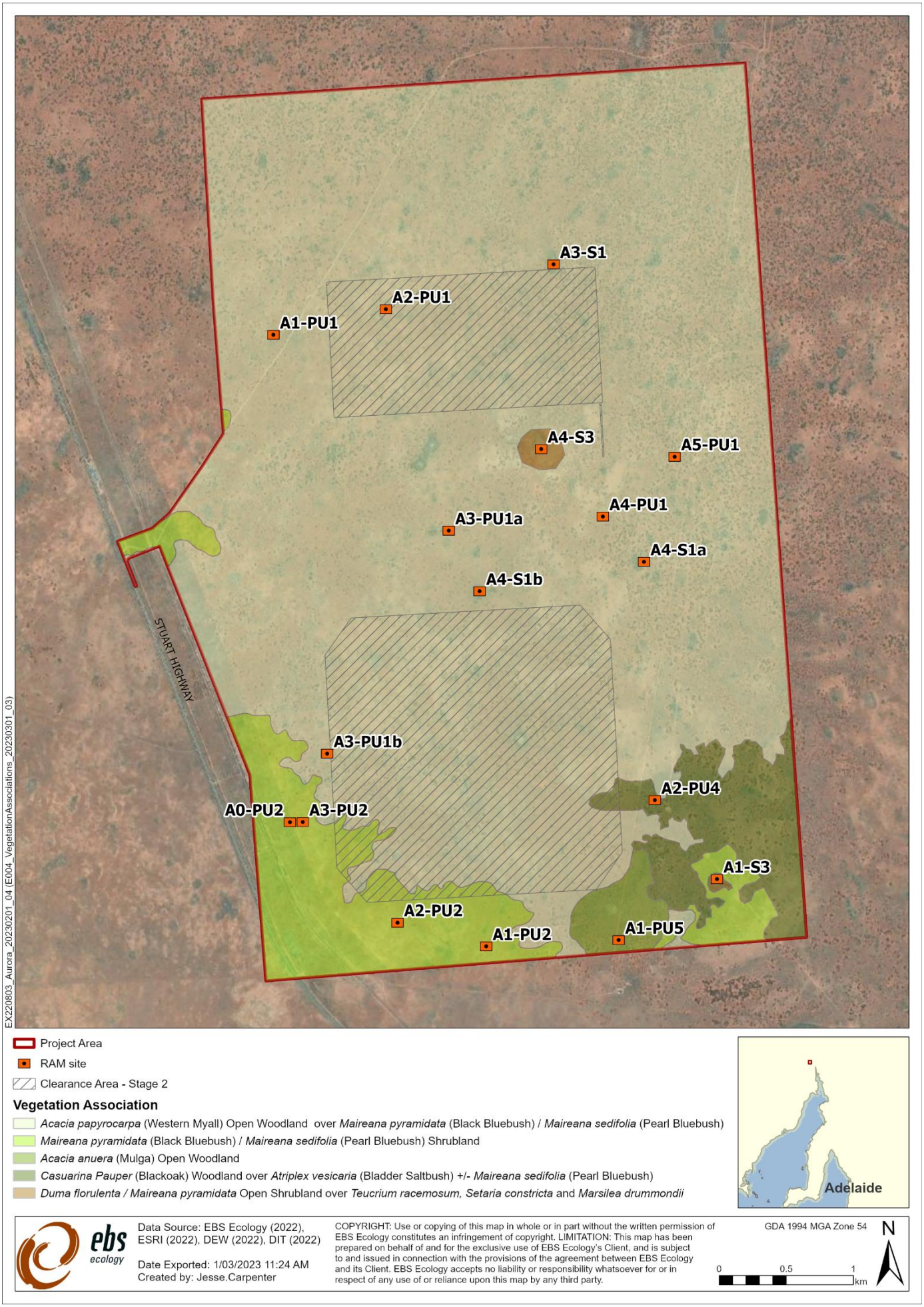


Figure 19. Stage 2 of the AEP proposed impact area.

4.5. Addressing the Mitigation Hierarchy

When exercising a power or making a decision under Division 5 of the Native Vegetation Regulations 2017, the NVC must have regard to the mitigation hierarchy. The NVC will also consider, with the aim to minimize, impacts on biological diversity, soil, water and other natural resources, threatened species or ecological communities under the EPBC Act or listed species under the NP&W Act.

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

Previous surveys identified that vegetation in the northeast of the project Area is in better condition than elsewhere. Silicon has designed the layout of the AEP to avoid these areas.

b) Minimization – if clearance cannot be avoided, outline measures taken to minimize the extent, duration and intensity of impacts of the clearance on biodiversity to the fullest possible extent (whether the impact is direct, indirect or cumulative).

Silicon will minimise the extent of clearing as far as is possible by the following elements of planning and design:

- Minimum possible buffer zones between facility and surrounding undisturbed areas (10 m).
- Where possible, existing access tracks will be utilised. Where access roads are required, they will be constructed to a maximum width of 10 m, including batters.
- Common user infrastructure where possible, i.e. single shared access road for substation, BESS and VS1.
- Construction will occur on flat ground to avoid the need to cut and fill.
- All construction laydown areas will be located within the operational footprint of the development.
- BESS, TESS and substations will be located adjacent to the existing Hill to Hill 275 kilovolt (kV) transmission line to limit the length of transmission line construction required.
- Internal transmission lines between solar arrays and plants will be laid underground to reduce the requirement of maintaining permanent clearance corridors for cables. Cable corridors will be cleared to a maximum width of 5 m.
- The CEMP and OEMP will be prepared prior to any clearance occurring.

The CEMP and OEMP will include management strategies and actions that seek to minimise direct and indirect impacts to flora and fauna. This will include, as a minimum, the measures summarised in Table 19.

Table 19. Measures undertaken to minimise impact to flora and fauna.

Management Plan	Sub-plan	Management Strategy	Responsibility
Construction Environmental Management Plan (CEMP)	Flora and Fauna Management Plan	All construction personnel will be inducted to be made aware of the CEMP and its content.	Construction contractor
		Clearance areas will be clearly defined and marked.	
		Vehicles, machinery, and personnel will not access areas outside the construction footprint (CF). No clearing, parking, laydown, stockpiles or other disturbance of native vegetation outside of the CF.	
		Topsoil and cleared vegetation will be stockpiled for spreading over rehabilitation areas.	

Management Plan	Sub-plan	Management Strategy	Responsibility
		Trigger points and stop work procedures will be developed and implemented in the event of unplanned and unauthorised vegetation clearance.	
		Trigger points and stop work procedures will be developed and implemented in the event of injury or death to fauna.	
		A log of unplanned incidents involving flora and fauna will be maintained.	
		Clearance procedures clearly defined and approved by Silicon.	
		Construction activities to occur during daylight hours only.	
	Dust Management Plan	Dust suppression activities will be implemented.	Construction contractor
		A programme to monitor the impact of dust on vegetation will be designed and implemented.	
	Weed Management Plan	Limit entry/exit points to the CF to the minimum number possible.	Construction contractor
		Designate/establish vehicle and machinery washdown and inspection sites.	
		All fill materials required for construction (e.g., sand, soil, gravel) will be sourced from certified weed and phytophthora free sites.	
		Restrict all vehicle and machinery traffic to designated (existing and new) roads and access tracks that are approved by landowners.	
		All vehicles and machinery accessing the CF will be washed down and inspected by a trained responsible officer in accordance with the Weed Management Plan. This will occur at the designated washdown/inspection sites. Heavy vehicles/machinery must be certified weed and soil free by the responsible officer prior to entering the CF.	
		Location of entry and exit points, laydown areas and vehicle and machinery washdown and inspection procedures will form part of toolbox meetings for site crews.	
		The CF will be regularly surveyed for weed outbreaks. Outbreaks and recommended corrective action will be communicated to Silicon.	
		New weed outbreaks will be controlled in accordance with the Weed Management Plan. Any weed control will be undertaken only after consent from landowners.	
Operation Environmental Management Plan (OEMP)	Flora and Fauna Management Plan	Vehicles, machinery, and personnel will not access areas outside the operational footprint (OF). No clearing, parking, laydown, stockpiles or other disturbance of native vegetation outside of the OF.	Operation contractor
		Trigger points and stop work procedures will be developed and implemented in the event of unplanned and unauthorised vegetation clearance.	
		Trigger points and stop work procedures will be developed and implemented in the event of injury or death to fauna.	
		A log of unplanned incidents involving flora and fauna will be maintained.	

Management Plan	Sub-plan	Management Strategy	Responsibility
	Dust Management Plan	Dust suppression activities will be implemented throughout the operational phase.	Operation contractor
		A programme to monitor the impact of dust on vegetation will be designed and implemented.	
	Weed Management Plan	Designate/establish vehicle and machinery washdown and inspection sites.	
		All vehicles and machinery accessing the OF will be washed down and inspected by a trained responsible officer in accordance with the Weed Management Plan. This will occur at the designated washdown/inspection sites. Heavy vehicles/machinery must be certified weed and soil free by the responsible officer prior to entering the OF.	
		Restrict all vehicle and machinery traffic to designated (existing and new) roads and access tracks that are approved by landowners.	
		Location of entry and exit points, laydown areas and vehicle and machinery washdown and inspection procedures will form part of toolbox meetings for site crews.	
		The OF will be regularly surveyed for weed outbreaks. Outbreaks and recommended corrective action will be communicated to Silicon.	
		New weed outbreaks will be controlled in accordance with the Weed Management Plan. Any weed control will be undertaken only after consent from landowners.	

c) Rehabilitation or restoration – outline measures taken to rehabilitate ecosystems that have been degraded, and to restore ecosystems that have been degraded, or destroyed by the impact of clearance that cannot be avoided or further minimized, such as allowing for the re-establishment of the vegetation.

Almost all clearance will occur within the operational areas of the AEP. This clearance is therefore permanent, and no rehabilitation or restoration will be undertaken. However, to manage dust, the areas between heliostats will be rehabilitated.

A transmission cable will be laid underground between plant and substation. Following construction, the cable corridor will be rehabilitated.

For this to occur, a Rehabilitation Plan will be prepared that will implement the following:

- Topsoil will be removed prior to clearing and stockpiled on site.
- Cleared vegetation will be stockpiled on site.
- Following construction, topsoil and cleared vegetation will be spread in rehabilitation and other degraded areas.
- Rehabilitated area will be monitored for weeds, with control actions implemented as required.

In addition to the rehabilitation measures listed above, the Project Area will be destocked prior to operation. This will reduce grazing pressure and improve the structural complexity of habitat on the site.

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.

Silicon intends to offset unavoidable impacts resulting from the AEP by payment of the Significant Environmental Benefit into the Native Vegetation Fund.

4.6. Principles of Clearance (Schedule 1, *Native Vegetation Act 1991*)

The Native Vegetation Council will consider Principles 1(b), 1(c) and 1(d) when assigning a level of Risk under Regulation 16 of the Native Vegetation Regulations. The Native Vegetation Council will consider all the Principles of clearance of the Act as relevant, when considering an application referred under the *Planning, Development and Infrastructure Act 2016*.

The Project has been assessed against the Principles as discussed in Table 20.

Table 20. Assessment against the Principles of Clearance.

Principle of clearance	Considerations	Report Section
Principle 1(a) – it comprises a high level of diversity of plant species	**Relevant information** A total of 86 plant species (19 introduced) were recorded during the field survey, as listed in Appendix 1. As the RAM was used, no plant diversity score has been calculated. **Assessment against the principles** Seriously at Variance No Vegetation Associations. At Variance No vegetation Associations. **Moderating factors that may be considered by the NVC** Not applicable	Section 4.1 Appendix 1
Principle 1(b) – significance as a habitat for wildlife	**Relevant information** Four threatened fauna species have been recorded in the Project Area, including two EPBC Act Vulnerable species: • Southern Whiteface (EPBC Act VU) • Blue-winged parrot (EPBC Act VU) • Elegant Parrot • Slender-billed Thornbill (Western) An additional 15 threatened fauna species have been assessed as at least possibly using habitat in the Project Area. Listed below, all are listed as threatened under the NPW Act, with only Grey Falcon also listed under the EPBC Act: • Australian Bustard (Highly likely) • White-browed Treecreeper (Highly likely) • White-winged Chough (Highly likely)	Section 4.2.2 Section 4.2.3 Section 4.3

Principle of clearance	Considerations	Report Section
	• Brown Quail (Possible) • Grey Falcon (Likely) • Peregrine Falcon (Highly likely) • Black Falcon (Highly likely) • Black-breasted Buzzard (Likely) • Little Eagle (Highly likely) • Major Mitchell's Cockatoo (Highly likely) • Restless Flycatcher (Highly likely) • Scarlet-chested Parrot (Possible) • Scarlet Robin (Possible) • Flock Bronzewing (Possible) • Striped Honeyeater (Highly likely) Threatened Fauna Score: *Acacia papyrocarpa* Open Woodland over *Maireana pyramidata / Maireana sedifolia* – 0.1. *Maireana pyramidata / Maireana sedifolia* Shrubland – 0.1 Unit biodiversity Score: *Acacia papyrocarpa* Open Woodland over *Maireana pyramidata / Maireana sedifolia* – 84.84 *Maireana pyramidata / Maireana sedifolia* Shrubland – 86.09	
	Assessment against the principles Seriously at Variance Clearance of the following Vegetation Associations is Seriously at Variance with the Principle: • *Acacia papyrocarpa* Open Woodland over Maireana pyramidata / Maireana sedifolia. • *Maireana pyramidata / Maireana sedifolia* Shrubland At Variance No Vegetation Associations	
	Moderating factors that may be considered by the NVC Impact significance Impacts to EPBC listed species Southern Whiteface, Blue-winged Parrot and Grey Falcon have been assessed against NVC significant impact criteria. These assessments are shown in Sections 4.3.1, 4.3.2 and 4.3.3. The remaining species listed above are widespread in similar semi-arid woodland and shrubland habitat that is extensive in northern inland South Australia, with the Impact area not likely to contain a discrete population of any species. Records of seven species are likely to represent vagrant individuals only, or seasonal movements outside of the breeding season: • Flock Bronzewing • Striped Honeyeater • Scarlet Robin • Scarlet-chested Parrot • Blue-winged Parrot • Brown Quail	

Principle of clearance	Considerations	Report Section
	• Australian Bustard Silicon will implement management actions to avoid and/or minimise impact to threatened species, as described in Section 4.4. Clearance of 116.06 ha of native vegetation is not likely to: • Lead to a long-term decrease in the size of a population. • Reduce the area of occupancy of the species. • Fragment an existing population into two or more populations. • Adversely affect habitat critical to the survival of a species. • Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline. • Result in invasive species that are harmful to a threatened species becoming established in the threatened species habitat. • Interfere with the recovery of the species. <u>Common species</u> The vegetation provides habitat for many common species that reside in semi-arid woodlands and shrublands, such as Red Kangaroo, White-winged Fairywren and reptile species. Given the extent of similar intact habitat in the surrounding 5 km area (21,000 ha), the area being cleared is unlikely to be essential in maintaining the local population of any common fauna species recorded.	
Principle 1(c) – plants of a rare, vulnerable or endangered species	**<u>Relevant information</u>** One plant species listed as threatened (Rare) under the NPW Act was recorded in the Project Area: • *Gratwickia monochaeta* (One-bristle Everlasting) The plant was found to be common on sandy rises in *Acacia aneura* and *Casuarina pauper* Open Woodlands in the south-eastern Project Area. It does not occur in the Impact Area however and will therefore not be impacted by the Project. Eight threatened plant species identified by the database searches were assessed as at least possibly occurring in the Project Area, although they have not been recorded during any field survey: • *Austrostipa breviglumis* (possible) • *Brachyscome ciliaris* var. *subintegrifolia* (Highly likely) • *Cryptandra campanulata* (Possible) • *Maireana excavata* (Likely) • *Malacocera gracilis* (Likely) • *Rumex dumosus* (Possible) • *Santalum spicatum* (Highly likely) • *Sarcozona bicarinata* (Possible) All are listed under the NPW Act. None are EPBC Act listed. Despite not being recorded at the survey site, these species have been entered in the RAM scoresheets, as per the RAM requirements. <u>Threatened Flora Score(s):</u>	Section 4.1 Section 4.2.1 Section 4.2.3 Section 4.4

Principle of clearance	Considerations	Report Section
	Acacia papyrocarpa Open Woodland over *Maireana pyramidata / Maireana sedifolia* – 0.16 *Maireana pyramidata / Maireana sedifolia* Shrubland – 0.16	
	Assessment against the principles Seriously at Variance Clearance of the following Vegetation Associations is Seriously at Variance with the Principle: • *Acacia papyrocarpa* Open Woodland over *Maireana pyramidata / Maireana sedifolia.* • *Maireana pyramidata / Maireana sedifolia* Shrubland At Variance No Vegetation Associations	
	Moderating factors that may be considered by the NVC *Impact Significance* The only threatened plant species recorded in the Project Area during the survey does not occur in the Impact Area of Stage 1 and will not be impacted at all by the Project (based on current designs). Those species assessed as at least possibly occurring based on historical records were not recorded during the survey and the Impact Area is unlikely to represent critical habitat to any. All species have a wide area of occupancy throughout the semi-arid rangelands of South Australia. Management measures will be implemented to avoid and/or minimise impact to threatened plant species. Clearance of vegetation associated with the Project is therefore unlikely to: • Lead to a long-term decrease in the size of a population. • Reduce the area of occupancy of the species. • Fragment an existing population into two or more populations. • Adversely affect habitat critical to survival of a species. • Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline. • Result in invasive species that are harmful to a threatened species becoming established in the threatened species habitat. • Interfere with the recovery of a species. *Number of plants to be cleared* No threatened plant species will be cleared.	
Principle 1(d) – the vegetation comprises the whole or part of a plant community that is Rare,	**Relevant information** No impacted Vegetation Associations are listed as threatened ecological communities under the EPBC Act or are listed on the Department for Environment and Water *Provisional list of threatened ecosystems.*	Section 4.1

Principle of clearance	Considerations	Report Section
Vulnerable or endangered	Threatened Community Score - 1	
	Assessment against the principles Seriously at Variance No Vegetation Associations	
	Moderating factors that may be considered by the NVC Not applicable	
Principle 1(e) – it is significant as a remnant of vegetation in an area which has been extensively cleared	**Relevant information** IBRA Subregion Remnancy: 62% Total Biodiversity Score – 8688.92 The vegetation in the Impact Area is intact and in good health and has not been historically cleared. There is some regeneration of the woodland overstorey, however it is impacted by grazing activities and weeds.	Section 4.1
	Assessment against the principles Seriously at Variance No Vegetation Associations At Variance Clearance of the following Vegetation Associations is Seriously at Variance with the Principle: • *Acacia papyrocarpa* Open Woodland *over Maireana pyramidata / Maireana sedifolia* • *Maireana pyramidata / Maireana sedifolia* Shrubland	
	Moderating factors that may be considered by the NVC Not applicable.	
Principle 1(f) – it is growing in, or in association with, a wetland environment	**Relevant information** Although there are ephemeral swamps elsewhere in the Project Area, the impacted vegetation is not growing in association with any or any other type of wetland. There are no watercourses in the Project or Impact Areas.	Section 2.3.5
	Assessment against the principles Seriously at Variance No Vegetation Associations At Variance – No Vegetation Associations	
	Moderating factors that may be considered by the NVC Not applicable.	
Principle 1(g) – it contributes significantly to the amenity of the area in	**Relevant information** The Impact Area is on a pastoral lease and not accessible by the public. Although any access road upgrades will be visible from the Stuart Highway, the only public road nearby, the BESS and VS1 are	

Principle of clearance	Considerations	Report Section
which it is growing or is situated	sufficiently remote from the highway to be hidden from view by surrounding vegetation.	
	N/A	
	Moderating factors that may be considered by the NVC In determining if the clearance is at variance with the Principle, the NVC will have regard to the Local Council's recommendations (if any) in relation to the application.	

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.

4.7. Risk assessment

The clearance is a Level 4 clearance and is seriously at variance with the Principles listed in Table 21.

Table 21. Summary of the level of risk associated with the application.

Total clearance	No. of trees	0
	Area (ha)	116.06
	Total biodiversity Score	9685.27
Seriously at variance with principle 1(b), 1(c) or 1 (d)		1(b), 1(c)
Risk assessment outcome		Level 4

5. Clearance Summary

The clearance and SEB obligation associated with the Project is summarised in Table 22, with the SEB totals shown Table 23. Rangelands Assessment Scoresheets used to calculate the scores in the table are provided as Attachment 2. Spatial data used to calculate the impact footprint is provided as Attachment 3.

Table 22. Clearance area summary table.

Block	Landform Type	Site	Vegetation Association	TEC Score	Threatened plant score	Threatened fauna score	UBS	Area (ha)	TBS	Loss factor	Loadings	Reductions	SEB Points required	SEB payment	Admin Fee
A	PU	A1-PU1	*Acacia papyrocarpa* Open Woodland over *Maireana pyramidata / Maireana sedifolia*	1	0.16	0.1	74.03	103.81	8454.11	1	0	0	8876.82	$634,687.27	$34,907.80
A	PU	A2-PU1	*Acacia papyrocarpa* Open Woodland over *Maireana pyramidata / Maireana sedifolia*	1	0.16	0.1	86.24	103.81	7619.23	1	0	0	8000.19	$557,884.98	$30,683.67
A	PU	A3-PU1a	*Acacia papyrocarpa* Open Woodland over *Maireana pyramidata / Maireana sedifolia*	1	0.16	0.1	87.92	103.81	8875.85	1	0	0	9319.64	$652,637.77	$35,895.08
A	PU	A3-PU1b	*Acacia papyrocarpa* Open Woodland over *Maireana pyramidata / Maireana sedifolia*	1	0.16	0.1	83.30	103.81	9048.49	1	0	0	9500.91	$670,923.10	$36,900.77
A	PU	A4-PU1	*Acacia papyrocarpa* Open Woodland over *Maireana pyramidata / Maireana sedifolia*	1	0.16	0.1	89.15	103.81	8572.73	1	0	0	9001.36	$630,349.43	$34,669.22
A	PU	A5-PU1	*Acacia papyrocarpa* Open Woodland over *Maireana pyramidata / Maireana sedifolia*	1	0.16	0.1	92.34	103.81	9174.83	1	0	0	9633.57	$685,959.85	$37,727.79
A	S	A4-S1a	*Acacia papyrocarpa* Open Woodland over *Maireana pyramidata / Maireana sedifolia*	1	0.16	0.1	81.44	103.81	9503.17	1	0	0	9978.33	$713,444.51	$39,239.45
						Mean	**84.29**	**103.81**	**8749.77**				**9187.26**	**$649,412.42**	**$35,717.68**
A	PU	A0-PU2	*Maireana pyramidata / Maireana sedifolia* Shrubland	1	0.16	0.1	93.13	12.25	1140.82	1	0	0	1197.86	$83,884.33	$4,613.64
A	PU	A1-PU2	*Maireana pyramidata / Maireana sedifolia* Shrubland	1	0.16	0.1	67.44	12.25	826.13	1	0	0	867.43	$61,255.22	$3,369.04
A	PU	A2-PU2	*Maireana pyramidata / Maireana sedifolia* Shrubland	1	0.16	0.1	72.09	12.25	883.07	1	0	0	927.23	$65,205.01	$3,586.28
A	PU	A3-PU2	*Maireana pyramidata / Maireana sedifolia* Shrubland	1	0.16	0.1	72.81	12.25	891.95	1	0	0	936.55	$65,584.77	$3,607.16
						Mean	**76.37**	**12.25**	**935.49**				**982.27**	**$68,982.33**	**$3,794.03**
						TOTAL SEB	**116.06**	**9685.27**					**10,169.53**	**$718,394.75**	**$39,511.71**

Table 23. Totals summary table. Annual rainfall stated is sourced from NatureMaps.

	Total Biodiversity score	Total SEB points required	SEB Payment	Admin Fee	Total Payment
Application	9685.27	10,169.53	$718,394.75	$39,511.71	$718,394.75

Economies of Scale Factor	0.11
Annual Rainfall (mm)	A1-PU1 – 237 A2-PU1 – 238 A3-PU1a – 240 A3-PU1b – 238 A4-PU1 – 242 A5-PU1 – 243 A4-S1a – 243 A0-PU2 – 238 A1-PU2 – 240 A2-PU2 – 239 A3-PU2 – 238

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

The proponent intends to pay into the Native Vegetation Fund the amount shown below:

$757,906.76 (including administration fee of $39,511.71).

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8. Appendices

Appendix 1 – Plant species recorded during the survey.

Scientific Name	Common Name	Conservation Status		Introduced
		EPBC Act	NPW Act	
Acacia aneura	Mulga	-	-	
Acacia burkittii	Pin-bush Wattle	-	-	
Acacia oswaldii	Umbrella Wattle	-	-	
Acacia papyrocarpa	Western Myall	-	-	
Aira sp.	Hair-grass	-	-	Yes
Alectryon oleifolius	Mallee Bitter-bush	-	-	
Alectryon oleifolius ssp. canescens	Bullock Bush	-	-	
Amyema preissii	Wire-leaf Mistletoe	-	-	
Amyema quandang var. quandang	Grey Mistletoe	-	-	
Aristida contorta	Curly Wire-grass	-	-	
Atriplex holocarpa	Pop Saltbush	-	-	
Atriplex vesicaria	Bladder Saltbush	-	-	
Austrostipa elegantissima	Feather Spear-grass	-	-	
Austrostipa nitida	Balcarra Spear-grass	-	-	
Austrostipa scabra	Rough Spear-grass	-	-	
Austrostipa sp.	Spear-grass	-	-	
Boerhavia dominii	Tar-vine	-	-	
Brachyscome ciliaris var.	Variable Daisy	-	-	
Bulbine semibarbata	Small Leek-lily	-	-	
Calandrinia eremaea	Dryland Purslane	-	-	
Calotis cymbacantha	Showy Burr-daisy	-	-	
Calotis hispidula	Hairy Burr-daisy	-	-	
Calotis latiuscula	Leafy Burr-daisy	-	-	
Carrichtera annua	Ward's Weed	-	-	Yes
Carthamus lanatus	Saffron Thistle	-	-	Yes
Casuarina pauper	Black Oak	-	-	
Centipeda thespidioides	Desert Sneezeweed	-	-	
Chenopodium curvispicatum	Cottony Goosefoot	-	-	
Chenopodium desertorum ssp. desertorum	Frosted Goosefoot	-	-	
Chenopodium nitrariaceum	Nitre Goosefoot	-	-	
Citrullus colocynthis	Colocynth	-	-	Yes
Convolvulus sp.	Bindweed	-	-	
Daucus glochidiatus	Native Carrot	-	-	
Dissocarpus paradoxus	Ball Bindyi	-	-	
Dodonaea viscosa ssp. angustissima	Narrow-leaf Hop-bush	-	-	
Duma florulenta	Lignum	-	-	
Dysphania cristata	Crested Crumbweed	-	-	
Dysphania pumilio	Small Crumbweed	-	-	
Einadia nutans	Climbing Saltbush	-	-	
Emex sp.		-	-	Yes
Enchylaena tomentosa	Ruby Saltbush	-	-	
Enneapogon avenaceus	Common Bottle-washers	-	-	

Scientific Name	Common Name	Conservation Status		Introduced
		EPBC Act	NPW Act	
Enneapogon polyphyllus	Leafy Bottle-washers	-	-	
Eragrostis dielsii	Mulka	-	-	
Eremophila longifolia	Weeping Emubush	-	-	
Eriochiton sclerolaenoides	Woolly-fruit Bluebush	-	-	
Erodium cicutarium	Cut-leaf Heron's-bill	-	-	Yes
Erodium sp.	Heron's-bill/Crowfoot	-	-	
Euchiton sphaericus	Annual Cudweed	-	-	
Euphorbia drummondii		-	-	
Exocarpos aphyllus	Leafless Cherry	-	-	
Galium bulliformis	Reflexed Bedstraw	-	-	
Glinus lotoides	Hairy Carpet-weed	-	-	
Gnephosis arachnoidea	Spidery Button-flower	-	-	
Goodenia sp.	Goodenia	-	-	
Gratwickia monochaeta		-	R	
Heliotropium sp.	Heliotrope	-	-	Yes
Herniaria cinerea	Rupturewort	-	-	Yes
Lotus cruentus	Red-flower Lotus	-	-	
Lycium australe	Australian Boxthorn	-	-	
Maireana appressa	Pale-fruit Bluebush	-	-	
Maireana brevifolia	Short-leaf Bluebush	-	-	
Maireana georgei	Satiny Bluebush	-	-	
Maireana pentatropis	Erect Mallee Bluebush	-	-	
Maireana pyramidata	Black Bluebush	-	-	
Maireana sedifolia	Bluebush	-	-	
Maireana sp.	Bluebush/Fissure-plant	-	-	
Maireana turbinata	Top-fruit Bluebush	-	-	
Malva parviflora	Small-flower Marshmallow	-	-	Yes
Marrubium vulgare	Horehound	-	-	Yes
Marsilea drummondii	Common Nardoo	-	-	
Medicago polymorpha	Burr-medic	-	-	Yes
Minuria cunninghamii	Bush Minuria	-	-	
Myoporum platycarpum	False Sandalwood	-	-	
Nicotiana velutina	Velvet Tobacco	-	-	
Oxalis perennans	Native Sorrel	-	-	
Pimelea microcephala ssp.	Shrubby Riceflower	-	-	
Pimelea simplex ssp.	Desert Riceflower	-	-	
Pimelea sp.	Riceflower	-	-	
Pittosporum angustifolium	Native Apricot	-	-	
Plantago drummondii	Dark Plantain	-	-	
Podolepis capillaris	Wiry Podolepis	-	-	
Portulaca oleracea	Common Purslane	-	-	
Pseudognaphalium luteoalbum	Jersey Cudweed	-	-	
Pterocaulon sphacelatum	Apple-bush	-	-	
Ptilotus obovatus	Silver Mulla Mulla	-	-	

Scientific Name	Common Name	Conservation Status		Introduced
		EPBC Act	NPW Act	
Reichardia tingitana	False Sowthistle	-	-	Yes
Rhagodia parabolica	Mealy Saltbush	-	-	
Rhodanthe moschata	Musk Daisy	-	-	
Rhodanthe stuartiana	Clay Everlasting	-	-	
Rhodanthe uniflora	Woolly Daisy	-	-	
Rytidosperma caespitosum	Common Wallaby-grass	-	-	
Salsola australis	Buckbush	-	-	
Scaevola parvibarbata	Small-beard Fanflower	-	-	
Scaevola spinescens	Spiny Fanflower	-	-	
Schismus arabicus	Arabian Grass	-	-	Yes
Schismus barbatus	Arabian Grass	-	-	Yes
Sclerolaena constricta		-	-	
Sclerolaena diacantha	Grey Bindyi	-	-	
Sclerolaena obliquicuspis	Oblique-spined Bindyi	-	-	
Setaria constricta	Knotty-butt Paspalidium	-	-	
Sida ammophila	Sand Sida	-	-	
Sida intricata	Twiggy Sida	-	-	
Sisymbrium sp.	Wild Mustard	-	-	Yes
Solanum aridicola		-	-	
Solanum lithophilum	Velvet Potato-bush	-	-	
Solanum nigrum	Black Nightshade	-	-	Yes
Solanum petrophilum	Rock Nightshade	-	-	
Solanum quadriloculatum	Plains Nightshade	-	-	
Sonchus oleraceus	Common Sow-thistle	-	-	Yes
Stemodia florulenta	Bluerod	-	-	
Templetonia egena	Broombush Templetonia	-	-	
Tetragonia implexicoma	Bower Spinach	-	-	
Tetragonia sp.	False Spinach	-	-	
Teucrium racemosum	Grey Germander	-	-	
Thysanotus baueri	Mallee Fringe-lily	-	-	
Tribulus sp.	Caltrop	-	-	
Tribulus terrestris	Caltrop	-	-	Yes
Tripogonella loliiformis	Five-minute Grass	-	-	
Verbena supina var. erecta	Trailing Verbena	-	-	Yes
Vittadinia blackii	Narrow-leaf New Holland Daisy	-	-	
Vittadinia cervicularis var. cervicularis	Waisted New Holland Daisy	-	-	
Vittadinia sp.	New Holland Daisy	-	-	
Wahlenbergia gracilenta	Annual Bluebell	-	-	
Zygophyllum aurantiacum		-	-	
		-	-	

Conservation Status: *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)/*National Parks and Wildlife Act 1972* (NPW Act). CR, Critically Endangered. EN/E, Endangered. VU/V, Vulnerable. R, Rare. Mi, Migratory.

Appendix 2 – Fauna species recorded during the survey

Scientific Name	Common Name	Conservation Status		Introduced	EBS Record Date (most recent record)
		EPBC Act	NPW Act		
Acanthagenys rufogularis	Spiny-cheeked Honeyeater	-	-		2022
Acanthiza apicalis	Inland Thornbill	-	-		2022
Acanthiza chrysorrhoa	Yellow-rumped Thornbill	-	-		2017
Acanthiza iredalei iredalei	Slender-billed Thornbill	-	R		2017
Acanthiza uropygialis	Chestnut-rumped Thornbill	-	-		2017
Anthus australis	Australian Pipit	-	-		2022
Aphelocephala leucopsis	Southern Whiteface	VU	-		2022
Artamus cinereus	Black-faced Woodswallow	-	-		2022
Artamus personatus	Masked Woodswallow	-	-		2015
Aquila audax	Wedge-tailed Eagle	-	-		2022
Barnardius zonarius zonarius	Port Lincoln Parrot	-	-		2022
Barnardius zonarius barnardi	Mallee Ringneck	-	-		2022
Cacomantis pallidus	Pallid Cuckoo	-	-		2017
Calamanthus campestris	Rufous Fieldwren	-	-		2015
Capra hircus	Feral Goat	-	-	Yes	2022
Certhionyx variegatus	Pied Honeyeater	-	-		2022
Chalcites basalis	Horsfield's Bronze Cuckoo	-	-		2022
Cheramoeca leucosterna	White-backed Swallow	-	-		2015
Circus assimilis	Spotted Harrier	-	-		2015
Climacteris picumnus	Brown Treecreeper	-	-		2022
Colluricincla harmonica	Grey Shrikethrush	-	-		2017
Coracina novaehollandiae	Black-faced Cuckooshrike	-	-		2022
Corvus coronoides	Australian Raven	-	-		2022
Corvus mellori	Little Raven	-	-		2017
Cracticus torquatus	Grey Butcherbird	-	-		2022
Ctenophorus cristatus	Crested dragon	-	-		2022
Daphoenositta chrysoptera	Varied Sittella	-	-		2017
Dicaeum hirundinaceum	Mistletoebird	-	-		2022
Dromaius novaehollandiae	Emu	-	-		2022
Elanus axillaris	Black-shouldered Kite	-	-		2015
Eolophus roseicapilla	Galah	-	-		2022
Epthianura albifrons	White-fronted Chat	-	-		2015
Epthianura aurifrons	Orange Chat	-	-		2017
Epthianura tricolor	Crimson Chat	-	-		2022
Falco berigora	Brown Falcon	-	-		2022
Falco cenchroides	Nankeen Kestrel	-	-		2022
Gavicalis virescens	Singing Honeyeater	-	-		2022
Grallina cyanoleuca	Magpielark	-	-		2022
Gymnorhina tibicen	Australian Magpie	-	-		2022

Scientific Name	Common Name	Conservation Status		Introduced	EBS Record Date (most recent record)
		EPBC Act	NPW Act		
Hirundo neoxena	Welcome Swallow	-	-		2022
Macropus fuliginosus	Western Grey Kangaroo	-	-		2022
Macropus robustus	Euro	-	-		2015
Malurus lamberti	Variegated Fairywren	-	-		2022
Malurus leucopterus	White-winged Fairywren	-	-		2022
Malurus splendens	Splendid Fairywren	-	-		2022
Manorina flavigula	Yellow-throated Miner	-	-		2022
Megalurus cruralis	Brown Songlark	-	-		2022
Melopsittacus undulatus	Budgerigar	-	-		2022
Merops ornatus	Rainbow Bee-eater	Mi	-		2022
Microeca fascinans	Jacky Winter	-	-		2017
Milvus migrans	Black Kite	-	-		2017
Neophema chrysostoma	Blue-winged Parrot	VU	V		2017
Neophema elegans	Elegant Parrot	-	R		2017
Northiella haematogaster haematogaster	Eastern Bluebonnet (eastern and central SA)	-	-		2022
Ocyphaps lophotes	Crested Pigeon	-	-		2022
Oreoica gutturalis	Crested Bellbird	-	-		2022
Oryctolagus cuniculus	European Rabbit	-	-	Yes	2022
Osphranter rufus	Red Kangaroo	-	-		2022
Ovis aries	Sheep	-	-	Yes	2022
Pachycephala rufiventris	Rufous Whistler	-	-		2022
Petroica goodenovii	Red-capped Robin	-	-		2022
Petrochelidon nigricans	Tree Martin	-	-		2017
Pogona vitticeps	Central Bearded Dragon	-	-		2022
Pomatostomus superciliosus	White-browed Babbler	-	-		2022
Psephotellus varius	Mulga Parrot	-	-		2022
Psophodes cristatus	Chirruping Wedgebill	-	-		2022
Pyrrholaemus brunneus	Redthroat	-	-		2022
Rhipidura albiscapa	Grey Fantail	-	-		2015
Rhipidura leucophrys	Willie Wagtail	-	-		2022
Taeniopygia guttata	Zebra Finch	-	-		2022
Tiliqua rugosa	Sleepy lizard	-	-		2022
Turnix velox	Little Buttonquail	-	-		2022
Tympanocryptis lineata	Lined Earless Dragon	-	-		2022
Varanus gouldii	Sand Goanna	-	-		2022
Vulpes vulpes	Red Fox	-	-		2017

Conservation Status: *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)/*National Parks and Wildlife Act 1972* (NPW Act). CR, Critically Endangered. EN/E, Endangered. VU/V, Vulnerable. R, Rare. Mi, Migratory.

Appendix 3 – Likelihood of Occurrence Assessment

Scientific Name	Common Name	Conservation Status		Last Sighting (Year)	Source or Record	Habitat	Assessment of Likelihood
		EPBC Act	NPW Act				
FLORA							
Acacia pendula	Weeping Myall		V	2019	1	In South Australia, the plants natural distribution is limited to the Broken Hill Complex and Murray Darling Depression IBRA regions (Botanic Gardens of South Australia, 2023).	**Unlikely.** The Project Area is outside the natural area of occurrence of this species. Records probably relate to planted specimens since the tree is commonly planted as a street tree in Port Augusta.
Acacia quornensis	Quorn Wattle		R	2015	1	Grows in low woodland associated with *Callitris*. Known from only two locations around Quorn and Hawker along rocky creeks or on the lower slopes of ranges (Botanic Gardens of South Australia, 2023).	**Unlikely.** The Project Area is outside the known populations of the species and suitable habitat does not occur in the Project Area. The species was not recorded in the impact areas during the field survey.
Asperula syrticola	Southern Flinders Woodruff		R	1999	1	Occurs under Eucalyptus woodlands and mallee.	**Unlikely.** There is no Eucalyptus woodlands or mallee in the Project Area.
Austrostipa breviglumis	Cane Spear-grass		R	2003	1	Occurs in hills and on ridges in sandy loam soil (Botanic Gardens of South Australia, 2023).	**Possible.** The most recent record within 50 km of the Project Area is 20 years old and there are no hills or ridge lines in the project Area.
Austrostipa petraea	Flinders Range Spear-grass		R	2009	1	This species occurs in rocky areas in the northern and southern Flinders ranges (Botanic Gardens of South Australia, 2023)	**Unlikely.** There are no rocky habitats in the Project Area.
Brachyscome ciliaris var. subintegrifolia			R	2005	1	Grasslands, grassy woodlands and shrublands (Royal Botanic Gardens Victoria, 2023).	**Highly likely.** There are records of the species within 20 years and there is suitable habitat in the Project Area.

Scientific Name	Common Name	Conservation Status		Last Sighting (Year)	Source or Record	Habitat	Assessment of Likelihood
		EPBC Act	NPW Act				
Caladenia coactilis	Flinders Ranges Caladenia		R	1999	1	Woodland dominated by *Eucalyptus cladocalyx* and *Callitris* (Niejalke & Bates, 2022).	**Unlikely.** There is no suitable habitat in the Project Area.
Caladenia gladiolata	Bayonet Spider-orchid	EN			2	Woodland, grassland and grassy open forest on fertile loams. Mainly on hillsides (Niejalke & Bates, 2022).	**Unlikely.** There are no records of the species within 50 km of the Project Area and no suitable habitat.
Caladenia tensa	Inland Green-comb Spider-orchid	EN		1999	1, 2	Dry mallee on fertile soils (Niejalke & Bates, 2022).	**Unlikely.** There is no suitable mallee habitat in the project Area.
Codonocarpus pyramidalis	Slender Bell-fruit	VU	V		2	Grows along the crests of hills and ridges, slopes and along creeks (Department of Climate Change, Energy, the Environment and Water, 2023b).	**Unlikely.** There are no records of the species within 50 km of the Project Area and no suitable habitat.
Cryptandra campanulata	Long-flower Cryptandra		R	2020	1	Occurs in shallow soils over rocks, often in *Lomandra* grasslands, heath and shrubland vegetation (Kellermann, 2020).	**Possible.** There are recent records in the 50 km search area, however habitat in the Project Area is unsuitable.
Dianella longifolia var. grandis	Pale Flax-lily		R	1999	1	Grassy woodland (Botanic Gardens of South Australia, 2023).	**Unlikely.** There are records in the Search Area, however they are more than 20 years old and there is no preferred habitat in the Project Area.
Eucalyptus percostata	Ribbed White Mallee		R	2006	1	Occurs between Quorn and Napperby in woodland and mallee on well-drained loams on the slopes of rocky hills (Botanic Gardens of South Australia, 2023).	**Unlikely.** The Project Area is outside the area of occurrence of the species and there is no suitable habitat. The tree was not recorded during the field survey.

Scientific Name	Common Name	Conservation Status		Last Sighting (Year)	Source or Record	Habitat	Assessment of Likelihood
		EPBC Act	NPW Act				
Eucalyptus viridis ssp. viridis	Green Mallee		R	2009	1	Eyre Peninsula, Flinders Ranges, and northern Mount Lofty Ranges, growing on rocky hillslopes and ridges and deeper soils on the footslopes and undulating plains (Botanic Gardens of South Australia, 2023).	**Unlikely.** There is no suitable habitat, and the species was not observed during the field survey.
Festuca benthamiana	Bentham's Fescue		R	2000	1	Restricted to the Flinders Ranges (Ausgrass2, 2023).	**Unlikely.** The Project Area is not within the Flinders Ranges.
Gratwickia monochaeta	One-bristle Everlasting		R	2022	1, 3	Usually grows in sandy sites (Botanic Gardens of South Australia, 2023).	**Unlikely** Although present in the Project Area, the species is unlikely in the Impact Area since soils are not suitable.
Haeckeria cassiniiformis	Dogwood Haeckeria		R	2006	1	In sandy mallee vegetation associations.	**Unlikely.** There is no sandy mallee habitat in the Project Area.
Hovea purpurea	Tall Hovea		R	2001	1	Grows on rocky ridges and by streams in forest, woodland and riparian vegetation (Royal Botanic Gardens and Domain Trust, 2023).	**Unlikely.** There is no suitable habitat in the Project Area.
Logania saxatilis	Rock Logania		R	1996	1	Steep-sided sandstone gorges in open woodland and crevices in rock outcrops (Botanic Gardens of South Australia, 2023).	**Unlikely.** There is no suitable habitat in the project Area.
Maireana excavata	Bottle Fissure-plant		V	1996	1	Grasslands and shrublands (Royal Botanic Gardens and Domain Trust, 2023).	**Likely.** Habitat is broadly suitable for the species, but records are more than 20 years old.
Malacocera gracilis	Slender Soft-horns		V	2016	1	Saline clay soils or gypseous mounds (Department for Environment and Water, 2023c).	**Likely.** There are recent records (<20 years) in the Search Area, but suitable saline or gypseous habitat is limited.
Myoporum parvifolium	Creeping Boobialla		R	2009	1	Clay soils and saline flats.	**Unlikely.**

Scientific Name	Common Name	Conservation Status		Last Sighting (Year)	Source or Record	Habitat	Assessment of Likelihood
		EPBC Act	NPW Act				
							There is no suitable habitat in the Project Area.
Ozothamnus scaber	Rough Bush-everlasting		V	1999	1	Found only in the Flinder's Ranges (Botanic Gardens of South Australia, 2023).	**Unlikely.** The Project Area is outside the species' area of occurrence.
Prasophyllum pallidum	Pale Leek-orchid	VU	R	2009	1, 2	Better soils of woodland and open grassy forest (Niejalke & Bates, 2022)	**Unlikely.** There is no suitable grassy forest or woodland habitat in the Project Area.
Ptilotus angustifolius	Narrow-leaf Yellow-tails		E	1996	1	Grows on rocky slopes and hills in association with *Eucalyptus microcarpa* woodlands (Botanic Gardens of South Australia, 2023).	**Unlikely.** There is no suitable habitat in the project Area.
Pycnosorus globosus	Drumsticks		V	2001	1	Occurs in open areas in moist, heavy soils prone to inundation (Botanic Gardens of South Australia, 2023).	**Unlikely.** There are no records of the species on the plains west of the Flinder's Ranges.
Rumex dumosus	Wiry Dock		R	1996	1	Occurs in grasslands and disturbed grassy areas (Royal Botanic Gardens and Domain Trust, 2023).	**Possible.** Open areas in the Project Area may provide suitable habitat, although there are no records of the species in the past 20 years.
Santalum spicatum	Sandalwood		V	2017	1	Semi-arid and arid woodlands and shrublands. Sandalwood is hemiparasitic with a preference for *Acacia* spp. for host plants (McLellan, Dixon, & Watson, 2021).	**Unlikely.** Although no Sandalwood was located in the Impact Area despite targeted survey.
Sarcozona bicarinata	Ridged Noon-flower		V	2008	1	Low open shrubland and dunes bordering saline depressions with *Atriplex, Acacia, Olearia, Carpobrotus* and *Eucalyptus socialis*.	**Possible.** Recorded within the last 20 years in the Search Area, but suitable habitat is limited.
Senecio megaglossus	Large-flower Groundsel	VU	E	2009	1	Mostly confined to rocky creek banks and rocky gorge/valley slopes (Department of Climate Change, Energy, the Environment and Water, 2023b).	**Unlikely.** There is no suitable habitat in the Project Area.

Scientific Name	Common Name	Conservation Status		Last Sighting (Year)	Source or Record	Habitat	Assessment of Likelihood
		EPBC Act	NPW Act				
Thysanotus tenellus	Grassy Fringe-lily		R	1995	1	Prefers Eucalyptus woodlands, Lomandra grasslands and Dodonaea lobulata shrublands.	**Unlikely.** There is no suitable habitat in the Project Area.
Veronica decorosa	Showy Speedwell		R	2020	1	Found in rocky gullies and on ridges in the Flinders Ranges (Botanic Gardens of South Australia, 2023).	**Unlikely.** There is no suitable habitat in the Project Area.
FAUNA							
Acanthiza iredalei iredalei	Slender-billed Thornbill		R	2019	1, 3	Usually occurs in chenopod shrublands that are dominated by samphire or Maireana and Atriplex associations. It occasionally occurs in acacia shrublands and mangroves adjacent to more preferred habitat.	**Highly likely.** Suitable habitat is found throughout the Project Area.
Actitis hypoleucos	Common Sandpiper	Mi	R	2008	1	Muddy banks, rocks and sandy beaches near water. Found in coastal or inland wetlands, both saline and fresh. The Common Sandpiper has been recorded in estuaries and deltas of streams, as well as on banks farther upstream; around lakes, pools, billabongs, reservoirs, dams and claypans, and occasionally piers and jetties (Department of Climate Change, Energy, the Environment and Water, 2023b).	**Unlikely.** Only terrestrial habitats are impacted by the Project.
Amytornis merrotsyi	Short-tailed Grasswren	VU	V	2001	1, 2	Rocky (quartzitic) hillsides and hilltops, steep-sided gullies, stony rises and ridge-crests and, less often, foothills. The vegetation is spinifex (*Triodia*) tussock grassland, usually with scattered low shrubs (Threatened Species Scientific Committee, 2014).	**Unlikely.** Although recent records of the species are located nearby, there is no suitable habitat in the Project Area.
Amytornis textilis myall	Western Grasswren	VU	V	2018	1, 2	Scattered and widespread on the north-eastern Eyre Peninsula, from around Whyalla and Mt Middleback, northwest through the Gawler Ranges. open chenopod shrublands, often where dense stands *Acacia tetragonophylla* or *Maireana pyramidata* surround	**Unlikely.** The Project Area is outside the known area of occurrence of the species. Targeted field survey using call-playback methods did not detect the

Scientific Name	Common Name	Conservation Status		Last Sighting (Year)	Source or Record	Habitat	Assessment of Likelihood
		EPBC Act	NPW Act				
						drainage lines. It also occurs in *Atriplex* spp. and *Maireana* spp. shrublands with a sparse or open overstorey of low trees or shrubs, such as *Acacia papyrocarpa*, *Casuarina pauper*.	species. However, habitat is broadly suitable.
Ardeotis australis	Australian Bustard		V	2019	1	Mainly inhabits tussock and hummock grasslands, though prefers tussock grasses to hummock grasses; also occurs in low shrublands and low open grassy woodlands; occasionally seen in pastoral and cropping country, golf courses and near dams.	**Highly likely.** Recent records of the species (<10 years) in the Search Area. Habitat throughout the Project Area is suitable for the species.
Aprasia pseudopulchella	Flinders Ranges Worm-lizard	VU		2017	1, 2	The species occurs in open woodland, native tussock grassland, riparian habitats and rocky isolates. It is found in stony soils, or clay soils with a stony surface, and has been found sheltering beneath stones (Department of Climate Change, Energy, the Environment and Water, 2023b).	**Unlikely.** There are no stony soil habitats in the project Area.
Arenaria interpres interpres	Ruddy Turnstone		R	2014	1	Prefers rocky shores or beaches where there are large deposits of rotting seaweed (Department of Climate Change, Energy, the Environment and Water, 2023b).	**Unlikely.** Only terrestrial habitats are impacted by the Project.
Biziura lobata menziesi	Musk Duck		R	2016	1	Deep freshwater lagoons, with dense reed beds.	**Unlikely.** Only terrestrial habitats are impacted by the Project.
Bubulcus ibis coromandus	Eastern Cattle Egret		R	2006	1	Tropical and temperate grasslands, wooded lands and terrestrial wetlands. It has occasionally been seen in arid and semi-arid regions however this is extremely rare. High numbers have been observed in moist, low-lying poorly drained pastures with an abundance of high grass; it avoids low grass pastures. It uses predominately shallow, open and fresh wetlands including meadows and swamps with low emergent vegetation and abundant	**Unlikely.** Only terrestrial habitats are impacted by the Project.

Scientific Name	Common Name	Conservation Status		Last Sighting (Year)	Source or Record	Habitat	Assessment of Likelihood
		EPBC Act	NPW Act				
						aquatic flora (Department of Climate Change, Energy, the Environment and Water, 2023b).	
Calidris acuminata	Sharp-tailed Sandpiper	Mi			2	Temporary or flooded wetlands and leaving them when they dry. On migration, they forage and roost on rocky and sandy beaches, freshwater habitats and inland saltwater habitats (Department of Climate Change, Energy, the Environment and Water, 2023b).	**Unlikely.** Only terrestrial habitats are impacted by the Project.
Calidris canutus	Red Knot	EN		2012	1	Intertidal mudflats, sandflats and sandy beaches of sheltered coasts, in estuaries, bays, inlets, lagoons and harbours. They are occasionally seen on terrestrial saline wetlands near the coast, such as lakes, lagoons, pools and pans but rarely use freshwater swamps (Department of Climate Change, Energy, the Environment and Water, 2023b).	**Unlikely.** Only terrestrial habitats are impacted by the Project.
Calidris ferruginea	Curlew Sandpiper	CR	E	2019	1, 2	Curlew Sandpipers mainly occur on intertidal mudflats in sheltered coastal areas, such as estuaries, bays, inlets and lagoons, and around non-tidal swamps, lakes and lagoons near the coast, and ponds in saltworks and sewage farms. They are also recorded inland, though less often, including around ephemeral and permanent lakes, dams, waterholes and bore drains, usually with bare edges of mud or sand (Department of Climate Change, Energy, the Environment and Water, 2023b).	**Unlikely.** Only terrestrial habitats are impacted by the Project.
Calidris melanotus	Pectoral Sandpiper	Mi			2	Prefers shallow fresh to saline wetlands. The species is found at coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands (Department of Climate	**Unlikely.** Only terrestrial habitats are impacted by the Project.

Scientific Name	Common Name	Conservation Status		Last Sighting (Year)	Source or Record	Habitat	Assessment of Likelihood
		EPBC Act	NPW Act				
						Change, Energy, the Environment and Water, 2023b).	
Calidris ruficollis	Red-necked Stint	Mi			2	Mostly found in coastal areas, including in sheltered inlets, bays, lagoons and estuaries with intertidal mudflats (Department of Climate Change, Energy, the Environment and Water, 2023b).	**Unlikely.** Only terrestrial habitats are impacted by the Project.
Carcharodon carcharias	Great White Shark	VU			2	Marine. Close inshore habitats (e.g., rocky reefs and shallow coastal bays) to the outer continental shelf and slope areas (Department of Climate Change, Energy, the Environment and Water, 2023b).	**Unlikely.** Only terrestrial habitats are impacted by the Project.
Caretta caretta	Loggerhead Turtle	EN			2	Marine, including waters of coral and rocky reefs, seagrass beds and muddy bays (Department of Climate Change, Energy, the Environment and Water, 2023b).	**Unlikely.** Only terrestrial habitats are impacted by the Project.
Cladorhynchus leucocephalus	Banded Stilt		V	2019	1	Found mainly in saline and hypersaline, waters of the inland and coast, typically large, open and shallow.	**Unlikely.** Only terrestrial habitats are impacted by the Project.
Climacteris affinis	White-browed Treecreeper		R	2020	1	Semi-arid and arid inland scrubs, including woodlands of *Acacia* spp., *Eucalyptus* spp. and *Casuarina* spp. (Pizzey & Knight, 2007).	**Highly likely.** Highly likely to occur in *Acacia papyrocarpa woodlands and Casuarina pauper* woodlands in the Project Area.
Corcorax melanorhamphos	White-winged Chough		R	2015	1	Woodlands and taller mallee, where it feeds on the ground amongst the leaf-litter. Tend to prefer wetter areas with leaf-litter, for feeding, and available mud for nest building (Pizzey & Knight, 2007).	**Highly likely.** Highly likely to occur in *Acacia papyrocarpa woodlands and Casuarina pauper* woodlands in the Project Area.
Coturnix ypsilophora australis	Brown Quail		V	2014	1	Rank grasses near wetlands, bracken and dense vegetation thickets (Pizzey & Knight, 2007).	**Possible.** Habitat may be suitable for the species following rainfall, particularly around swamp areas when inundation causes rank grass growth.

Scientific Name	Common Name	Conservation Status		Last Sighting (Year)	Source or Record	Habitat	Assessment of Likelihood
		EPBC Act	NPW Act				
Egretta garzetta nigripes	Little Egret		R	2019	1	Tidal mudflats, saltmarshes, mangroves and freshwater wetlands (Pizzey & Knight, 2007).	**Unlikely.** Only terrestrial habitats are impacted by the Project.
Egretta sacra sacra	Pacific Reef Heron		R	2017	1	Rocky shores, exposed reefs, beaches and tidal rivers (Pizzey & Knight, 2007).	**Unlikely.** Only terrestrial habitats are impacted by the Project.
Eubalaena australis	Southern Right Whale	EN			2	Marine species.	**Unlikely.** Only terrestrial habitats are impacted by the Project.
Falco hypoleucos	Grey Falcon	VU	R	2006	1, 2	timbered lowland plains, particularly acacia shrublands that are crossed by tree-lined water courses. The species has been observed hunting in treeless areas and frequents tussock grassland and open woodland, especially in winter (Department of Climate Change, Energy, the Environment and Water, 2023b).	**Highly Likely.** There are recent records of the species in the Search Area (<10 years old), with habitat throughout the Project Area suitable.
Falco peregrinus macropus	Peregrine Falcon		R	2020	1	Cliffs, gorges, timbered watercourses, plains, open woodlands and urban areas (Pizzey & Knight, 2007).	**Highly likely.** It is highly likely that the species uses the Project Area habitats for foraging, although there is no breeding habitat (cliffs, gorges) present.
Falco subniger	Black Falcon		R	2018	1	Tree-lined watercourses, grasslands, over wetlands and woodlands in semi-arid and arid areas.	**Highly likely.** The Project Area provides suitable habitat for the species, with recent records (<10 years old) in the Search Area.
Falcunculus frontatus frontatus	Eastern Shriketit		R	1997	1	*Eucalyptus* forests and woodlands (Pizzey & Knight, 2007).	**Unlikely.** There are no Eucalyptus forests or woodlands in the Project Area.
Haematopus fuliginosus fuliginosus	Sooty Oystercatcher		R	2019	1	Intertidal rocky and coral reefs, mostly on ocean shores (Pizzey & Knight, 2007).	**Unlikely.** Only terrestrial habitats are impacted by the Project.

Scientific Name	Common Name	Conservation Status		Last Sighting (Year)	Source or Record	Habitat	Assessment of Likelihood
		EPBC Act	NPW Act				
Haematopus longirostris	Pied Oystercatcher		R	2019	1	Undisturbed sandy beaches, tidal mudflats and estuaries (Pizzey & Knight, 2007).	**Unlikely.** Only terrestrial habitats are impacted by the Project.
Haliaeetus leucogaster	White-bellied Sea Eagle		E	2014	1	In South Australia, the species is associated with open coastal landscapes. Nesting sites are in coastal areas along cliffs, rock outcrops or, rarely, coastal trees and mangrove swamps (Department for Environment and Water, 2021).	**Unlikely.** The Project does not impact any coastal habitats.
Hamirostra melanosternon	Black-breasted Buzzard		R	2011	1	Grasslands, sandhills, gibber deserts; timbered watercourses and waterholes; tropical woodlands (Pizzey & Knight, 2007).	**Likely.** Records in the Search Area are more than 10 years old, however the Project Area provides broadly suitable habitat.
Hieraaetus morphnoides	Little Eagle		V	2020	1	Plains, foothills, open forests, woodlands and shrublands. River Red Gums on watercourses and lakes.	**Highly likely.** There are recent records in the Search Area and habitat in the Project Area is broadly suitable for the species.
Hylacola pyrrhopygia pedleri	Chestnut-rumped Heathwren		V	1997	1	Heaths and dense undergrowth of forests and woodlands.	**Unlikely.** No historical records within the past 20 years and not recorded during any field survey in the Project Area. Habitat unsuitable.
Limosa limosa	Black-tailed Godwit	Mi			2	Sheltered bays, estuaries and lagoons with large intertidal mudflats or sandflats, or spits and banks of mud, sand or shell-grit (Department of Climate Change, Energy, the Environment and Water, 2023b).	**Unlikely.** Only terrestrial habitats are impacted by the Project.
Lophochroa leadbeateri	Major Mitchell's Cockatoo		R	2020	1	Timbered watercourses and surrounding grasslands, shrublands and woodlands, including *Acacia* spp., *Casuarina* and *Eucalyptus* (Pizzey & Knight, 2007).	**Highly likely.** There are recent records in the Search Area and habitat in the Project Area is broadly suitable for the species.
Macronectes giganteus	Southern Giant Petrel	EN	V	2000	1	The Southern Giant-Petrel is marine bird that occurs in Antarctic to subtropical waters (Department of	**Unlikely.**

Scientific Name	Common Name	Conservation Status		Last Sighting (Year)	Source or Record	Habitat	Assessment of Likelihood
		EPBC Act	NPW Act				
						Climate Change, Energy, the Environment and Water, 2023b).	Only terrestrial habitats are impacted by the Project.
Myiagra inquieta	Restless Flycatcher		R	2016	1	Open forests and woodlands (Pizzey & Knight, 2007).	**Highly likely.** There are recent records in the Search Area and habitat in the Project Area is broadly suitable for the species.
Neophema chrysostoma	Blue-winged Parrot		V	2016	1, 3	Open woodlands, mallee, chenopod shrublands and wetland margins (Pizzey & Knight, 2007).	**Highly likely.** The Project Area provides suitable habitat, and the species was observed during field surveys in 2015.
Neophema elegans elegans	Elegant Parrot		R	2020	1	Open forests, woodlands, chenopod shrublands, mallee and saltmarsh habitats (Pizzey & Knight, 2007).	**Highly likely.** There are recent records of the species in the Search Area and the Project Area provides suitable habitat.
Neophema petrophila zietzi	Rock Parrot		R	1998	1	Coastal dunes, grasslands and swamps (Pizzey & Knight, 2007).	**Unlikely.** The Project Area is not in a coastal area.
Neophema splendida	Scarlet-chested Parrot		R	2009	1	Mainly mallee and *Eucalyptus* woodlands. Also *Casuarina* and *Acacia* woodlands and surrounding chenopod shrublands (Pizzey & Knight, 2007).	**Possible.** There is no mallee or *Eucalyptus* woodland habitat in the Project Area. However, there are recent records in the search Area and *Acacia* and *Casuarina* woodlands in the Project Area may provide some habitat.
Numenius madagascariensis	Far Eastern Curlew	CR	E	2015	1, 2	The eastern curlew is most associated with sheltered coasts, especially estuaries, bays, harbours, inlets and coastal lagoons, with large intertidal mudflats or sandflats, often with beds of seagrass (Department of Climate Change, Energy, the Environment and Water, 2023b).	**Unlikely.** Only terrestrial habitats are impacted by the Project.
Oxyura australis	Blue-billed Duck		R	2011	1	Well vegetated freshwater swamps and large dams and lakes (Pizzey & Knight, 2007).	**Unlikely.** Only terrestrial habitats are impacted by the Project.

Scientific Name	Common Name	Conservation Status		Last Sighting (Year)	Source or Record	Habitat	Assessment of Likelihood
		EPBC Act	NPW Act				
Pachycephala inornata	Gilbert's Whistler		R	2017	1	Mallee and woodlands with a dense sclerophyllous shrub understorey, including *Acacia, Melaleuca, Senna, Dodonaea* and *Exocarpos*. Often found in association with a *Triodia* understorey (Office of Environment and Heritage, 2023).	**Unlikely.** The Project Area does not provide any suitable dense sclerophyllous shrub understorey in woodlands. There is no mallee present and no areas with a *Triodia* understorey. The species has not been recorded by any survey in the Project Area.
Pandion haliaetus cristatus	Eastern Osprey	Mi	E	2008	1	Eastern Osprey require extensive areas of open fresh, brackish or saline water for foraging. They frequent a variety of wetland habitats including inshore waters, reefs, bays, coastal cliffs, beaches, estuaries, mangrove swamps, broad rivers, reservoirs and large lakes and waterholes. In the South Australian part of their range, they are associated with coastal habitats (Department for Environment and Water, 2021).	**Unlikely.** Only terrestrial habitats are impacted by the Project.
Petrogale xanthopus	Yellow-footed Rock-wallaby	VU	V	2021	1, 2	Inhabits rocky outcrops, cliffs and ridges in semi-arid country, ranging from sandstones, limestones and conglomerates in the Flinders Ranges, to granites in the Gawler Ranges and Olary Hills (Department of Climate Change, Energy, the Environment and Water, 2023b)	**Unlikely.** There are no ranges or rocky outcrops in the Project Area.
Petroica boodang boodang	Scarlet Robin		R	2013	1	Forests and woodlands, although in winter can be found in more open habitats and shrublands (Pizzey & Knight, 2007).	**Possible.** The Project Area is unlikely to provide habitat for resident Scarlet Robins, but may provide wintering habitat.
Phaps histrionica	Flock Bronzewing		R	2013	1	This species is highly irruptive in response to climatic conditions, with the species core range in the Northern territory and south-west Queensland in grassland habitat (Peddler & Lynch, 2016). This record probably relates to a breeding event of Flock Bronzewing in	**Possible.** The Project Area is not within the core distribution of the species. However, it does provide some suitable habitat although it is only likely to frequent the area during rare population irruptions.

Scientific Name	Common Name	Conservation Status		Last Sighting (Year)	Source or Record	Habitat	Assessment of Likelihood
		EPBC Act	NPW Act				
						central South Australia, documented by Peddler and Lynch, 2016.	
Plectorhyncha lanceolata	Striped Honeyeater		R	2015	1	Dry woodlands including mallee, *Casuarina* and *Acacia* (Pizzey & Knight, 2007).	**Likely.** The Project Area provides suitable habitat for the species, with the most recent record in the search Area in 2015.
Podiceps cristatus australis	Great Crested Grebe		R	2002	1	Lakes, large lagoons and swamps. Coastal bays and inlets (Pizzey & Knight, 2007)	**Unlikely.** Only terrestrial habitats are impacted by the Project.
Spatula rhynchotis	Australasian Shoveler		R	2017	1	Fresh and saline lakes, well vegetated wetlands, coastal inlets (Pizzey & Knight, 2007)	**Unlikely.** Only terrestrial habitats are impacted by the Project.
Stagonopleura guttata	Diamond Firetail		V	2018	1	Eucalyptus dominated vegetation associations with a grassy understorey, including forest, woodland and mallee (Department for Environment and Heritage, 2014a).	**Unlikely.** There is no suitable Eucalyptus dominated habitat in the Project Area. The species has not been recorded by any survey in the Project Area.
Sterna hirundo longipennis	Common Tern		R	2008	1	Offshore waters, beaches, reefs, bays and estuaries (Pizzey & Knight, 2007).	**Unlikely.** Only terrestrial habitats are impacted by the Project.
Sternula nereis nereis	Fairy Tern	VU	E	2019	1, 2	Embayments of a variety of habitats including offshore, estuarine or lake islands, wetlands and mainland coastline. The bird roosts on beaches at night (Department of Climate Change, Energy, the Environment and Water, 2023b).	**Unlikely.** Only terrestrial habitats are impacted by the Project.
Stictonetta naevosa	Freckled Duck		V	2007	1	Large, well vegetated swamps (Pizzey & Knight, 2007).	**Unlikely.** Only terrestrial habitats are impacted by the Project.
Thalassarche steadi	White-capped Albatross	VU			2	The White-capped Albatross is a marine species and occurs in subantarctic and subtropical waters (Department of	**Unlikely.** Only terrestrial habitats are impacted by the Project.

Scientific Name	Common Name	Conservation Status		Last Sighting (Year)	Source or Record	Habitat	Assessment of Likelihood
		EPBC Act	NPW Act				
						Climate Change, Energy, the Environment and Water, 2023b).	
Tringa nebularia	Common Greenshank	Mi			2	Variety of inland wetlands and sheltered coastal habitats of varying salinity. It occurs in sheltered coastal habitats, typically with large mudflats and saltmarsh, mangroves or seagrass (Department of Climate Change, Energy, the Environment and Water, 2023b).	**Unlikely.** Only terrestrial habitats are impacted by the Project.
Tringa stagnatilis	Marsh Sandpiper	Mi			2	The Marsh Sandpiper lives in permanent or ephemeral wetlands of varying salinity, including swamps, lagoons, billabongs, saltpans, saltmarshes, estuaries, pools on inundated floodplains, and intertidal mudflats and regularly at sewage farms and saltworks (Department of Climate Change, Energy, the Environment and Water, 2023b).	**Unlikely.** Only terrestrial habitats are impacted by the Project.
Turnix varius varius	Painted Buttonquail		R	2014	1	Eucalyptus woodland and forest with a heath or grassy understorey and abundant leaf litter (Department for Environment and Heritage, 2014b).	**Unlikely.** There is no suitable Eucalyptus dominated habitat in the Project Area. The species has not been recorded by any survey in the Project Area.
Varanus varius	Lace Monitor		R	2021	1	Arboreal, although forages on the ground. Habitat includes well-treed areas with large trees for shelter and foraging (Wilson & Swan, 2013).	**Unlikely.** There are no habitats that contain large trees in the Project Area.
Xenus cinereus	Terek Sandpiper		R	2014	1	Tidal mudflats, shores and reefs (Pizzey & Knight, 2007).	**Unlikely.** Only terrestrial habitats are impacted by the Project.
Zapornia tabuensis	Spotless Crake		R	2011	1	Freshwater wetlands well vegetated with reeds and rushes (Pizzey & Knight, 2007).	**Unlikely.** Only terrestrial habitats are impacted by the Project.

Conservation Status: *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)/*National Parks and Wildlife Act 1972* (NPW Act). CR, Critically Endangered. EN/E, Endangered. VU/V, Vulnerable. R, Rare. Mi, Migratory.
Source of record: 1, BDBSA data extract, including Birdlife Australia records. 2, PMST report. 3, EBS Ecology field survey records.

9. Attachments

Attachment 1 – Landholder permission to clear letter.

Attachment 2 – Rangelands Assessment Scoresheets (Excel spreadsheets electronic attachment).

Attachment 3 – Spatial data (Shape files electronic attachment).

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