succession ecology

Native Vegetation Clearance

Robertstown East Solar Farm

Data Report

Clearance under the *Native Vegetation Regulations 2017*

19 November 2024

Prepared by Jessica Lynch, Kahli Gifford, Glenn Smyth, Nicholas Congedi and Dr C. E. Timothy Paine

Document Specification

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ACKNOWLEDGEMENT OF COUNTRY

Succession Ecology acknowledges and pays respect to the past, present and future Traditional Custodians and Elders of this nation and the continuation of cultural, spiritual and educational practices of Aboriginal and Torres Strait Islander peoples.

Glossary

AoLA	Atlas of Living Australia
BAM	Bushland Assessment Method
BESS	Battery energy storage system
BDBSA	Biological Database of South Australia (maintained by DEW)
DCCEEW	Department of Climate Change, Energy, the Environment and Water (Commonwealth)
DEW	Department of Environment and Water (South Australia)
EPBC Act	*Environmental Protection and Biodiversity Conservation Act 1999*
ha	Hectare
IBRA	Interim Biogeographical Regionalisation of Australia
MDD	Murray-Darling Depression
MNES	Matters of National Environmental Significance
NVC	Native Vegetation Council
PCU	Power conditioning unit
PMST	Protected Matters Tool
PV	Photovoltaic modules
RAM	Rangelands Assessment Methodology
RTE	Robertstown East
RSF	Robertstown Solar Farm
SAM	Scattered Tree Assessment Methodology
SEB	Significant Environmental Benefits
SPRAT	Species Profile and Threats Database
TEC	Threatened Ecological Community
VA	Vegetation Association

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1. Application information

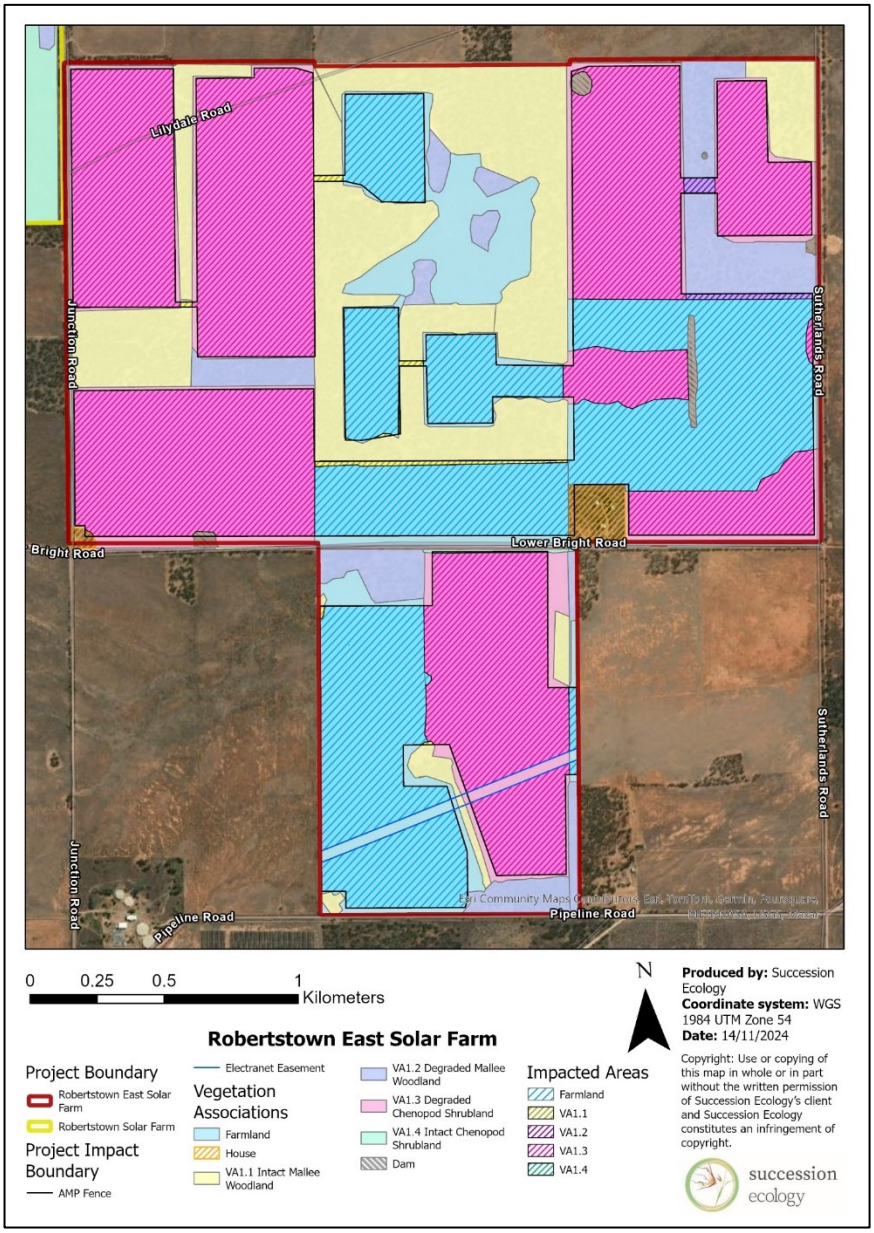
1.1 Application details

Applicant:	AMP Energy		
Key contact:	Brynne Jayatilaka - bjayatilaka@amp.energy (0409 965 110)		
Landowner:	Brenton and Darren Olsen[1], Adrian Schmidt[2]		
Site Address:	957 Lower Bright Road, Geranium Plains, SA 5381		
Local Government Area:	Goyder	**Hundred:**	Bundey (200400)
Title ID:	CT/5400/625[1] CT/5974/451[1] CT/5978/775[2]	**Parcel ID:**	H200400 SE32[1] H200400 SE31[1] H200400 SE30[1] H200400 SE2[2]

1.2 Summary of proposed clearance

Purpose of clearance	Clearance is required to support the installation of a solar farm and associated infrastructure approximately 4 km north-east of the township of Robertstown, in South Australia's Mid-North region, adjacent to the Robertstown Solar Farm (RSF). The Project is adjacent to the proposed Robertstown Solar Farm. This additional area provides flexibility for the purposes of avoiding clearance of valuable remnant native vegetation within the RSF site as well as minimising impacts of the project to Southern Hairy-nosed Wombats. This project is referred to as Robertstown East (RTE). The energy produced by RTE will contribute towards the National Energy Grid. The timing of construction will depend on economic and supply requirements. RTE may be constructed across several stages, which will be independently financed. If so, impacts to native vegetation will be staged. Note: The timing of impacts to native vegetation is yet to be determined based on economic and power supply requirements. As such, the assessment of vegetation condition and value in this application is indicative. The land is still used for agricultural purposes with cropping and grazing applied depending on the landowners' requirements. Cropping impacts, could lead to a significant reduction in the extent of native vegetation on the land evaluated in this assessment. This document is an indicative draft of the clearance application, intended to support the Development Application. The clearance application will be finalised once development approval is granted including details of investigation into an on-ground SEB. Commencement of clearance is not expected to happen in the short-term.
Native Vegetation Regulation	Regulation 12, Schedule 1, clause 34, Infrastructure

Description of the vegetation under application	The proposed RTE solar farm development and associated infrastructure will be placed across an area of 642.6 hectares. The proposed footprint includes a total of 414.7 ha, of which 255.8 ha will require clearance of native vegetation, and 11 scattered *Eucalyptus oleosa* trees. Clearance will occur within the following vegetation associations: • VA 1.1 Relatively intact open mallee woodland with chenopod understorey • VA 1.2 Degraded open mallee woodland with chenopod understorey • VA 1.3 Regenerating chenopod understorey with emergent scattered overstorey • VA 1.4 Relatively intact chenopod shrubland with emergent scattered overstorey
Total proposed clearance – area (ha) and number of trees	The proposed clearance is 255.8 ha and 11 scattered trees.
Level of clearance	Level 4
Overlay (Planning and Design Code)	Hazards (Bushfire - Regional) Hazards (Flooding - Evidence Required) Key Outback and Rural Routes Murray-Darling Basin Native Vegetation Water Resources

Map of proposed Clearance Area	 *Map of the Robertstown East Solar Farm Project site showing the distribution of the four vegetation associations and farmland, proposed to be impacted by the development. Impacted areas indicated via hatching overlay.*
Mitigation hierarchy	While this application is only for the clearance associated with RTE it should be read in conjunction with the application for clearance of RSF to gain a full picture of mitigation undertaken by AMP Energy and EPS Energy. The planning process for the project as a whole dates back to 2018 and includes several design iterations to avoid and minimise the clearance of native vegetation and reduce impacts on Threatened Ecological Communities threatened species and native fauna. Much of the project footprint has been designed to fit within areas of farmland and regenerating chenopod shrubland subject to farming practices to reduce the need for vegetation clearance. The investigation of sites at RTE is due to refinement and reduction in the footprint of RSF to support avoidance of native vegetation clearance. The RTE Solar Farm has been designed to maximise panel area and streamline logistics within the smallest possible footprint. Where practical, project designs minimise the amount

	of clearance required by locating temporary project components, such as construction laydowns, in areas designated for longer-term components, such as solar arrays. Vegetation clearance will be implemented between January and May, to minimise impacts to the breeding of threatened bird species. Access tracks have been designed to be as narrow as possible to avoid any indirect impacts, such as spreading of Declared and environmental weeds. Some of the areas to be cleared for temporary items, such as site offices, will be rehabilitated, reducing the total amount of long-term vegetation loss from the area. Where practical, vegetation clearance in shrublands will utilise vegetation rolling, rather than complete clearance. The opportunity for an on-ground SEB offset area will be explored in the local area. This is dependent on discussion with local landholders. It is proposed that the SEB be established in stages linked with the stages of clearing impacts. A detailed SEB Revegetation Management Plan will be prepared to outline the restoration efforts necessary to achieve the conservation outcomes required for an SEB. It would be submitted at the time of the clearance application. A payment into the Native Vegetation Fund will also be made to account for the difference in SEB offset required and the SEB points available from the on-ground SEB offset area.
SEB Offset proposal	A total of 15,846.01 SEB points is required for The Project. This may be partially offset by an SEB area to be explored and details to be included in the final clearance application. A payment into the Native Vegetation Fund will be made for the difference in SEB offset required. Where an on-ground SEB offset is not available, a payment of $5,622,027.30 will be made into the fund.

2. Purpose of clearance

2.1 Description

The RTE development is proposed as an expansion of the broader RSF project which consists of the following in dependently financed stages of development associated with the proposed native vegetation clearance:

- Clearance and construction of a Battery Energy Storage System (BESS), solar arrays, access tracks and ancillary infrastructure at the RSF site (Note: the RSF project and the associated clearance is not the subject of this application).
- Clearance and construction at the RTE project site including the solar arrays, access tracks and ancillary infrastructure.

The RTE site is being proposed for development in view of the design and environmental mitigation that has been undertaken at the RSF site. Briefly, a detailed design process undertaken since 2018 has led to mitigation of environmental impacts. 99 % of the development at RSF has been sited in farmland containing no native vegetation and areas of high-quality native vegetation have been excised from the final project design. Refer to Succession Ecology (2024) for further detail on mitigation of environmental impacts at the RSF site. Due to design changes at RSF, the energy output of the current design has been reduced. In order to achieve the required energy output for the Robertstown Solar project as a whole, AMP Energy have investigated nearby areas to the east of RSF which have historically been managed as dryland farmland with little native vegetation. This has been done to maintain the low environmental impact of the project including avoidance of native vegetation clearance and minimising clearance to high value native vegetation.

The timing of impacts to native vegetation is yet to be determined based on economic and power supply requirements. As such, the assessment of vegetation condition and value in this application is indicative. The land is still used for agricultural purposes with cropping and grazing applied depending on the landowners' requirements. Cropping impacts, in particular could lead to a significant reduction in the extent of native vegetation on the land evaluated in this assessment. This may alter vegetation conditions as described in section 4.1.2 and will subsequently impact the required SEB offset. This is discussed in further detail in section 6.2.1.

AMP Energy is proposing the development of RTE along Lower Bright Road, Geranium Plains, 4 km north of Robertstown, SA. The final design lies between Powerline Road and Pipeline Road and is henceforth referred to as the 'proposed impact area' (Figure 2). The design is split into power conditioning unit (PCU) blocks, each of which consists of solar panel arrays and a single distribution unit, a local Substation, access tracks, and ancillary infrastructure as independently financed stages of the development. The Project will supply energy into the National Energy Grid.

2.2 General location

The Project is located within the Regional Council of Goyder and the Northern and Yorke Landscape Board Robertstown East Solar Farm is approximately 4 km north-east of the township of Robertstown, in South Australia's Mid-North region. The project area is T-shaped, bounded by Powerline Road to the north, Sutherlands Road to the east, Pipeline Road to the south and Junction Road to the west (Figure 1). The Project adjoins the Robertstown Solar Farm (RSF) which is directly west of the Project area.

2.3 Background

2.3.1 Administrative Boundaries

The Project is sited within the Regional Council of Goyder and the Northern and Yorke Landscape Board. It is located within the Murray Darling Depression Interim Biogeographic Regionalisation for Australian (IBRA) Region, the Murray Mallee Sub-region and the Sutherlands Association.

2.3.2 Local and Regional Land Use

The RTE Solar Farm is adjacent to the existing Robertstown Solar Farm and Substation. The proposed land is currently used as dryland farmland for cropping and sheep grazing, patches of native vegetation are dispersed throughout the Project area (Figure 1). Cropping and grazing cycles vary across the two landowners Olsen (northern blocks), and Schmidt (southern block). These areas will hereby be referred to as Olsen West (H200400 S32), Olsen Central (Parcel IDH200400 S31), Olsen East (Parcel ID: H200400 S30), Schmidt East and Schmidt West (Parcel ID: H200400 S2).

Paddocks within Olsen West, Central and East were most recently cropped in 2021, and are currently subject to sheep grazing. Prior to this, seed was sown in 2014, 2015, 2016, 2017, 2018, 2020. Likewise, Schmidt alternates between cropping and grazing cycles with seed most previously sown in 2024 in the East paddock, and 2022 the West paddocks. Previously, seed was sown in Schmidt (East and West) in 2015, and 2016, with additional sowing in the West paddock in 2021. Between cropping cycles these areas are used for stock grazing. However, stock has currently been removed from the West paddock due to the drought. Prior to commencement of the proposed development, these paddocks have the potential to be re-cropped by landowners. Cropping and grazing cycles are heavily dependent on rainfall and future land use will be subject to environmental conditions.

Surrounding land uses include a mixture of livestock grazing, agricultural cropping, solar electricity generation, electricity transmission, and reserve land. The nearest conservation parks are the Mimbara Conservation Park (10 km) and the Hopkins Creek Conservation Park (12 km), located north and north-west of the Project area, respectively.

The landscape is slightly undulating, with a 30 m change in elevation across the Project area. The soil in this region is most likely to be calcareous loam on clay. There are no marked watercourses present within the proposed Project area, however, there are watercourses immediately to the west of the site, of stream order 1 and 2. The climate of the region is semi-arid with an annual rainfall ranging from 287 to 297 mm.

2.3.3 Native Vegetation Remnancy

The local area contains a low level of remnant native vegetation, with 28 % remnancy mapped within 5 km of the Project area (statistics derived from NatureMaps). Remnancy values were averaged from four areas across the Project Site. The Sutherlands IBRA Association contains 47 % remnancy (Native Vegetation Council 2024), however, it is estimated that only 20 % of historic mallee habitat remains (DAWE 2021a) and only 4.22 % of remnant vegetation is protected within the Murray Mallee IBRA Subregion (DCCEEW 2022).

2.3.4 Associated Development

The proposed solar farm will be owned and operated by AMP Energy, who is also the developer of the neighbouring Robertstown Solar Farm (RSF) that abuts the northwestern corner of the proposed Project area (Figure 1). The Project is associated with the development of the RSF to the west. The clearance of native vegetation for Robertstown Solar Farm is the subject of a separate data report, but the impacts of both developments are considered when discussing cumulative impacts.

2.4 Details of the proposal

AMP Energy proposes to develop up to 300 MW (AC) of PVS solar generation on land adjacent to the development approved Robertstown Solar Farm (RSF; Figure 1). This Project will be known as Robertstown East Solar (RTE). Approximately 200MW+ of approved RSF solar generation land is considered unviable for construction. The new

generation area is proposed to allow contingency for constraints of the new RTE site. This new RTE land is proposed to ameliorate generation requirements due to site constraints realised from preconstruction investigation works to reduce environmental impacts, post development approval, on the RSF site.

The proposed RTE Project consists of solar panel arrays, buildings, fences, tracks, cable routes, laydowns, stockpiles and other associated infrastructure. The main Project components are described below:

- Solar panel blocks, each with a Power Conditioning Unit (PCU), with 1 m tracker gaps between arrays. Trackers within the same block require a gap of 5 m to allow for the installations of combiner boxes, DC trenches and swept paths for small trucks and vehicles.
- Cable routes to connect the solar farm to the Robertstown Substation along Lower Bright Road.
- Access tracks (4 m wide) between PCU blocks and between sections of the solar farm.

The RTE proposal also includes a secondary option to connect to Bundy Substation, should connection capacity at Robertstown Substation be taken by another Project.

2.5 Approvals required or obtained

The project is subject to the *Planning, Development and Infrastructure Act 2016* (*PDI Act)* with a planning submission currently being developed for assessment by the South Australian Planning Commission (SCAP).

An *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)* Self-assessment will be undertaken for the project to determine if the project requires referral to the Department of Climate Change, Energy, the Environment and Water.

No other approvals with regards to native vegetation clearance are required.

2.6 Native vegetation regulation

The proposed clearance will be assessed under Regulation 12, Schedule 1, clause 34, Infrastructure of the *Native Vegetation Act, 1991* (*NV Act*).

2.7 Development Application Information

The Project area falls within the Rural Intensive Enterprise Zone and within the Native Vegetation overlay. The Project will be submitted to the State Planning Commission for approval.

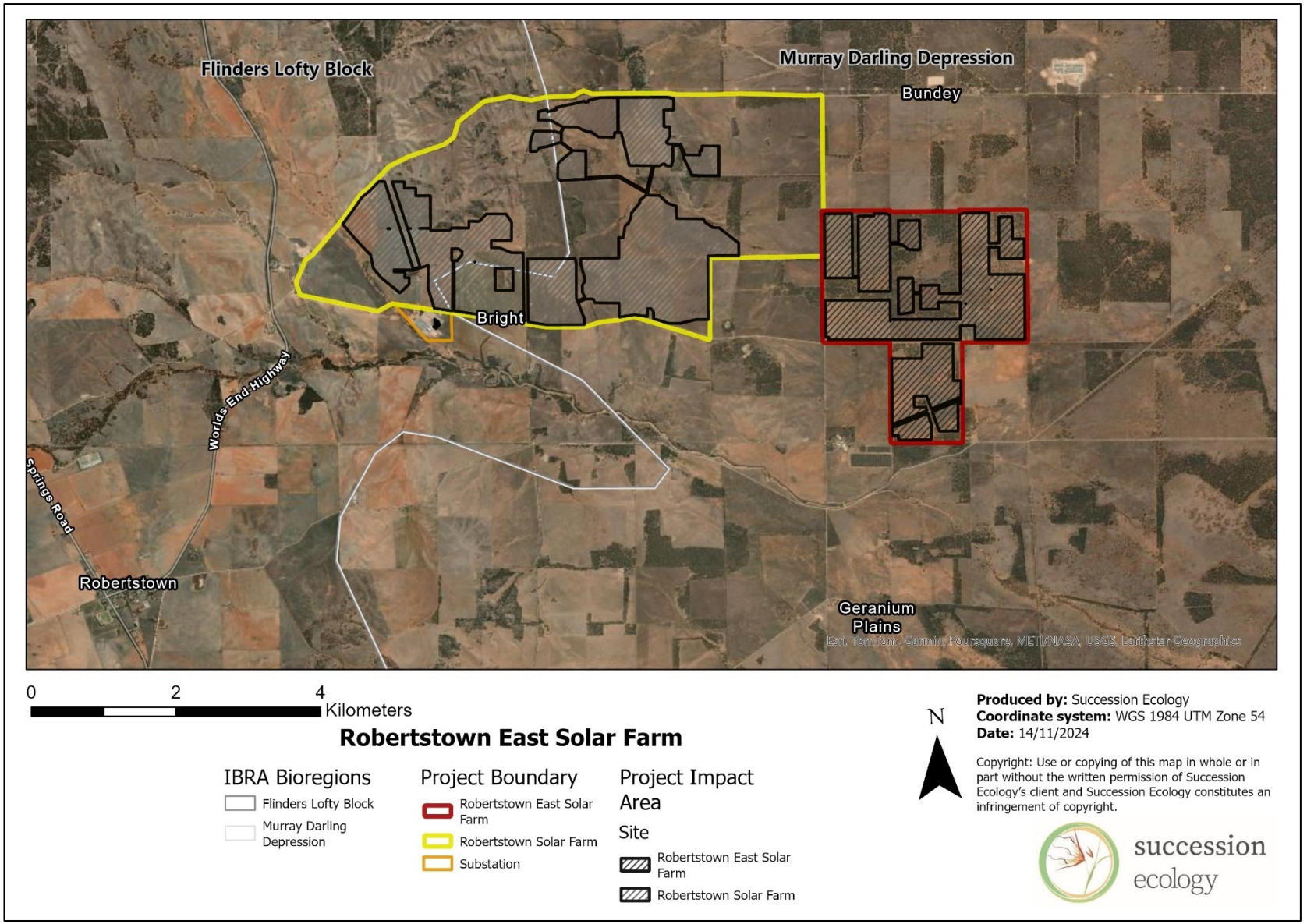


Figure 1: General Location of the Robertstown Solar East Farm (red), 2 km northeast of Robertstown, SA. Including the associated Robertstown Solar Farm (yellow), the existing Robertstown Substation (orange). Impacted areas are indicated via hatching and outlined in black. RTE is situated entirely within the Murray Darling Depression IBRA Bioregion.

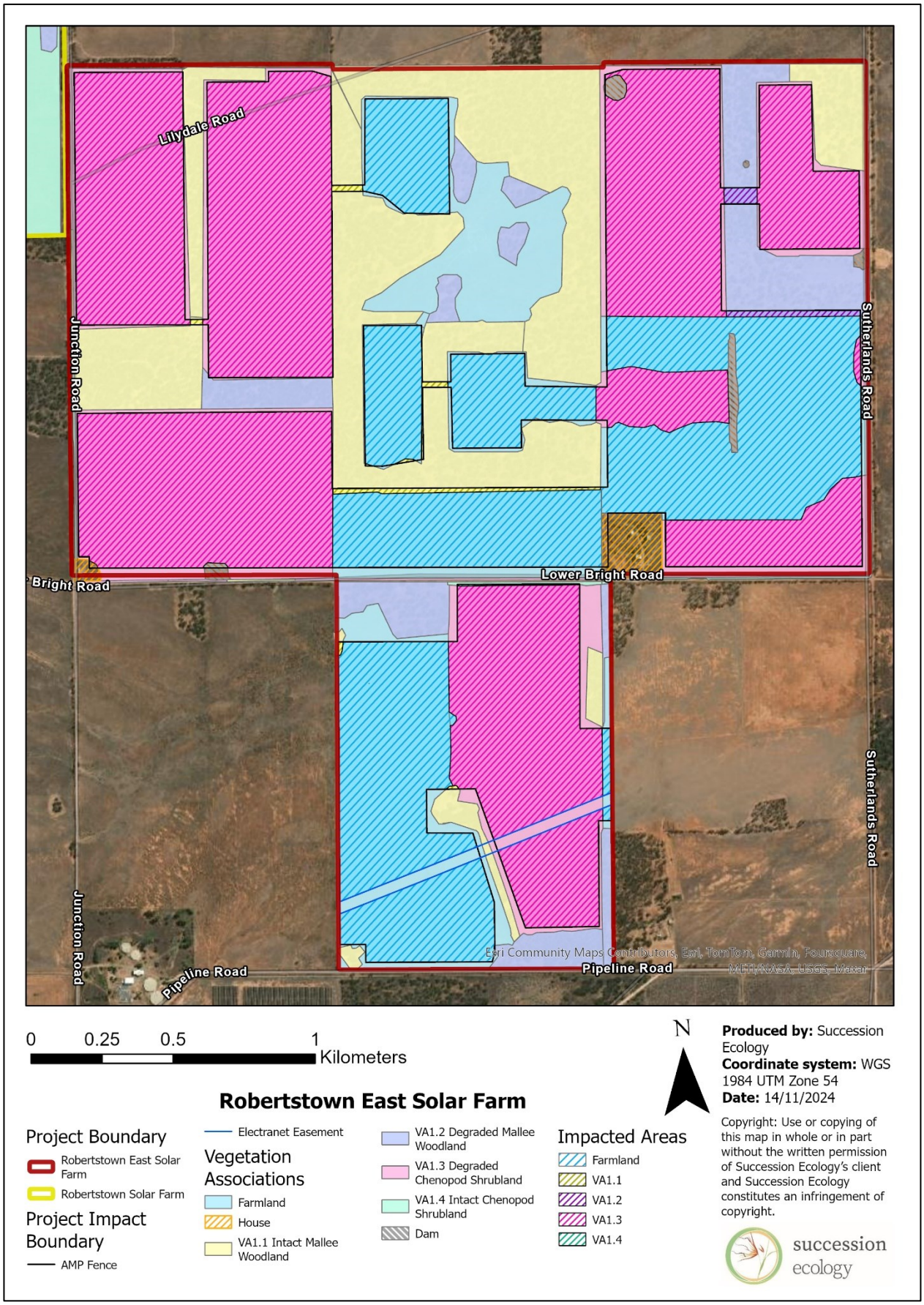


Figure 2: Vegetation associations present across Robertstown East Solar Farm broader project area, including the proposed impact area (PCU blocks areas are outlined in black with hatching, and Electranet easement area outlined in blue).

3. Method

3.1 Flora and Fauna assessment

3.1.1 Desktop assessment

A desktop assessment was conducted to undertake preliminary mapping of native vegetation protected under the *NV Act 1991* via the NatureMaps tool. This mapping was used to plan the assessment and inform the field methodology.

The desktop assessment was also undertaken to determine the threatened ecological communities, flora species, and fauna species that potentially occur in the area. Communities and species were evaluated as threatened if they were listed under the *National Parks and Wildlife (NPW) Act 1972* and/or the *Environment Protection and Biodiversity Conservation (EPBC) Act 1999*, as outlined below:

- ***NPW Act 1972***
  - Schedule 7 – Endangered Species
  - Schedule 8 – Vulnerable Species
  - Schedule 9 – Rare Species
- ***EPBC Act 1999***

Part 13 – Species and communities – Division 1- Listed threatened species and ecological communities – Subdivision A – Listing – 178 Listings of threatened Species

  - Section 178 (c) – Critically Endangered
  - Section 178 (d) – Endangered
  - Section 178 (e) – Vulnerable

Threatened communities and species were evaluated if they had been recorded within 5 km of the project site since 1995 or were considered 'known' to occur within the search area via the Protected Matters Search Tool.

Databases searched during the desktop assessment included:

- Protected Matters Search Tool (PMST): to identify Matters of National Environmental Significance (MNES) under the *EPBC Act 1999,* including nationally threatened species and ecological communities, 'known' to occur in the search area.
- NatureMaps: to identify records of threatened flora and fauna listed under either the *NPW Act 1972* or *EPBC Act 1999*, recorded since 1995 within the search area.
- Biological Database of South Australia: to identify threatened flora and fauna listed under either the *NPW Act 1972* or *EPBC Act 1999*, recorded since 1995 within the search area that have restricted access to distribution data.
- Atlas of Living Australia (AoLA): to identify threatened flora and fauna listed under either the *NPW Act 1972* or *EPBC Act 1999*, recorded since 1995 within the search area. Records from 'citizen science' initiatives are excluded from results.
- Appendices in the NVC Bushland and Scattered Tree Assessment Manuals: to determine scattered trees species that provide suitable habitat for threatened fauna and threatened ecological communities protected under *NPW Act 1972*.
- DEH (in progress) unpublished and provisional list of Threatened Ecosystems: to identify threatened and rare ecosystems.

A likelihood of occurrence/habitat use assessment was carried out for threatened communities, fauna and flora species identified during the Desktop Assessment. The likelihood of these species using the site following the metric described in Table 1.

The distribution of vegetation associations was assessed using satellite imagery and vegetation community data obtained through NatureMaps. All maps were generated using ArcGIS Pro.

Table 1: Criteria for the likelihood of occurrence/habitat use of species within the survey 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 provides 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.

3.1.2 Field Survey

Vegetation surveys of the broader project area were conducted 26-28 August and 1-3 October 2024. Ground truthing of vegetation communities identified in the desktop assessment was carried out and the vegetation subject to clearance was surveyed using the Bushland Assessment Methodology (Native Vegetation Council 2024) and Scattered Tree Assessment Methodology (Native Vegetation Council 2020a), as appropriate. All field datasheets were entered into the excel scoresheets. Data cleaning was then undertaken to merge some into a single scoresheet (for vegetation associations where multiple assessments were conducted), to simplify the data output. Decisions on what field datasheets to merge were made based on the similarity of Unit Biodiversity Scores (UBS).

A formal fauna assessment was required for this site as a Level 4 Assessment. Opportunistic observation-based surveys were conducted to identify any fauna species using this vegetation as habitat. Opportunistic observations included incidental records of non-target species observed while conducting the specified survey technique, or while walking to or from the project site. This was supplemented by targeted assessments of reptiles, wombats, and birds as described below.

Herpetological assessment methodology

The desktop assessment (Succession Ecology 2024) conducted for the purposes of EPBC self-assessment (10 km search radius) identified both the Flinders Ranges Worm Lizard (FRWL) and Pygmy Blue-tongue Lizard (PBTL), protected under the *Environment, Protection and Biodiversity Conservation (EPBC) Act 1999*, as species that may occur at the site. Based on this finding it was recommended that a survey be carried out to determine whether these species were present. This information will be used to inform the need for an EPBC referral based on likelihood of impacts to these species. In addition, records of other reptile species or evidence of their occurrence were recorded during the survey (Appendix A).

A targeted reptile survey was conducted 1-3 October 2024. Timed, rambling transects were walked in pairs or groups of three to four, raking litter, rolling logs and rocks, removing tree bark and observing for movement of reptiles. In addition, we looked for diggings and sloughed skins to identify reptiles that may have been present. Search effort was timed to 1-hour active search time blocks to quantify sampling effort across different habitat types. Survey time

was modified depending on number of surveyors, (pairs searched in 30-minute blocks, groups of three in 20-minute blocks, and groups of four in 15-minute blocks. Searching ceased after each 15 to 30-minute block, regardless of whether reptiles were observed or not, however the time was paused during attempts to catch and process a single individual, so the total searching time was not reduced by the number of individuals found. Groups moved at least 100 m in the same habitat or to a new habitat prior to commencing a new search. When a reptile was observed, identity (to lowest taxonomic level), details of vegetation structure, macrohabitat (e.g., leaf litter or rocks) and microhabitat (e.g., in or under leaf litter) was recorded.

An effort was made to capture and photograph most lizards to confirm identification to the lowest taxonomic level possible. On occasion, we were unable to confirm identity due to animals moving too fast, or because our ability to catch them was hampered by dense vegetation at ground level. Nevertheless, those individuals were still generally identifiable to genus or family level. Additionally, each survey team recorded their location continuously using GPS. Tracks were downloaded nightly and mapped using ArcGIS Pro. For more methodological detail, see "Robertstown Reptile Survey, November 2022". Succession Ecology report ES0123-01 prepared for AMP Energy.

Wombat assessment

During the ecological assessments of Robertstown Solar Farm, Southern Hairy-Nosed Wombats (*Lasiorhinus latifrons*), were observed to occur. This species is classified as Near Threatened by the International Union for the Conservation of Nature (IUCN) and are protected under the *South Australian National Parks and Wildlife Act* (1972). Hence, a targeted distribution and abundance census of wombat warrens was conducted on 26-28 August and 22 October 2024. For methodological detail, see "Robertstown Wombat Survey, October 2022" (Succession Ecology report ES1022-10 prepared for AMP Energy).

Bird surveys

Targeted bird surveys were conducted from the 22nd to 25th of October 2024 to determine the presence of threatened species within the Project site.

These threatened species fall into three overlapping categories:

- Species protected under *National Parks and Wildlife Act* (SA, *NPW Act*): South-eastern Hooded Robin, Jacky Winter, White-winged Chough, Little Eagle, Black-eared Miner
- Species protected under *Environmental Protection and Biodiversity Conservation Act* (Cth, *EPBC Act*): Southern Whiteface, South-eastern Hooded Robin and Diamond Firetail.
- Species associated with a Threatened Ecological Community (TEC) protected under the *EPBC Act*: Mallee Bird Community of the Murray Darling Depression Bioregion (MDD) (Table 6).

Solitary observers conducted 30-minute surveys across each vegetation association, within three hours of sunrise and sunset. A maximum of five call-playbacks were used per VA, in line with the approved ethics permit (Project number 20/2024 *Robertstown East Solar Farm targeted reptile surveys)* to verify the presence and abundance of Southern Whiteface, South-eastern Hooded Robin, Jacky Winter, and Diamond Firetail. Observers also recorded opportunistic observations of non-threatened species.

4. Assessment outcomes

4.1 Vegetation assessment

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

IBRA Regions

The Project is located within the Murray Darling Depression Interim Biogeographic Regionalisation for Australia (IBRA) Region, the Murray Mallee Sub-region and the Sutherlands Association. Descriptions for the Murray Darling Depression Region are presented in Table 2.

The Murray Darling Depression (MDD) is an extensive gently undulating sand and clay plain of Tertiary and Quaternary age frequently overlain by aeolian dunes. Vegetation consists of semi-arid woodlands of Black Oak/Belah, Bullock Bush/Rosewood and *Acacia* spp., mallee shrublands and heathlands and savanna woodlands. Substantial areas of mallee remain today in the western aeolian dunes, mainly in South Australia and but also western NSW. Clearing has also been widespread in the northeastern portion of the bioregion in NSW particularly on the undulating plains and relict river channels and lakes associated with the Murray and Darling Rivers.

Table 2: IBRA region description (Thackway and Cresswell 1995).

Feature	Murray Darling Depression (MDD)
Land type	Depositional or Bare rock
Landscape	Depositional plain
Landform	Plains with variable dune cover, from dune formations with relatively small plains between to plains with isolated tracts of dunes. Claypans, saline soils, swamps, and intermittent lakes in low-lying areas.
Geology	Exposed caliche & crusty loamy soils; colluvial sand, silt, clay & gravel along foot-slopes of Olay Spur. Evaporite deposits; gypsum & halite.
Soil	Brown calcareous earths, highly calcareous loamy earths, cracking clays, yellow grey, hard setting loamy soils with red clayey subsoils.
Vegetation	Mallee Woodland and Shrubland
Climate	Semi-arid climate that is too dry to support field crops. Soil moisture tends to be greatest in winter.

Vegetation Overview

The vegetation across the site consists of four native vegetation associations and 11 scattered trees. A large portion of the site is cleared farmland used for cropping or intensive sheep grazing which does not contain any native vegetation. Portions of the land are less intensely grazed and feature regenerating native chenopod vegetation. Interspersed among the treeless grazing land are remnant patches of mallee in varying degrees of quality on the basis of the amount of understorey present. Across the site, the overstorey consists of Red Mallee (*Eucalyptus oleosa*), Grey Mallee (*Eucalyptus socialis*) whereas species from the family Amaranthaceae (Chenopodioidae) dominate the understorey and shrub layers. A total of 52 native plant species were identified during the field surveys across the four vegetation

associations. There are also 14 introduced species which includes the declared weeds African Boxthorn (*Lycium ferocissimum*), Horehound (*Marrubium vulgare*) and Cut-leaf Mignonette (*Reseda lutea*).

Field surveys identified four vegetation associations (VA) which include:

- VA 1.1 Relatively intact open mallee woodland with chenopod understorey
- VA 1.2 Degraded open mallee woodland with chenopod understorey
- VA 1.3 Regenerating chenopod understorey with scattered overstorey
- VA 1.4 Relatively intact chenopod shrubland with scattered overstorey

The proposed footprint primarily consists of VA 1.3 and farmland but will also have direct impacts on the edges of intact and degraded mallee patches (VA 1.1 and 1.2). The extent of degradation and the previous land uses vary substantially across the project site. The conditions of VA 1.1 and 1.2 were relatively consistent with those in RSF. Paddocks consistent with VA 1.3 contain a high diversity of flora species and have high potential to mature into an intact chenopod shrubland, if cropping and grazing pressure was released. The history of land use at these sites suggests that these areas may be cropped again in the years preceding development. Therefore, vegetation condition across these paddocks is subject to change. Despite the high number and diversity of regenerating species in VA 1.3, overall plant condition is moderate and is heavily grazed. This differs from the VA 1.3 at RSF, as those areas are in a later stage of regeneration and contain a denser chenopod shrubland with larger shrubs. Intact chenopod shrubland (VA 1.4) is restricted to roadside vegetation, which will experience only minor impacts by the proposed development (Figure 2).

A full list of species identified during the field survey is presented in Appendix A.

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

Vegetation Association	VA1.1: Relatively intact open mallee woodland with chenopod understorey

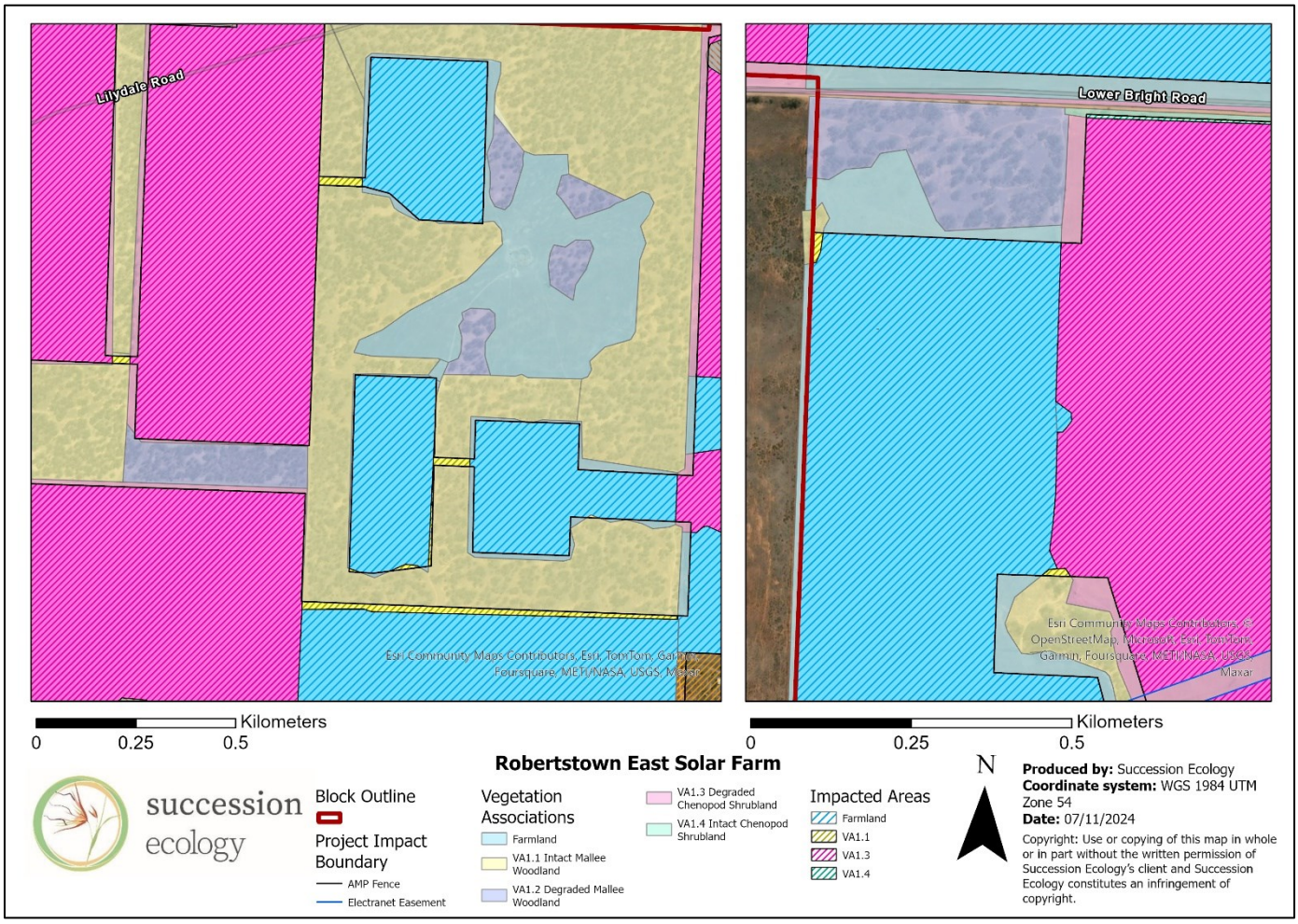


Figure 3: Impacted Bushland Assessment area for VA 1.1 displayed in yellow. Impacted patches limited to borders of paddocks. The intact mallee patches are shown as transparent with the proposed impacted areas in hatched overlay.

Vegetation Association	VA1.1: Relatively intact open mallee woodland with chenopod understorey

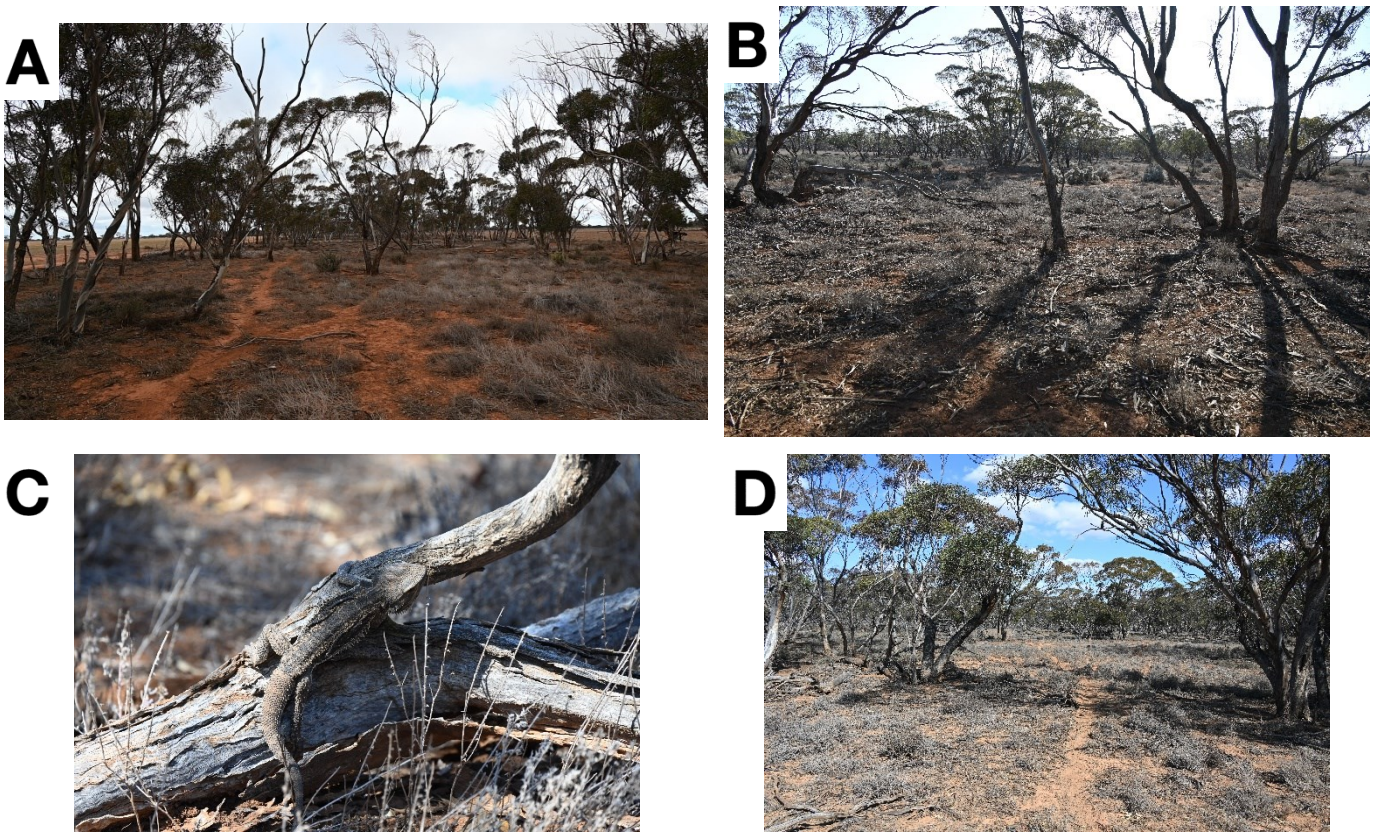


Figure 4: VA1.1 consisting of open mature mallee Eucalypts and chenopods species (A), mature and regenerating chenopod shrubland (B), Pogona sp. found basking (C), Mallee canopy across VA1.1 varied in condition from dense with foliage image (D) to moderate foliage density image (A).

General description	This VA has been scored against the BCM community MDBSA 2.1: Open Mallee / Low Open Woodland with Chenopod Shrub Understorey (Figure 3). This VA is in good condition and features a strongly intact overstorey of *Eucalyptus oleosa*, and *Eucalyptus socialis*, mallee trees as well as an intact mid- and understorey of mostly chenopods from the genera *Maireana, Rhagodia, Atriplex* and *Chenopodium*. Also present are larger shrubs including *Acacia oswaldii, Alectryon oleifolius, Santalum acuminatum, Senna artemisioides* ssp. *zygophylla, Nitraria billardierei,* and *Grevillea huegelii* (Figure 4). In the understorey there is some invasion of introduced species including *Carrichtera annua, Mesembryanthemum nodiflorum, Brassica* sp., and the declared weed *Lycium ferocissimum*.
Threatened species or community	**Threatened Ecological Communities** One threatened ecological community (TEC) identified during the desktop assessment, was identified as likely to occur within this association during the field survey: **Mallee Bird Community of the Murray Darling Depression Bioregion**. This fauna community is listed as Endangered under the *EPBC Act*. This community is present throughout VA1.1 as the vegetation and bird species assemblage meet the key diagnostic criteria and is assessed to be of good quality. As such, any impacts to the mallee areas and the bird species that rely on this community will be subject to assessment under the *EPBC Act*. **Threatened Fauna** The desktop assessment identified six threatened fauna species, three of which are listed as threatened under the *EPBC Act*. These are the Southern Whiteface (*Aphelocephala leucopsis*), which

<table>
<tr><td>Vegetation Association</td><td colspan="5">VA1.1: Relatively intact open mallee woodland with chenopod understorey</td></tr>
<tr><td></td><td colspan="5">is listed as ‘Vulnerable’, the South-eastern Hooded Robin (Melanodryas cucullata cucullata) which is listed as ‘Endangered’ and the Black-eared Miner (Manorina melanotis), which is listed as Endangered. The search also found three species listed as threatened under the NPW Act. These include Little Eagle (Hieraaetus morphnoides), Jacky Winter (Microeca fascinans fascinans), and White-winged Chough (Corcorax melanorhamphos). Little Eagle is listed as ‘Vulnerable’, while the other species are listed as ‘Rare’. The South-eastern Hooded Robin and Black-eared Miner are also listed as ‘Rare’ and ‘Endangered’ under the NPW Act. White-winged Chough, Southern Whiteface, South-eastern Hooded Robin and Jacky Winter were recorded in this VA during the October 2024 targeted bird survey. No other threatened species were observed, however Little Eagle is also considered possible to occur.

Threatened Flora

The desktop search identified a total of two threatened flora species within the search area; Dodonaea subglandulifera, which is listed as Endangered under the EPBC Act as known, or has habitat known to occur and Myoporum parvifolium which is listed as Rare under the NPW Act. No threatened flora species were identified within this VA.</td></tr>
<tr><td>Landscape context score</td><td>1.17</td><td>Vegetation Condition Score</td><td>65.93</td><td>Conservation significance score</td><td>1.50</td></tr>
<tr><td>Unit biodiversity Score</td><td>115.71</td><td>Area (ha)</td><td>2.183</td><td>Total biodiversity Score</td><td>252.59</td></tr>
<tr><td colspan="6">NPW Act; E= Endangered, V = Vulnerable, R= Rare

EPBC Act; Ex = Extinct, CR = Critically endangered, EN = Endangered; VU = Vulnerable</td></tr>
</table>

Vegetation Association	VA1.2: Degraded open mallee woodland with chenopod understorey

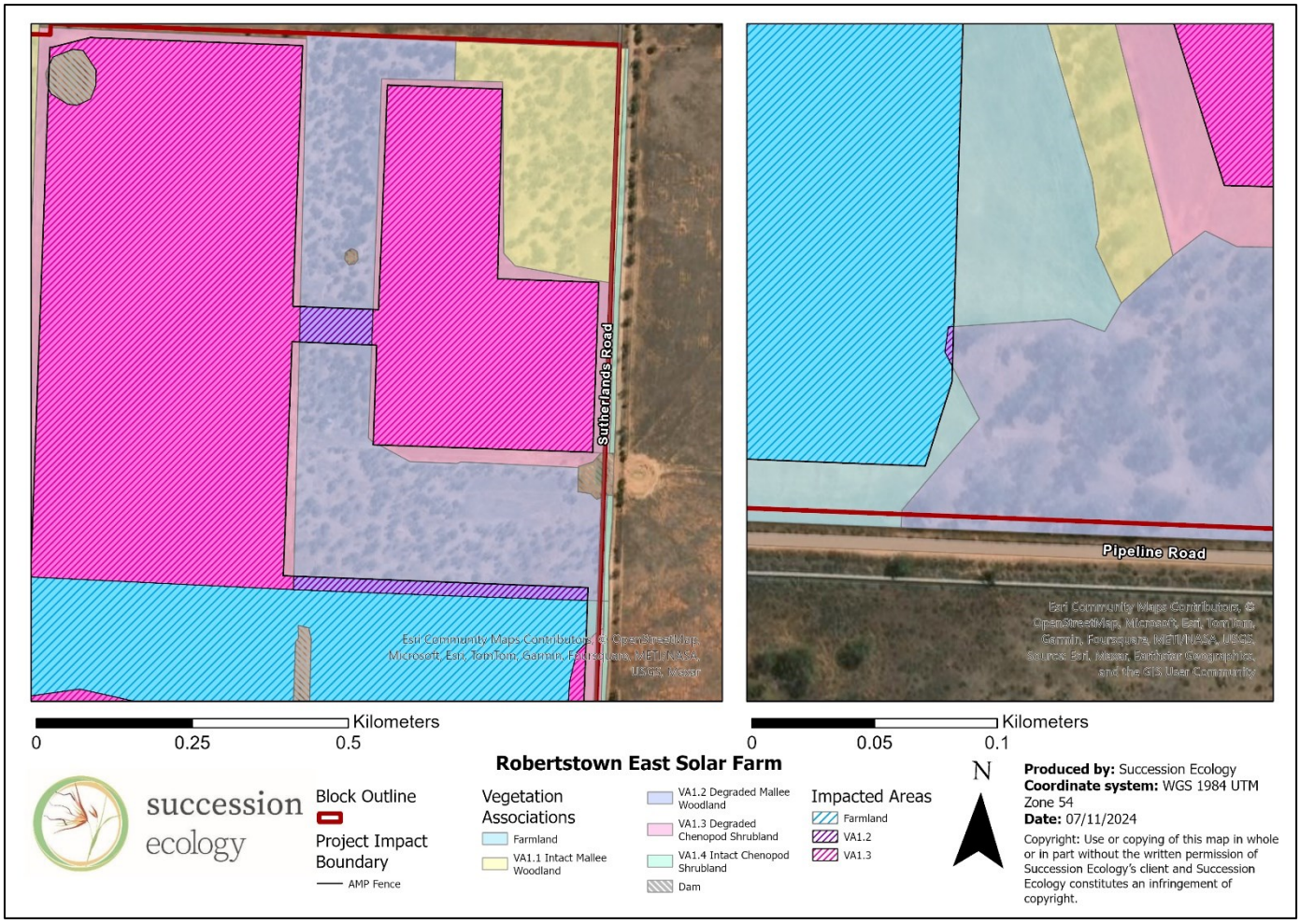


Figure 5: Impacted Bushland Assessment areas for VA 1.2 displayed in purple. The degraded mallee patches are shown as transparent with the proposed impacted areas in hatched overlay.

Vegetation Association	VA1.2: Degraded open mallee woodland with chenopod understorey

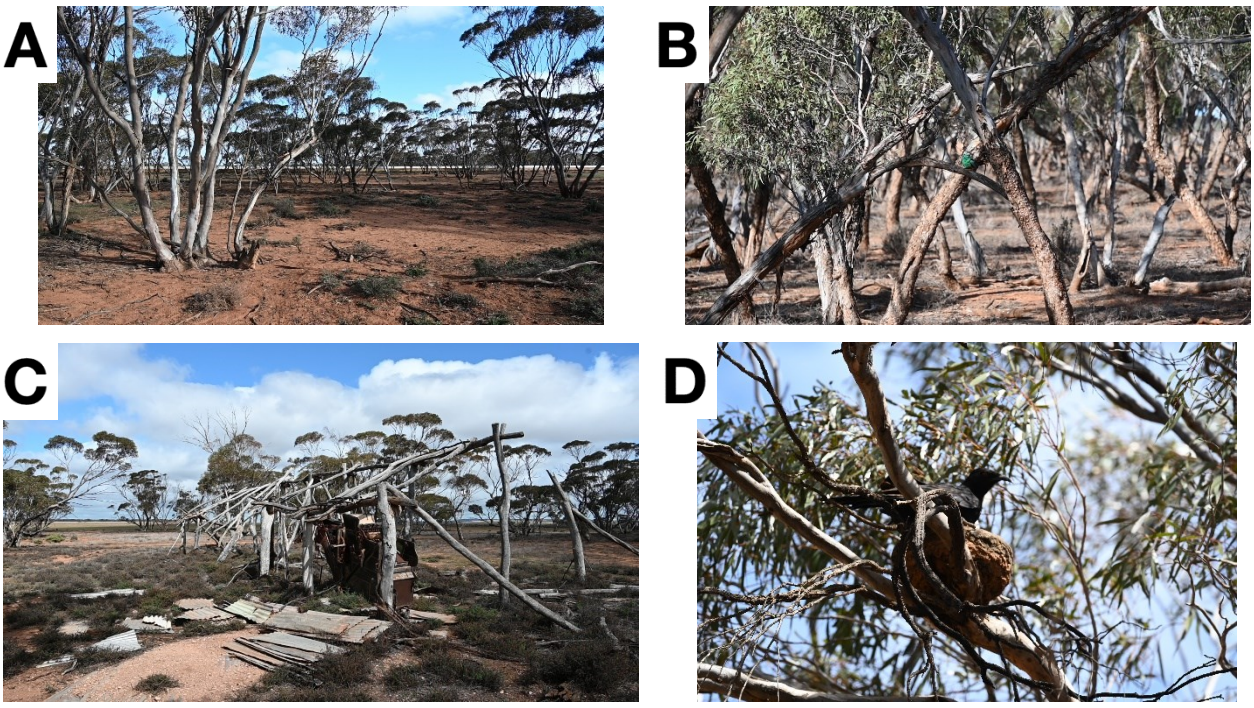


Figure 6: VA1.2 had a sparse to open mature mallee Eucalypt canopy with a degraded sparse chenopod understorey (A) throughout the site there was avian activity (B) in VA 1.2 there was signs of historic and current agriculture (C) there was also a nesting populations of the state rare White Winged Chough (Corcorax melanorhamphos) among other state and federally listed bird species (D), see appendix b for additional state and threatened bird species.

General description	This VA has been scored against the BCM community MDBSA 2.1: Open Mallee / Low Open Woodland with Chenopod Shrub Understorey (Figure 5). This VA is in good condition and features a strongly intact overstorey of *Eucalyptus oleosa,* and *Eucalyptus socialis,* mallee trees. The mid- and understorey in this VA is more degraded than VA1.1 but still features a diversity of chenopods from the genera *Maireana, Rhagodia, Atriplex* and *Chenopodium.* Also present, but in lower densities than VA1.1 are larger shrubs including *Alectryon oleifolius, Exocarpos aphyllus* and *Myoporum platycarpum* (Figure 6). In the understorey there is a larger density of introduced species including *Carrichtera annua, Mesembryanthemum nodiflorum, Brassica* sp., and the declared weed *Lycium ferocissimum.*
Threatened species or community	**Threatened Ecological Communities** One threatened ecological community (TEC) identified during the desktop assessment, was identified as likely to occur within this association during the field survey: **Mallee Bird Community of the Murray Darling Depression Bioregion**. This fauna community is listed as Endangered under the *EPBC Act.* This community is present throughout VA1.1 as the vegetation and bird species assemblage meet the key diagnostic criteria and is assessed to be of good quality. As such, any impacts to the mallee areas and the bird species that rely on this community will be subject to assessment under the *EPBC Act.* **Threatened Fauna** The desktop assessment identified six threatened fauna species, three of which are listed as threatened under the *EPBC Act.* These are the Southern Whiteface (*Aphelocephala leucopsis*), which is listed as 'Vulnerable', the South-eastern Hooded Robin (*Melanodryas cucullata cucullata*) which is listed as 'Endangered' and the Black-eared Miner (*Manorina melanotis),* which is listed as

Vegetation Association	**VA1.2: Degraded open mallee woodland with chenopod understorey**				
	Endangered. The search also found three species listed as threatened under the *NPW Act*. These include Little Eagle (*Hieraaetus morphnoides*), Jacky Winter (*Microeca fascinans fascinans*), and White-winged Chough (*Corcorax melanorhamphos*). Little Eagle is listed as 'Vulnerable', while the other species are listed as 'Rare'. The South-eastern Hooded Robin and Black-eared Miner are also listed as 'Rare' and 'Endangered' under the *NPW Act*. White-winged Chough, Southern Whiteface, South-eastern Hooded Robin and Jacky Winter were recorded in this VA during the October 2024 targeted bird survey. No other threatened species were observed, however Little Eagle is also considered possible to occur. **Threatened Flora** The desktop assessment identified a total of two threatened flora species within the search area; *Dodonaea subglandulifera,* which is listed as Endangered under the *EPBC Act* as known, or has habitat known to occur and *Myoporum parvifolium* which is listed as Rare under the *NPW Act*. No threatened flora species were identified within this VA.				
Landscape context score	1.17	**Vegetation Condition Score**	47.28	**Conservation significance score**	1.50
Unit biodiversity Score	82.98	**Area (ha)**	1.687	**Total biodiversity Score**	139.99
NPW Act; E= Endangered, V = Vulnerable, R= Rare EPBC Act; Ex = Extinct, CR = Critically endangered, EN = Endangered; VU = Vulnerable					

Vegetation Association	VA1.3: Regenerating chenopod understorey with emergent scattered overstorey

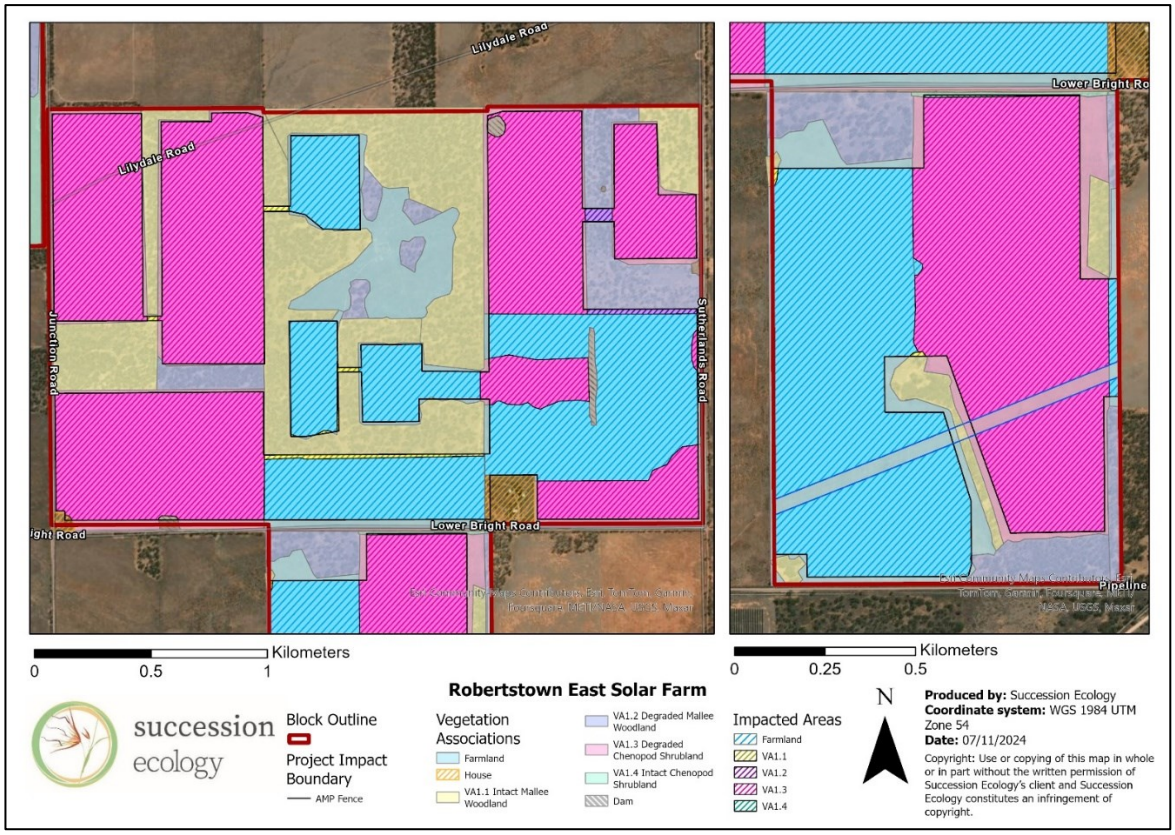


Figure 7: Impacted Bushland Assessment areas for VA1.3 displayed in pink. The regenerating chenopod patches are shown as transparent with the proposed impacted areas in hatched overlay.

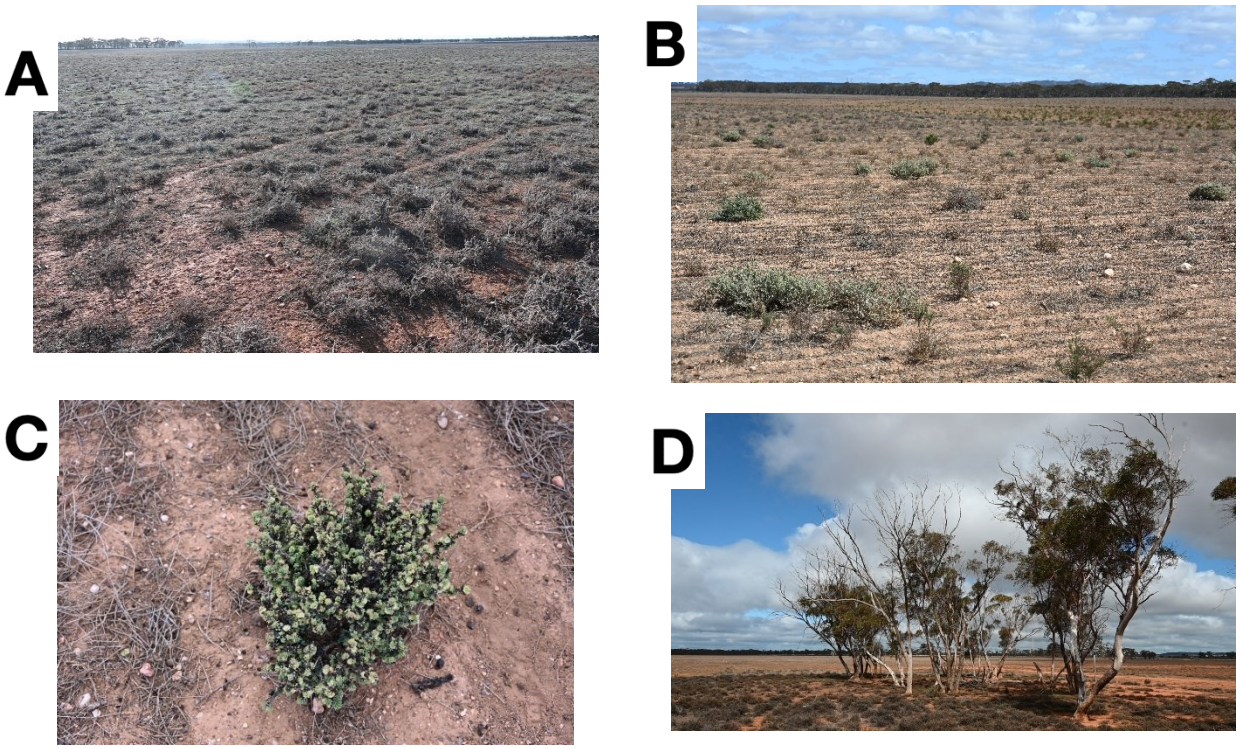


Figure 8: Though being heavily grazed the regenerating paddocks were dominated by chenopod species (A), some of VA 1.3 had historical ploughing, the regenerating chenopod diversity was high (B), some of the regenerating Maireana species had matured to produce a high density of seed (C) scattered sparsely across VA 1.3 was remnant stands of mallee Eucalypt (D).

Vegetation Association	**VA1.3: Regenerating chenopod understorey with emergent scattered overstorey**				
General description	This VA has been scored against the BCM community MDBSA 2.2: Chenopod Open Shrublands (Figure 7). This VA is in a degraded condition with heavy grazing impacts and a history of regular cropping cycles in the past 10 years. Despite the site history, a regenerating understorey of mostly chenopod species is present from the genera *Maireana, Rhagodia, Atriplex* and *Chenopodium*. Very few larger shrubs or trees are present. Native flora diversity is very high with 30 species observed across the Project site. No emergent trees within this site were observed regenerating at the time of field surveys. As this site is consistent with chenopod open shrublands no regenerating understory shrub species were recorded. There is also a high percentage cover and volume of the introduced weeds *Carrichtera annua* and *Mesembryanthemum nodiflorum*. While this VA currently features degraded but regenerating native vegetation, the land use and cropping history as described in section 2.3.2 suggests that before the clearance of this vegetation takes place it could change again (Figure 8). The quality of vegetation as seen during the site survey may be dependent on climatic conditions in the coming years and whether the landowner decides it is suitable to crop this land again. This VA is also subject to grazing pressure from sheep which is likely to restrict improvements in the vegetation condition.				
Threatened species or community	**Threatened Ecological Communities** One threatened ecological community (TEC) identified during the desktop assessment, was identified as likely to occur within the project area: **Mallee Bird Community of the Murray Darling Depression Bioregion**. This fauna community is listed as Endangered under the *EPBC Act*, however VA1.3 does not meet the key diagnostic criteria for the TEC due to the lack of overstorey, degraded understorey and potential for clearance due to current land use and cropping history. **Threatened Fauna** The desktop assessment identified six threatened fauna species, three of which are listed as threatened under the *EPBC Act*. These are the Southern Whiteface (*Aphelocephala leucopsis*), which is listed as 'Vulnerable', the South-eastern Hooded Robin (*Melanodryas cucullata cucullata*) which is listed as 'Endangered' and the Black-eared Miner (*Manorina melanotis),* which is listed as Endangered. The search also found three species listed as threatened under the *NPW Act*. These include Little Eagle (*Hieraaetus morphnoides*), Jacky Winter (*Microeca fascinans fascinans*), and White-winged Chough (*Corcorax melanorhamphos*). Little Eagle is listed as 'Vulnerable', while the other species are listed as 'Rare'. South-eastern Hooded Robin and Black-eared Miner are also listed as 'Rare' and 'Endangered' under the *NPW Act*. No other threatened species were observed in this VA; however Little Eagle is also considered Possible to occur. **Threatened Flora** The desktop assessment identified a total of two threatened flora species within the search area; *Dodonaea subglandulifera,* which is listed as Endangered under the *EPBC Act* as known, or has habitat known to occur and *Myoporum parvifolium* which is listed as Rare under the *NPW Act*. An additional species *Maireana rohrlachii* was identified in this VA and is listed as Rare under the *NPW Act.* No other threatened flora species observed.				
Landscape context score	1.17	**Vegetation Condition Score**	41.67	**Conservation significance score**	1.14

Vegetation Association	**VA1.3: Regenerating chenopod understorey with emergent scattered overstorey**				
Unit biodiversity Score	55.58	**Area (ha)**	251.772	**Total biodiversity Score**	13997.93
NPW Act; E= Endangered, V = Vulnerable, R= Rare EPBC Act; Ex = Extinct, CR = Critically endangered, EN = Endangered; VU = Vulnerable					

Vegetation Association	VA 1.4 Relatively intact chenopod shrubland with scattered overstorey

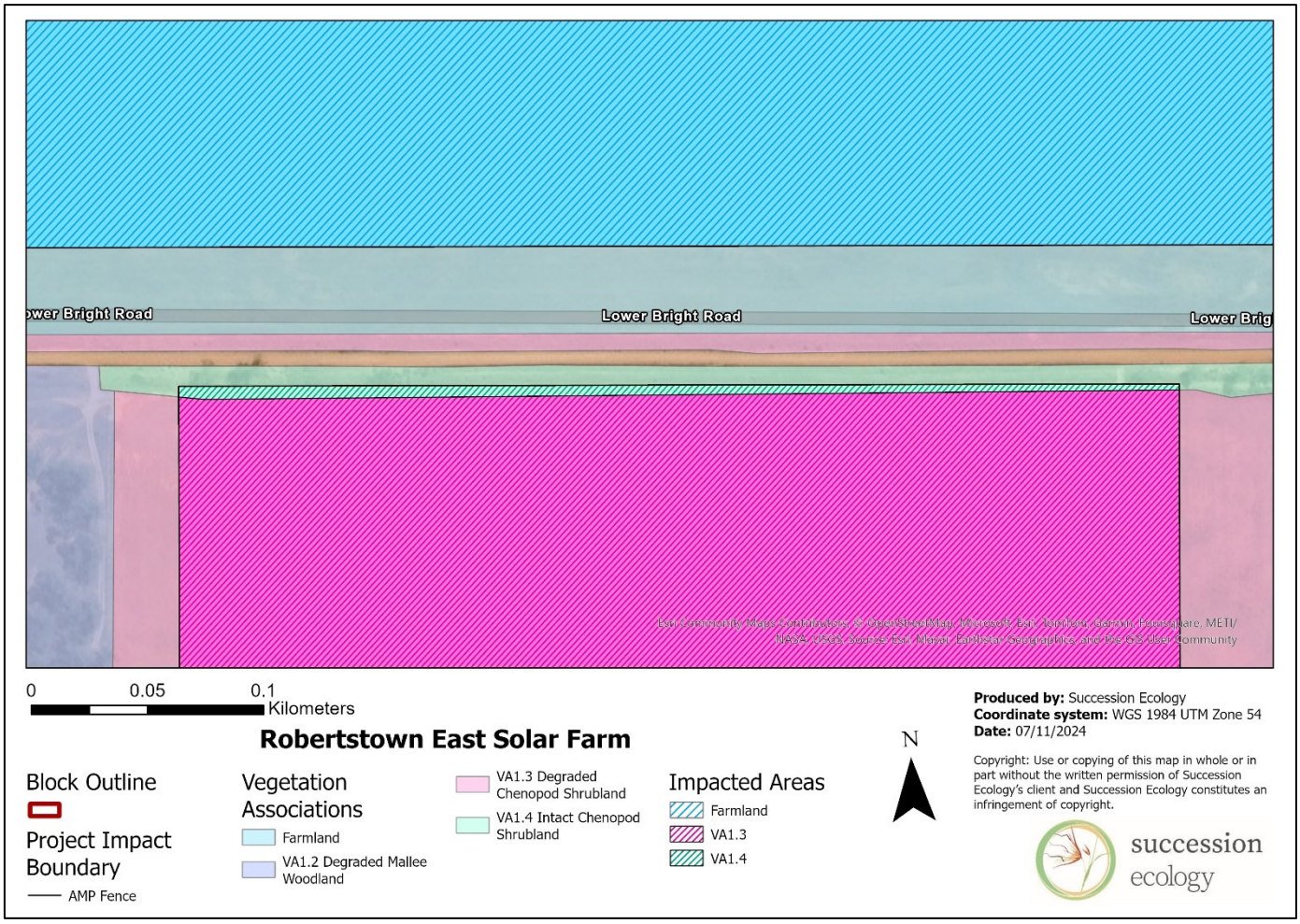


Figure 9: Impacted Bushland Assessment areas for VA1.4 displayed in aqua. The roadside chenopod patches are shown as transparent with the proposed impacted areas in hatched overlay.

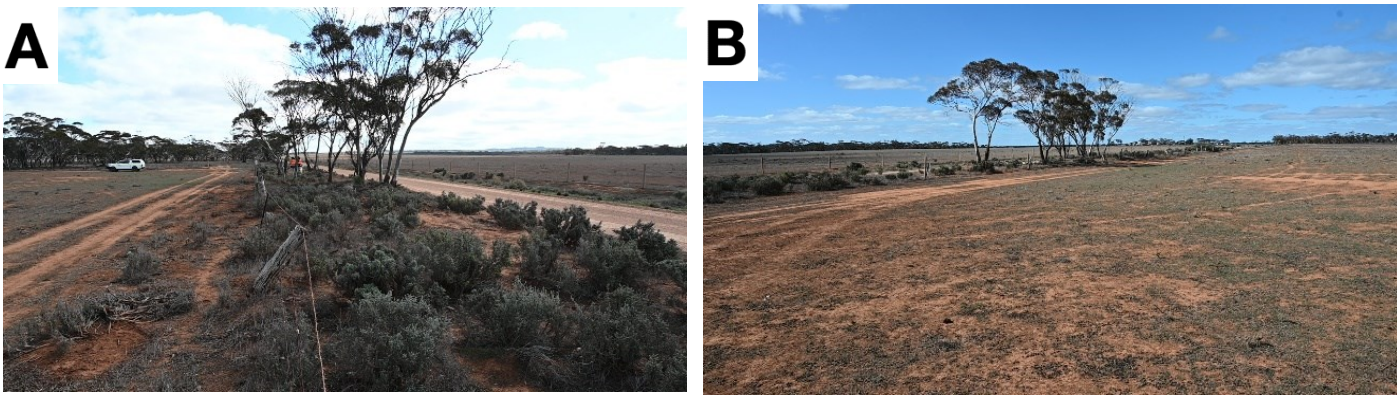


Figure 10: VA1.4 at RTE was restricted to along the roadsides (A), there were remnant mallee Eucalypts within VA1.4.

General description	This VA has been scored against the BCM community MDBSA 2.2: Chenopod Open Shrublands (Figure 9). This VA is in good condition and features an intact midstorey of mostly chenopod species including species from the genera *Maireana, Atriplex, Rhagodia* and *Sclerolaena*. Also present are scattered emergent trees including *Eucalyptus oleosa,* and *Eucalyptus socialis* and larger shrubs including *Alectryon oleifolius, Senna artemisioides* ssp. *zygophylla* (Figure 10). In the understorey

Vegetation Association	VA 1.4 Relatively intact chenopod shrubland with scattered overstorey				
	there is some invasion of introduced species including *Carrichtera annua,* and *Asphodelus fistulosus* (Onion Weed).				
Threatened species or community	**Threatened Ecological Communities** One threatened ecological community (TEC) identified during the desktop assessment, was identified as likely to occur within the project area: **Mallee Bird Community of the Murray Darling Depression Bioregion**. This fauna community is listed as Endangered under the *EPBC Act*, however VA1.4 does not meet the key diagnostic criteria for the TEC due to the sparse overstorey and narrow width of the site. **Threatened Fauna** The desktop assessment identified six threatened fauna species, three of which are listed as threatened under the *EPBC Act.* These are Southern Whiteface (*Aphelocephala leucopsis*), which is listed as 'Vulnerable', South-eastern Hooded Robin (*Melanodryas cucullata cucullata*) which is listed as 'Endangered' and Black-eared Miner (*Manorina melanotis),* which is listed as Endangered. The search also found three species listed as threatened under the *NPW Act*. These include Little Eagle (*Hieraaetus morphnoides*), Jacky Winter (*Microeca fascinans fascinans*), and White-winged Chough (*Corcorax melanorhamphos*). Little Eagle is listed as 'Vulnerable', while the other species are listed as 'Rare'. South-eastern Hooded Robin and Black-eared Miner are also listed as 'Rare' and 'Endangered' under the *NPW Act*. No threatened species were observed in this VA, however all species except Black-eared Miner are considered possible to occur. **Threatened Flora** The desktop search identified a total of two threatened flora species within the search area; *Dodonaea subglandulifera,* which is listed as Endangered under the *EPBC Act* as known, or has habitat known to occur and *Myoporum parvifolium* which is listed as Rare under the *NPW Act*. Neither of the threatened flora species were identified within this VA.				
Landscape context score	1.17	**Vegetation Condition Score**	57.24	**Conservation significance score**	1.10
Unit biodiversity Score	73.67	**Area (ha)**	0.182	**Total biodiversity Score**	13.41
NPW Act; E= Endangered, V = Vulnerable, R= Rare EPBC Act; Ex = Extinct, CR = Critically endangered, EN = Endangered; VU = Vulnerable					

All scattered trees are of the species *Eucalyptus oleosa*, and are situated in the southern block of RTE. They were in moderate to poor condition with significant dieback. The eleven *E. oleosa* considered in this assessment form small group isolated from patches of mallee by farmland (west) and regenerating chenopod shrubland (east), (Figure 11). The understory of this patch is dominated by Wards weed (*Carrichtera annua*) and Slender Ice Plant (*Mesembryanthemum nodiflorum*). Native vegetation in this patch is sparse (less than 5 % cover) and in poor condition.

As a group the remaining canopy and hollows may provide habitat for small birds, small reptiles, bats and invertebrates, in the form of shelter, perching/roosting, feeding, and nesting. All trees within this patch are to be cleared for the instalment of PV modules and associated works. Refer to Table 3 for individual tree condition scores.

Table 3: Robertstown Solar Farm East scattered tree attributes table

Tree ID	Species name	Number of trees in a clump	Height (m)	Diameter (cm)	Dieback (%)	Number of Hollows			Biodiversity Score
						Small	Medium	Large	
T03	*Eucalyptus oleosa*	1	2.0	10.9	90	1			0.07
T04	*Eucalyptus oleosa*	1	4.0	15.3	90				0.09
T05	*Eucalyptus oleosa*	1	5.4	18.5	10				0.44
T06	*Eucalyptus oleosa*	1	6.0	11.6	80				0.18
T07	*Eucalyptus oleosa*	1	2.0	13.1	70				0.09
T08	*Eucalyptus oleosa*	1	7.6	25.8	20				0.50
T09	*Eucalyptus oleosa*	1	6.2	31	10	2		1	1.37
T10	*Eucalyptus oleosa*	1	7.8	41.2	10	2			2.21
T11	*Eucalyptus oleosa*	1	2.4	18.4	80	1	1		0.22
T12	*Eucalyptus oleosa*	1	7.2	15.9	25				0.37
T13	*Eucalyptus oleosa*	1	6.2	20	30		1		0.44

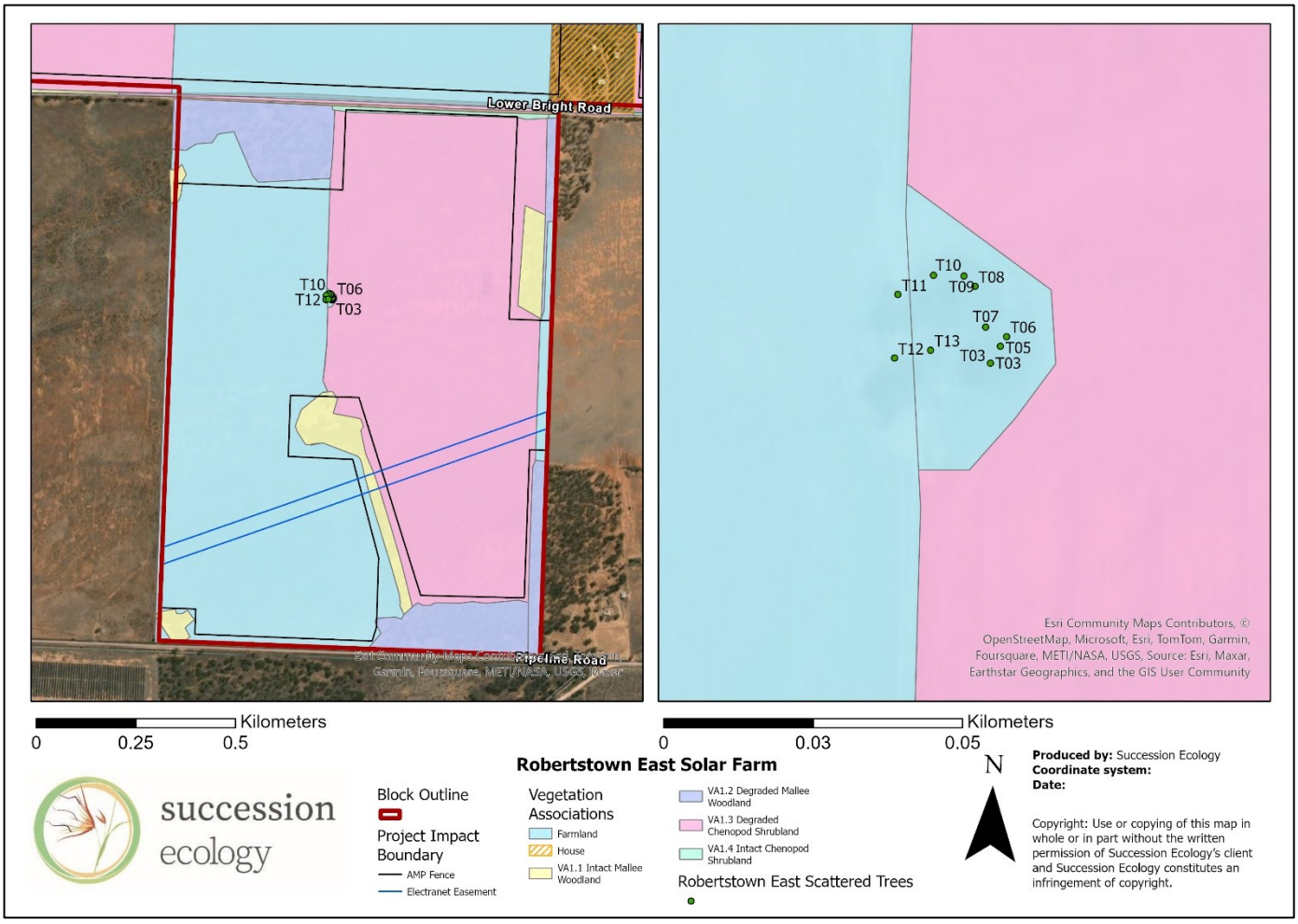


Figure 11: Location of scattered trees within Robertstown East Solar Farm.

Photo log

Photos of the vegetation communities and scattered trees are provided in the descriptions above with additional photos provided within Appendix B.

4.2 Threatened species assessment

4.2.1 Threatened ecological communities.

A Protected Matters Search identified five Threatened Ecological Communities (TEC), Iron-grass Natural Temperate Grassland of South Australia, Mallee Bird Community of the Murray Darling Depression (MDD) Bioregion, Peppermint Box (Eucalyptus odorata) Grassy Woodland of South Australia, Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions, and Plains mallee box woodlands of the Murray-Darling Depression, Riverina and Naracoorte Coastal Plain Bioregions (Table 4). Of these, the Mallee Bird Community of the Murray Darling Depression (MDD) Bioregion was identified within the Project Area during the field surveys conducted by Succession Ecology. No other threatened ecological communities were identified at this site.

Table 4: A summary of the threatened ecological communities recorded within 5km of the application area since 1995. Source: 1 - BDBSA, 2 - ALA, 3 - NatureMaps, 5 - Protected Matters search tool, 6 - others; NPW Act; E = Endangered, V = Vulnerable, R = Rare; EPBC Act; Ex = Extinct, CR = Critically endangered, EN = Endangered, VU = Vulnerable.

Threatened Ecological Community (TEC)	***EPBC Act***	**Likelihood of use for habitat**
Iron-grass Natural Temperate Grassland of South Australia	CR	Possible. This TEC occurs in the 5 km buffer area of the Project area only. Iron-grass grassland TEC generally occurs on low hills above 380 m above sea level, mainly on gentle hill slopes, but also on surrounding plains, hill crests, ridges gullies, and inter-dune corridors. This TEC was known to occur near the Robertstown Solar site to the west but was not observed at Robertstown East.
Mallee Bird Community of the Murray Darling Depression (MDD) Bioregion	E	**Likely –** Patches of vegetation within two of the vegetation associations within the site (VA 1.1 and VA 1.2) presented key diagnostic features associated with this TEC (DCCEEW 2023) including: • Location within the MDD bioregion • The size of the native vegetation patch • Presence of particular mallee communities • Suitable bird assemblage There will be minor direct impacts to small areas of these vegetation associations overlapping the proposed development footprint. A detailed summary of the assessment process to determine the presence of this TEC is provided in Table 5.
Peppermint Box (*Eucalyptus odorata*) Grassy Woodland of South Australia	CR	Unlikely. This community exists in the region but was not observed during any of the field assessments. Therefore, it is not expected to be impacted by the proposed development.
Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions	E	Unlikely. The Buloke Woodlands TEC encompasses a number of closely related woodland communities in which Buloke (*Allocasuarina luehmannii*) is usually the dominant or co-dominant tree. This community in the Riverina and Murray-Darling Depression Bioregions occurs from south-eastern South Australia through north-western and northern central Victoria into south central New South Wales. This community exists in the region but was not observed during any of the field assessments. Therefore, it is not expected to be impacted by the proposed development.

Plains mallee box woodlands of the Murray-Darling Depression, Riverina and Naracoorte Coastal Plain Bioregions	CR	Unlikely. This TEC is a medium to tall open mallee eucalypt woodland with a canopy typically dominated by 'mallee box' *Eucalyptus* species and an understorey in which tussock grasses may be prominent in relatively wet years, low chenopod shrubs occur in variable densities, and taller shrubs are typically sparse. The TEC is associated with relatively medium-heavy textured soils on near-level to gently sloping plains. This TEC is deemed unlikely to be present because the vegetation does not contain *Eucalyptus porosa* or *Eucalyptus behriana* as the dominant canopy species.

Mallee Bird Community of the Murray Darling Depression (MDD) Bioregion

The Mallee Bird Community TEC is considered to be present within VA 1.1 and VA 1.2 (Mallee woodland with intact or degraded understorey) based on criteria provided for determining the presence of the TEC (**Error! Reference source not found.**). The overlap between the location of RSF and RTE and estimates of the local extent of the Mallee Bird Community TEC is shown in Figure 12.

Table 5: Key diagnostic criteria used to determination of the presence of the Mallee Bird Community TEC within the project area at Robertstown Solar Farm.

Criteria	Description	Site
Location	*Is the area of proposed development within the Murray Darling Depression IBRA region?*	Yes
Connecting patch size	*Is a patch of native vegetation of at least 10 hectares present?*	Yes
Suitable mallee habitat	*Does the patch of native vegetation contain an area or areas of at least 5 hectares dominated by mallee?*	Yes
Bird Assemblage	*How many species of the Mallee Bird Community have been recorded from current bird surveys and/or from existing bird observation records within 20 km of the site and within the last 10 years?*	Records for six species of mallee dependent or mallee specialist birds within 20 km in the last 10 years
TEC present		**Yes**
Category		**A**

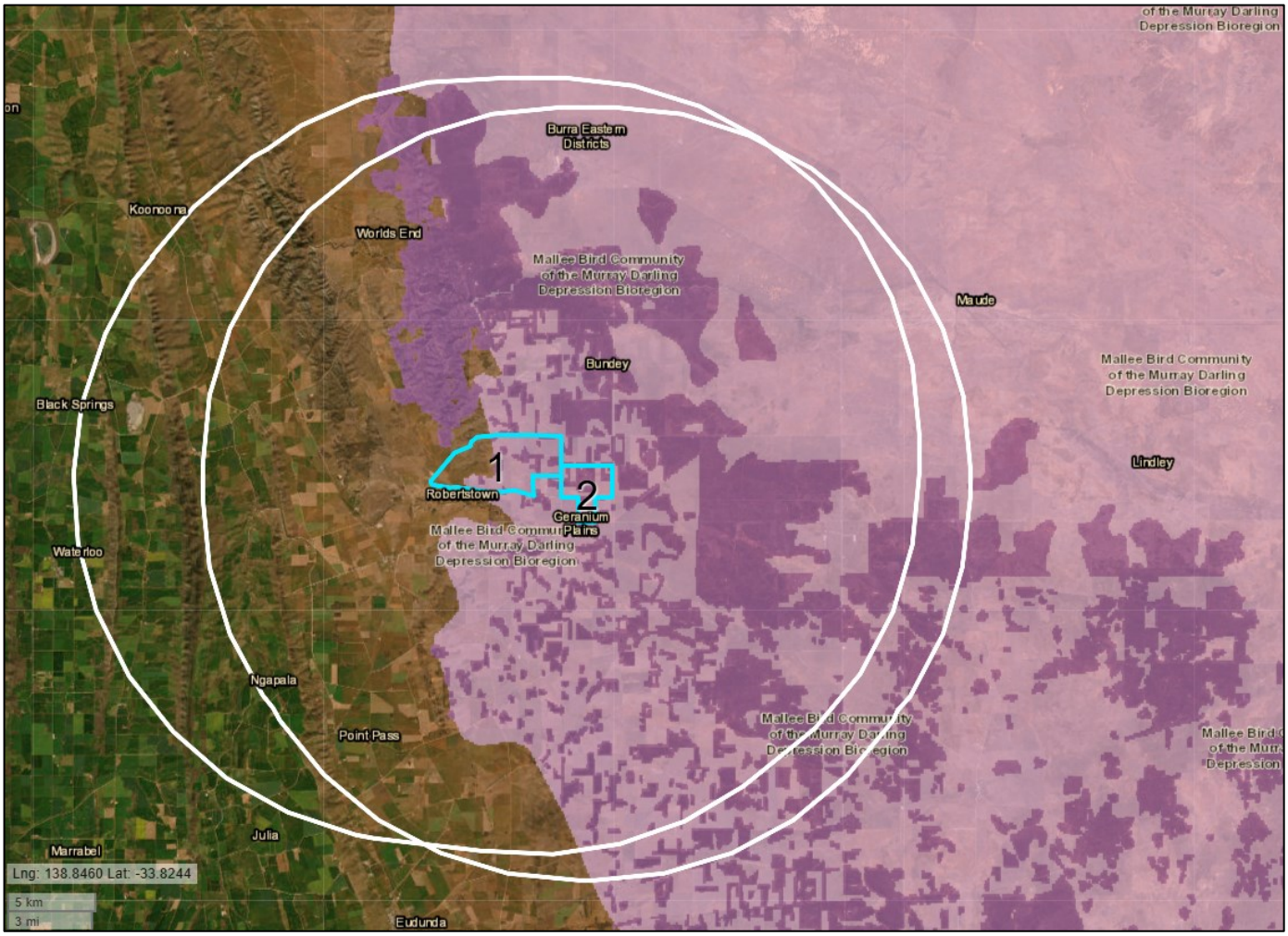


Figure 12: Overlap between estimates of the Mallee Bird Community Murray Darling Depression bioregion TEC for RSF (1) and RTE (2). 20 km radii around each site are represented by white circles. Map sourced from PMST (accessed 31/10/2024).

The Mallee Bird Community of the Murray Darling Depression Bioregion is a faunal community found in the Murray Darling Depression bioregion. It is an assemblage of bird species that are dependent on the mallee vegetation that characterises this bioregion.

Mallee Ecosystems

Mallee ecosystems occur in the drier parts of Australia, and within South Australia they are located south of the arid zone but north of the temperate zone. These ecosystems face severe summer water deficits, nutritional poverty, and fire regimes that govern their responses and traits. Within south-eastern Australia, mallee is generally associated with unconsolidated aeolian sands in low rainfall zones, typically within the 200-350 mm annual rainfall range.

The Mallee Bird Community

The Mallee Bird Community is an assemblage of 20 bird species that rely on mallee habitats for their continued persistence within the MDD bioregion. The assemblage represents 11 families, the most common being honeyeaters and wrens. Thirteen species are individually listed as threatened by at least one jurisdiction, and six are listed as nationally threatened. The species are divided into *Mallee specialists* – those found almost exclusively in mallee habitats especially within the MDD bioregion; and *Mallee dependents* – those species that are dependent on mallee where it is present but have a wider range extending into non-mallee woodland and shrubland habitats that intergrade with mallee vegetation. Key traits of the Mallee Bird Assemblage are as follows:

- The assemblage has a high proportion of small birds, with sixteen species weighing under 60 g, eleven of which are very small, weighing under 30 g. Only two species are large, reaching over 100 g: Regent Parrot and Malleefowl.

- Most species nest in a supported location i.e. where the base rests on standing vegetation, while only a few are ground nesters. The two parrot species are hollow-nesters.
- Most species prefer feeding on invertebrates, however the six honeyeater species favour nectar and pollen in addition to invertebrate prey. Eleven species also include seeds and/or fruit in their diets, and the two parrot species feed only on seeds, fruit or foliage and do not include invertebrates in their diet.
- Most species in the assemblage have a maximum lifespan of ten years or less and reach reproductive age within their first one to two years.

Threats to this community include altered fire regimes, fragmentation (mostly because of past clearing), some ongoing clearing of habitat for agricultural practices, climate change, pest animals, grazing and weed invasion.

Based on the diagnostic criteria in the conservation advice for this TEC, this area of mallee is categorised as "Category A: High number of MBC species". This is due to the presence of six species from the assemblage recorded within 20 km of the proposed action area from the past 10 years (Table 6).

Table 6: Details of species in the Mallee Bird Community assemblage and their presence near the proposed action area. Records sourced from Atlas of Living Australia as well as observations by Succession Ecology (Jacky Winter).

Common Name	**Species Name**	**EPBC status**	**Record within 20 km of the proposed action area from the past 10 years**
Mallee specialists			
Black-eared Miner	*Manorina melanotis*	Endangered	No
Chestnut Quail-thrush	*Cinclosoma castanotum*	-	No
Mallee Emu-wren	*Stipiturus mallee*	Endangered	No
Malleefowl	*Leipoa ocellata*	Vulnerable	No
Red-lored Whistler	*Pachycephala rufogularis*	Vulnerable	No
Scarlet-chested Parrot	*Neophema splendida*	-	No
Striated Grasswren	*Amytornis striatus*	-	No
Mallee Western Whipbird	*Psophodes nigrogularis*	Vulnerable	No
Mallee dependents			
Crested Bellbird	*Oreoica gutturalis*	-	No
Grey-fronted Honeyeater	*Ptilotula plumula*	-	No
Jacky Winter	*Microeca fascinans*	-	Yes
Purple-gaped Honeyeater	*Lichenostomus cratitius*	-	No
Regent Parrot	*Polytelis anthopeplus*	Vulnerable	No
Shy Heathwren	*Hylacola cauta*	-	No
Southern Scrub-robin	*Drymodes brunneopygia*	-	No
Splendid Fairywren	*Malurus splendens*	-	Yes
Spotted Pardalote	*Pardalotus punctatus*	-	Yes
White-eared Honeyeater	*Nesoptilotis leucotis*	-	Yes
White-fronted Honeyeater	*Purnella albifrons*	-	Yes
Yellow-plumed Honeyeater	*Ptilotula ornata*	-	Yes

4.2.2 Threatened fauna

The desktop search identified a total of six threatened fauna species within the search area, three listed under the *EPBC Act 1999* and three further fauna listed as threatened under the *NPW Act 1972*. Of these, all species have been included in the likelihood of use assessment (Table 7), using the site following the metric described in Table 1. All other species identified, but not considered relevant to this assessment, are presented in Appendix C. Four of the threatened fauna species identified within the desktop search were identified within the Project area.

Table 7: A summary of the fauna species recorded within 5 km of the application area since 1995, or those listed as known to occur in the PMST.

Species (common name)	NPW Act	EPBC Act	Data source	Date of last record	Species known habitat preferences	Likelihood of use for habitat – Comments
AVES						
Aphelocephala leucopsis (Southern Whiteface)		VU	5, 2	2010	Dry open forests and woodland and inland scrubs of mallee, mulga and saltbush are the preferred habitat of Southern White face, especially areas with fallen timber or dead trees and stumps (Birdlife Australia 2023).	**Known -** This species has a wide habitat preference, including many shrublands and woodlands. This species was observed during field surveys. The nearest on ALA is 1 km south of the Project boundary and an observation 6 km away to the Northeast.
Corcorax melanorhamphos (White-winged Chough)	R		3, 2	2024	Woodland and tall mallee, with a preference for wetter areas with leaf-litter for feeding and mud for building nests (DEH, 2014).	**Known** – Surveys at the site identified multiple groups of White-winged Choughs and nests in the mallee Woodlands.
Hieraaetus morphnoides (Little Eagle)	V		3	2010	Seen over woodland, forested land and open country. Avoids heavy forest (Birdlife Australia, 2021).	Possible – Potential to use habitat on site due to its broad habitat requirements, large home ranges and nomadic nature.
Manorina (Myzantha) melanotis (Black-eared Miner)	EN	EN	3	N.D.	Restricted to old growth mallee eucalypt woodland (DEH 2021).	Unlikely – Last known record in the area has no date. The closest observation within 20 years is 60 km east, with majority of its population being located further east near the Danggali Conservation Park. Given the species habitat preference for old growth woodland with a lack of disturbance, this species is unlikely to be present in the project area.

Species (common name)	NPW Act	EPBC Act	Data source	Date of last record	Species known habitat preferences	Likelihood of use for habitat – Comments
Melanodryas cucullata cucullata (South-eastern Hooded Robin)	R	EN	5	2024	*Eucalyptus* woodland and mallee and Acacia shrubland Nomadic, inhabits a wide range of habitats from dry sclerophyll forests, to forested wetlands, grassy woodlands and heathlands (DEH, 2014), (DPIE, 2017).	**Known** – RTE contains the preferred habitat of this species, and previous observations of the species are 7 km south, 9.5 km east and 10 km north of the site. However, this species was observed during the targeted bird survey.
Microeca fascinans fascinans (Jacky Winter, subspecies *fascinans*)	R		3	2017	Prefers open woodland with open shrub layer and bare ground. Seen in farmland (Birdlife Australia 2021).	**Known**. The known habitat preferences (DAWE 2021b) of the species are present. The species was observed during field surveys, although the presence of the rare subspecies was not confirmed.
Source; 1- BDBSA, 2 - AoLA, 3 – NatureMaps, 4 – Observed/recorded in the field, 5 - Protected matters search tool, 6 – others NPW Act; E= Endangered, V = Vulnerable, R= Rare EPBC Act; Ex = Extinct, CR = Critically endangered, EN = Endangered; VU = Vulnerable						

Results from Targeted Reptile Survey

The RTE targeted reptile survey identified no FRWL and PBTL or associated suitable habitat for either species to be present on site. In total, ten reptile species were identified across 97 individual observations. The majority of observations were from VA 1.2 (51), followed by VA 1.1 (25), VA 1.3 (14), and Farmland (7). No reptiles were observed in the roadside chenopod shrubland (VA 1.4). Findings are detailed in Appendix A. For more further information refer to the Robertstown Reptile Survey, November 2022. Succession Ecology report ES0123-01 prepared for AMP Energy.

Results from Targeted Wombat Survey

A small number of active wombat warrens was observed in the targeted wombat survey of the project site. Several apparently active warrens were observed, concentrated in the north-western corner and along the western edges of the site (Figure 13). These edges border off-site areas of relatively intact chenopod shrubland, suggesting that the wombats observed on site are mostly spilling over from neighbouring areas of preferred habitat.

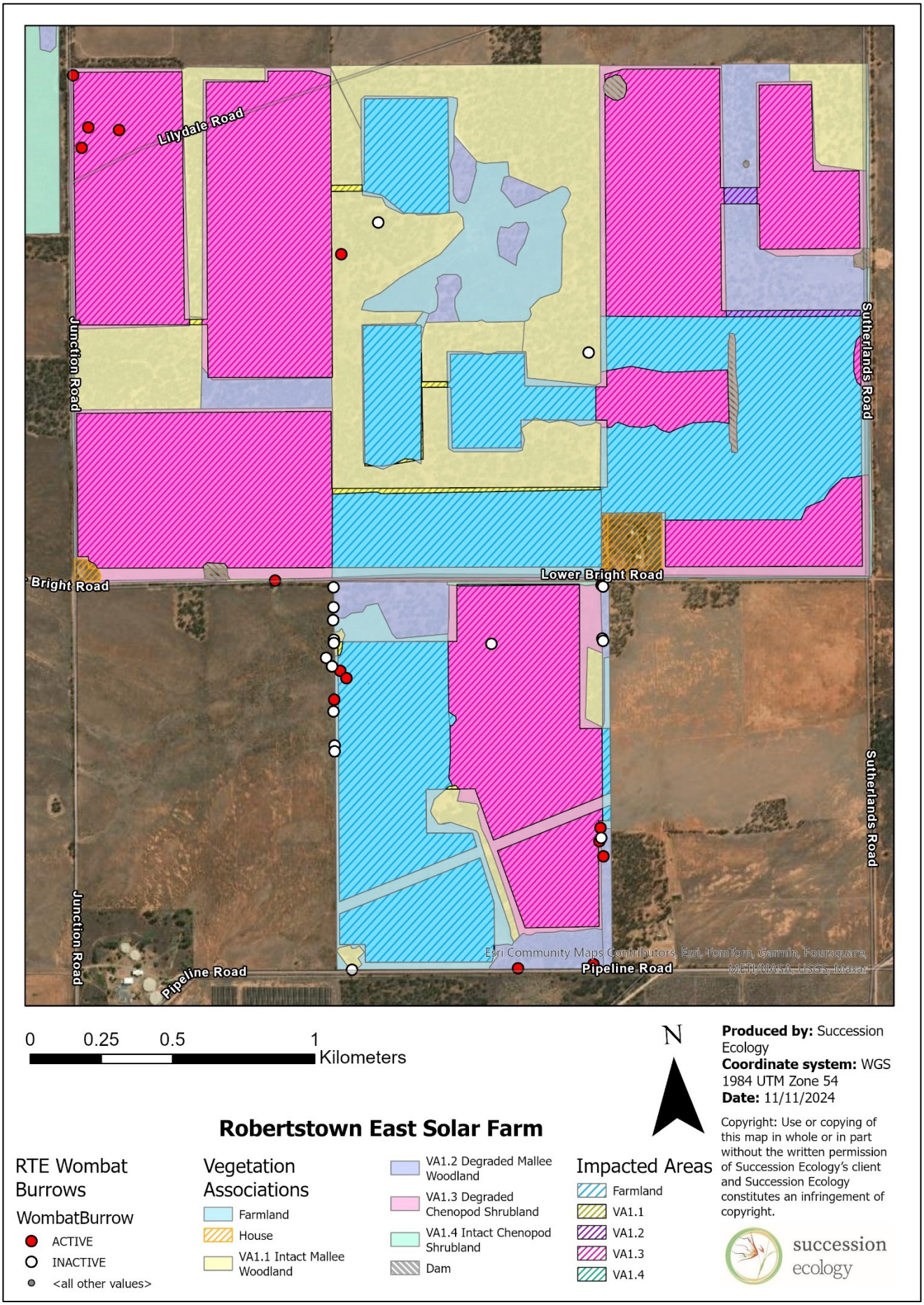


Figure 13: Distribution of active (red) and inactive (white) wombat burrows across Robertstown East Solar Farm.

Results from Targeted Bird Survey

The targeted bird surveys across RTE recorded 23 Southern Whiteface (*Vulnerable: EPBC Act*), eight White-winged Chough (*Rare: NPW Act*), seven Jacky Winter (*Rare: NPW Act*), and five South-eastern Hooded Robin (*Rare: NPW Act, Endangered: EPBC Act;* Figure 14). Of the Jacky Winter observations, only one individual can be confirmed as the non-threatened subspecies *Microeca fascinans assimilis*. To be conservative, the six remaining observations should be treated as the rare subspecies species (*M. f. fascinans)* as both are known to occur in the area and have overlapping distributions.

No Black-eared Miner, or Diamond Firetail were identified on site. The targeted survey identified 34 native bird species at RTE, with 45 species in total observed throughout all field surveys. Refer to Appendix A for the complete species list.

No additional observations of species consistent with the Mallee Bird Community of the Murray Darling Depression Bioregion were recorded at RTE. However, White-plumed Honeyeaters and White-fronted Honeyeaters were recorded within approximately 2 km of the project area, at RSF. Patches of mallee and chenopod vegetation are interconnected throughout the north-west portion of the RSF Project Area and become fragmented and isolated across the south-east. It is likely threatened species observed during the targeted survey may use all vegetation associations within RSF due to the lack of remnant vegetation within the region.

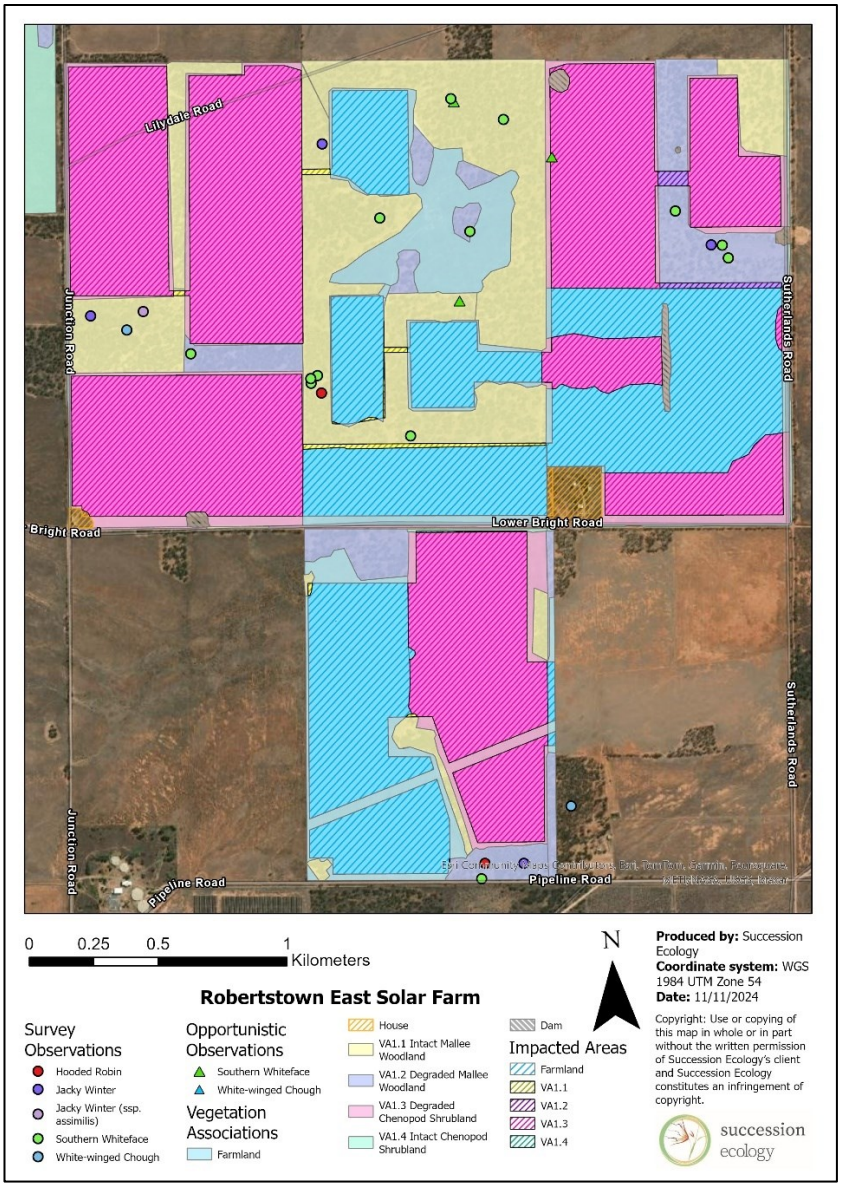


Figure 14: Threatened bird species observations across the Robertstown Solar East Farm Project Area and associated vegetation associations. Impacted vegetation associations are in hatching. Opportunistic observations outside of the targeted surveys are noted with a triangle.

A discussion of threatened species that are Likely, Highly Likely, or Known to occur is presented below, regarding their conservation status and likelihood of impacts from the proposed project.

Corcorax melanorhamphos* (White-winged Chough) *NPW Act (R) – Known

White-Winged Chough (*Corcorax melanorhamphos*) is one of only two members of the Australian mud-nest builders' family, Corcoracidae, and is the only member of the genus *Corcorax*. The White-Winged Chough typically inhabits woodland and tall mallee, with a preference for wetter areas with leaf-litter for feeding and mud for building nests. These birds spend most of their time on the ground and walk and run strongly.

The Project area is likely to provide suitable habitat for this species, and previous surveys in an adjacent property less than 1 km to the direct west of the site revealed a nest on site.

White Winged Choughs are large, black birds with a distinctive curved beak, a red eye and a large white wing patch which is seen when the bird is in flight. The species often occurs in flocks of up to 20 birds, being a strongly social species. Flocks can comprise breeding adults as well as non-breeding helpers, which can be young from previous years broods. The species is widespread within its range across the east and southeast of Australia (Figure 15). They inhabit woodland areas including mallee and prefer areas with leaf litter where they forage for insects, suitable native shrubs with seeds for feeding as well as mud for nest building

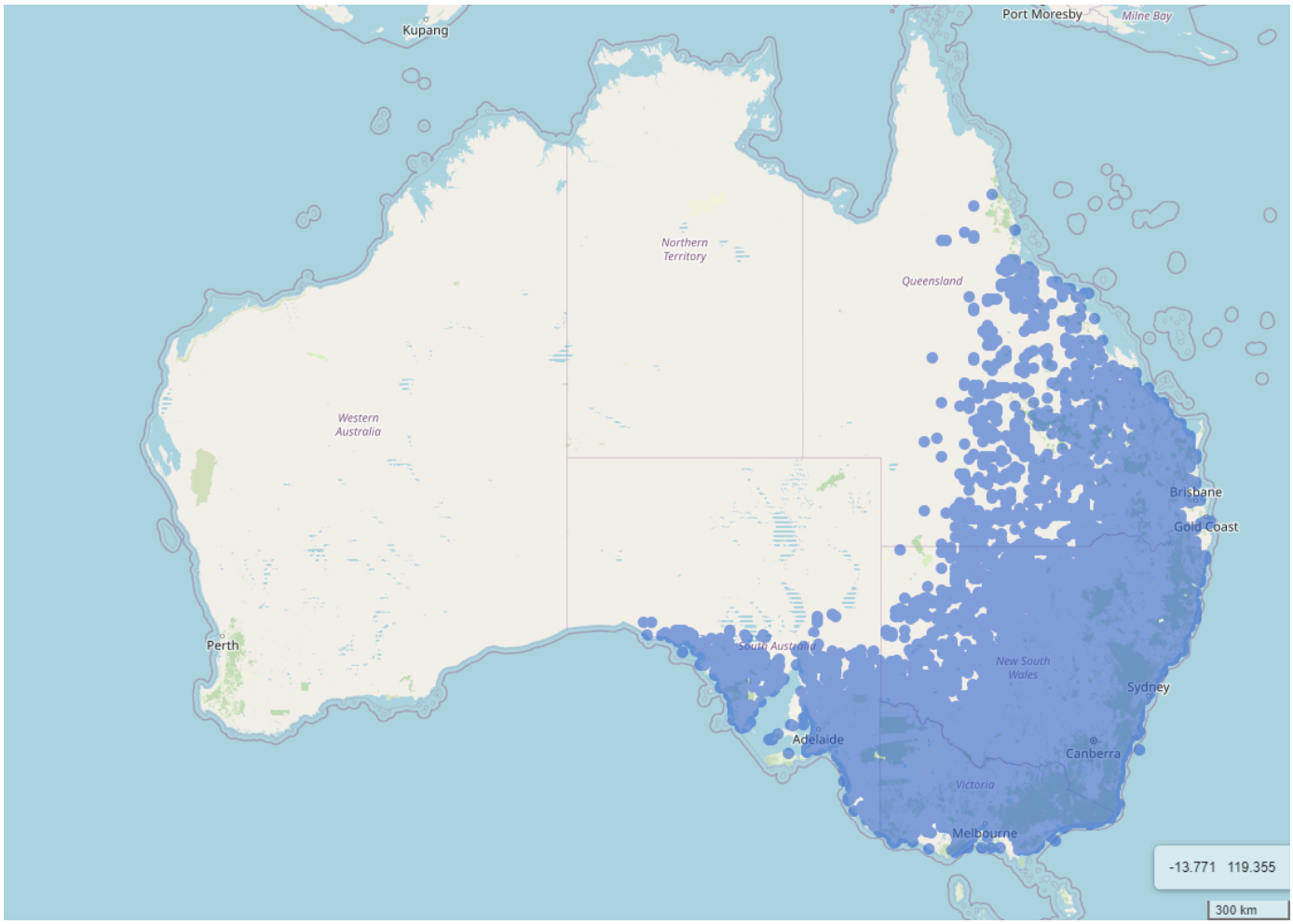


Figure 15: Distribution of White-winged Chough records across Australia. Records obtained from Atlas of Living Australia (accessed 13/09/2024).

Threats

The White-winged Chough is threatened by predation from invasive predators as well as removal of habitat and feeding resources. The species persists in remnant woodland areas within a farmland matrix, indicating that the

species is capable of dispersing across open areas. However, there is little to no research on the interaction between this species and solar farm developments.

Local Populations

This species was observed on site by Succession Ecology. White-winged Chough populations have also been recorded within the RSF site, and in the areas surrounding Robertstown, in the remnant patches of mallee interspersed within cleared farmland patches. Active nests are also dispersed through the mallee areas (Figure 16).

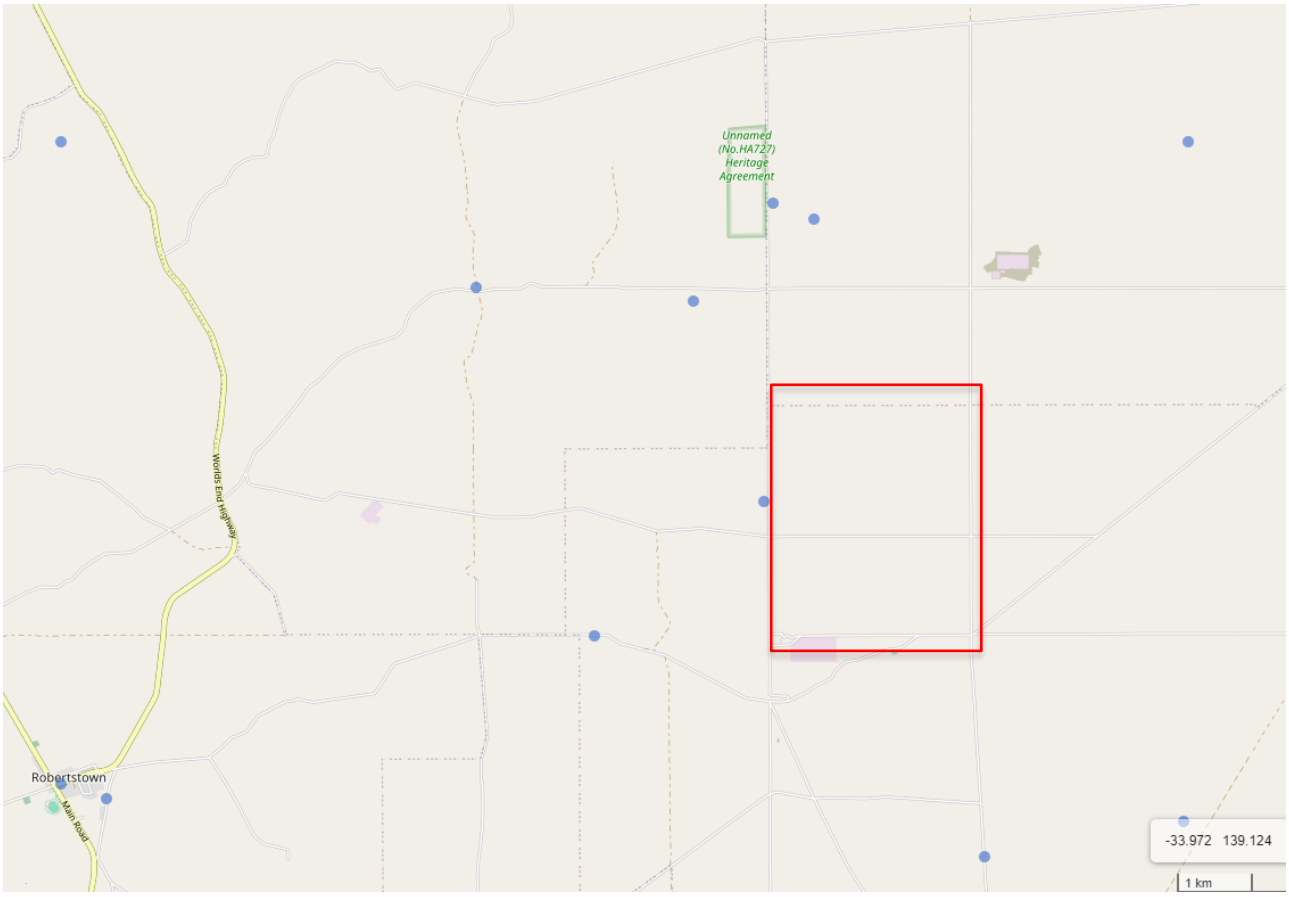


Figure 16: Distribution of White-winged Chough records from near the Robertstown East Solar Farm site. Records obtained from Atlas of Living Australia (accessed 13/09/2024).

***Aphelocephala leucopsis* (Southern Whiteface) *EPBC Act (VU)* – Known**

Southern Whiteface (*Aphelocephala leucopsis leucopsis*) is one of two subspecies of *A. leucopsis*, which occurs throughout south-eastern and central Australia (Figure 17). Since March 2023 it has been listed under the *EPBC Act* as Vulnerable. The species is eligible for listing based on substantial population decline, i.e., 30-50 % every ten years since 1999. The listing was made due to eligibility against the following criteria:

1 A2bc – Population reduction observed, estimated, inferred or suspected in the past where the causes of the reduction may not have ceased OR may not be understood OR may not be reversible, based on an index of abundance appropriate to the taxon, and a decline in the area of occupancy, extent of occurrence and/or quality of habitat.

1 A3c – Population reduction, projected or suspected to be in the future, based on a decline in the area of occupancy, extent of occurrence and/or quality of habitat.

1 A4bc – An observed, estimated, inferred, projected or suspected population reduction where the time period must include both in the past and the future (up to a max. of 100 years in future), and where the causes of reduction may not have ceased OR may not be understood OR may not be reversible, based on an index of abundance appropriate to the taxon, and a decline in the area of occupancy, extent of occurrence and/or quality of habitat.

Southern Whiteface is currently not classed as severely fragmented.

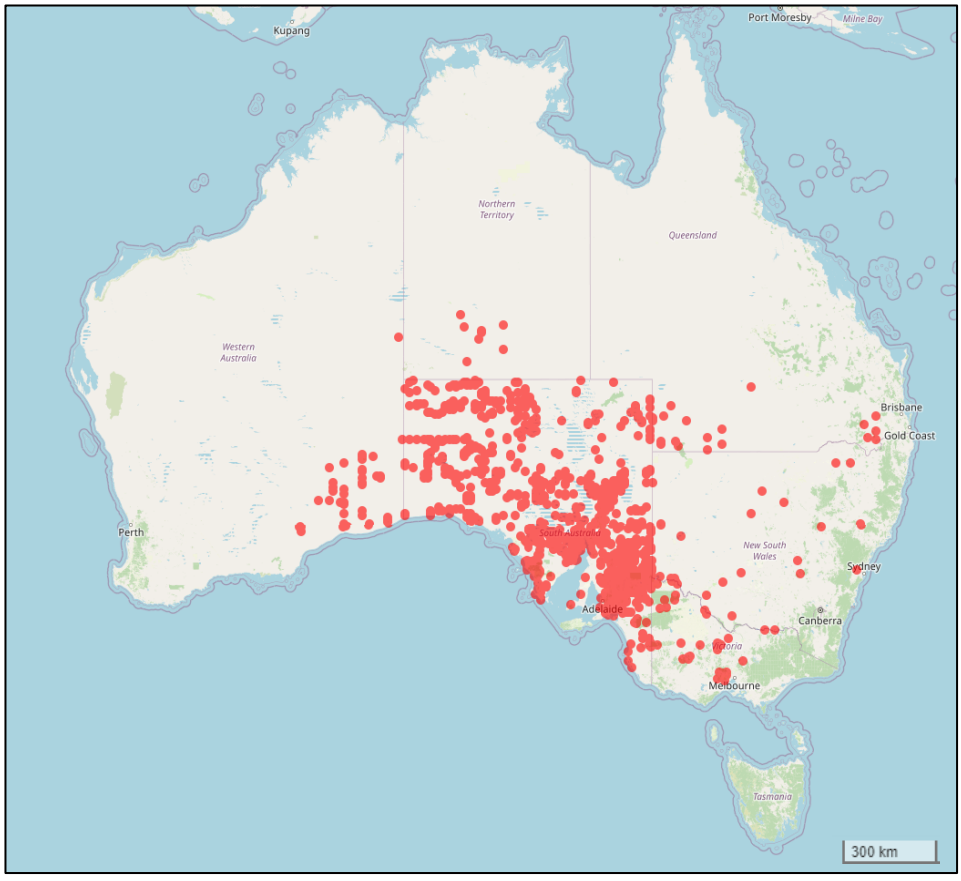


Figure 17: Distribution of Southern Whiteface (subspecies leucopsis*) sightings (red points) across Australia. Records obtained from Atlas of Living Australia (accessed 13/09/2024).*

Southern Whiteface is known to occur in a wide range of open woodlands and shrublands where there is an understorey of grasses or shrubs, or both, normally dominated by acacias or eucalypts (DCCEEW 2023). They occur on ranges, foothills and lowlands and plains. At present the estimated number of Southern Whiteface mature individuals is approximately 477,000, but substantially declining in number, largely attributed to habitat loss and fragmentation for intensive agriculture. Southern Whiteface is considered to be sedentary, although there is some evidence to suggest that they will move into wetter areas, outside of their usual range, in years of drought. They forage almost exclusively on the ground, and favour habitat with low tree densities and a herbaceous understorey and litter cover. They feed on

insects, spiders and seeds, typically in small groups of 2-8. Breeding usually takes place from July to October but can be affected by rainfall. They will build large bulky nest of grass, bark and roots, usually in a hollow or sometimes in low bushes.

Critical habitat for this species includes areas of relatively undisturbed open woodlands and shrublands with an understorey of grasses or shrubs or both, habitat with low tree densities, living and dead trees with hollows and crevices for roosting and nesting. All such habitat should not be cleared, fragmented or degraded and any known or likely habitat should be considered as habitat critical to the survival of the species (Figure 18)

Threats

Threats to populations of Southern Whiteface include habitat loss and fragmentation and habitat degradation due to grazing, drought and the increased likelihood of extreme weather events.

Conservation and recovery advice include:

a) Cease land clearing of critical habitat
b) Secure occupied habitat patches from further degradation in areas where the birds have a patch distribution
c) Undertake revegetation and promote connectivity of woodland remnants
d) Prevent intensive overgrazing
e) Raise awareness and coordinate recovery efforts
f) Monitor long-term trends and status of the species

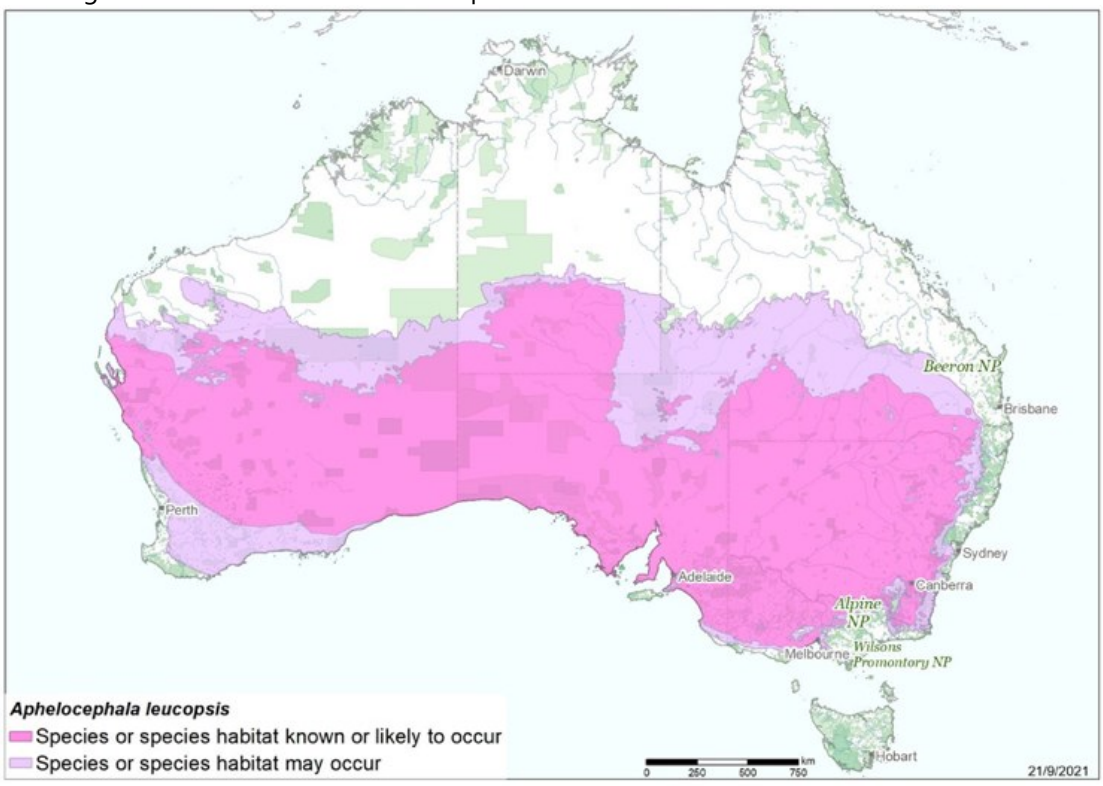


Figure 18: Distribution of critical habitat for the Southern Whiteface, defined as any area of known or likely habitat (map source: DCCEEW 2023a)

Local Populations

This species was observed on site by Succession Ecology. 23 individuals were observed across intact and degraded mallee woodlands during the October 2024 targeted bird surveys. Southern Whiteface populations have been recorded in the areas surrounding Robertstown, including populations within nearby Hopkins Creek and Mimbara Conservation Parks. The species has also been identified nearby on privately owned land, within small patches of mallee woodland near the project area. The Project Area also coincides with known habitat for this species and therefore is considered

critical habitat for the survival of the species (Figure 18). A pair of Southern Whiteface was also recorded 2.2 km to the south-east near the Morgan to Whyalla pipeline.

This species is well represented across the Murray Darling Depression Bioregion, and consequently, the local population is unlikely to be considered as a critical breeding population for maintaining genetic diversity and therefore is not considered to be an important population for the survival of the species.

***Microeca fascinans fascinans* (Jacky Winter, subspecies *fascinans*) *NPW Act (R)* – Known**

Jacky Winter is a small grey robin with a faint pale eye-line and a white underbody. The subspecies from the Adelaide Mount Lofty Ranges region is listed as Rare while the species as a whole (*Microeca fascinans*) is widely distributed and still quite common. There is known to be an overlap between the expected range of the MLR subspecies and the broader species. As the rare subspecies is known to occur in the area, to be conservative any sightings should be treated as being from that subspecies.

Threats

Threats to this species include ongoing clearance of habitat for agriculture and residential purposes. This species becomes scarce in areas populated by humans and does not tolerate high levels of human disturbance.

Local Populations

This species was observed on site by Succession Ecology. A population of Jacky Winter is known to occur within the region, multiple sightings of the species were observed during surveys at the Robertstown East site. However, the targeted subspecies *M. f. fascinans* is unable to be confirmed at the site due to overlapping geographic range with the non-threatened subspecies *M. f. assimilis (*Figure 19*).* Only one observation was able to be identified to the subspecies level. It was verified as subspecies *M. f. assimilis*.

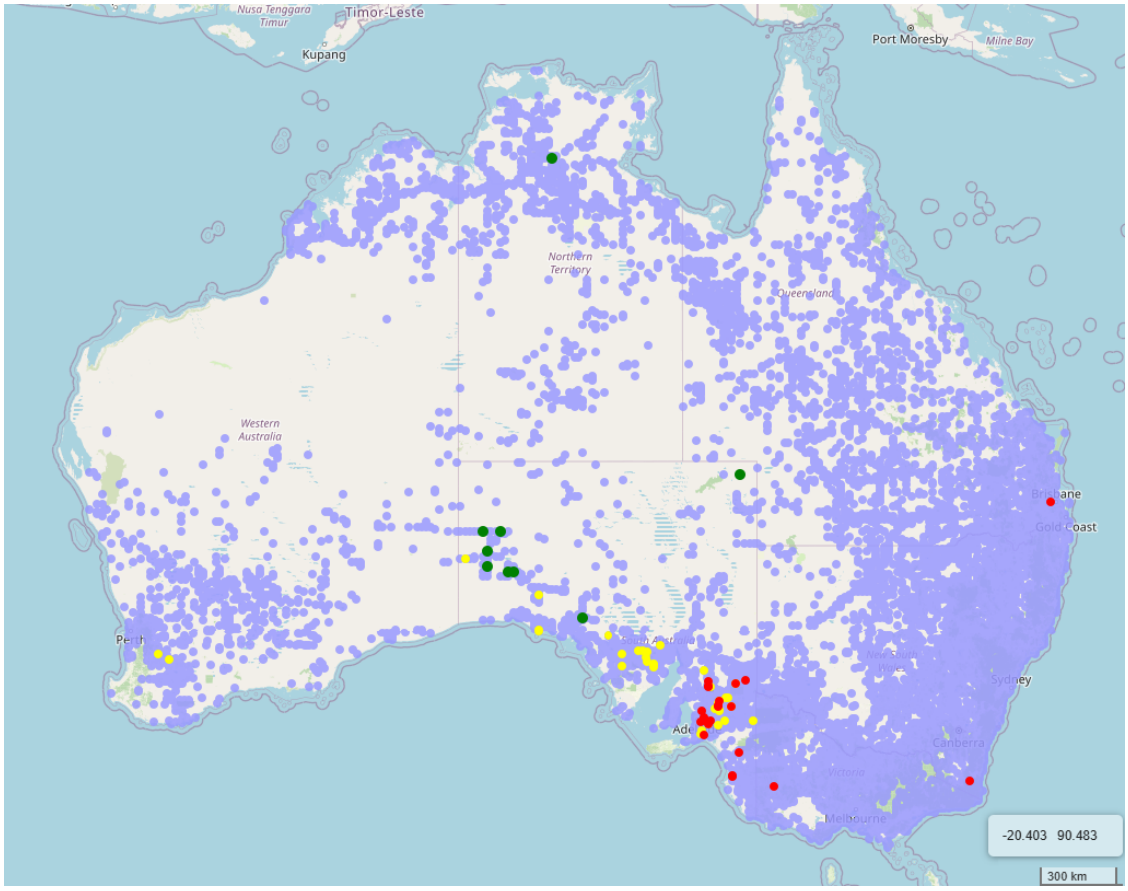


Figure 19: Distribution of Jacky Winter records across Australia. Records obtained from Atlas of Living Australia. Blue indicates Microeca fascinans, red indicates M. f. fascinans, yellow indicates M. f. assimilis, and green indicates *M. f. pallida, (accessed 29/10/2024).*

South-eastern Hooded Robin (Melanodryas cucullata cucullata) *NPW Act (R), EPBC (EN)* - Known

Conservation advice (DCCEEW 2023a)

The South-eastern Hooded Robin is a large Australian robin reaching up to 17 cm in length, with males featuring distinctive black and white markings, the black forming a bold hood extending to a white breast. It forms a subspecies within the broader species South-eastern Hooded Robin (*Melanodryas cucullata*). The subspecies is listed as Endangered under the *EPBC Act* and is eligible for listing under the following criterion.

- Criterion 1 A2bce – Population reduction observed, estimated, inferred or suspected in the past where the causes of the reduction may not have ceased OR may not be understood OR may not be reversible.

South-eastern Hooded Robins occur in south-eastern South Australia, across Victoria and NSW and into parts of southern Queensland (Figure 20). The population is not considered severely fragmented, however fragmented populations do occur in some areas and these are genetically isolated.

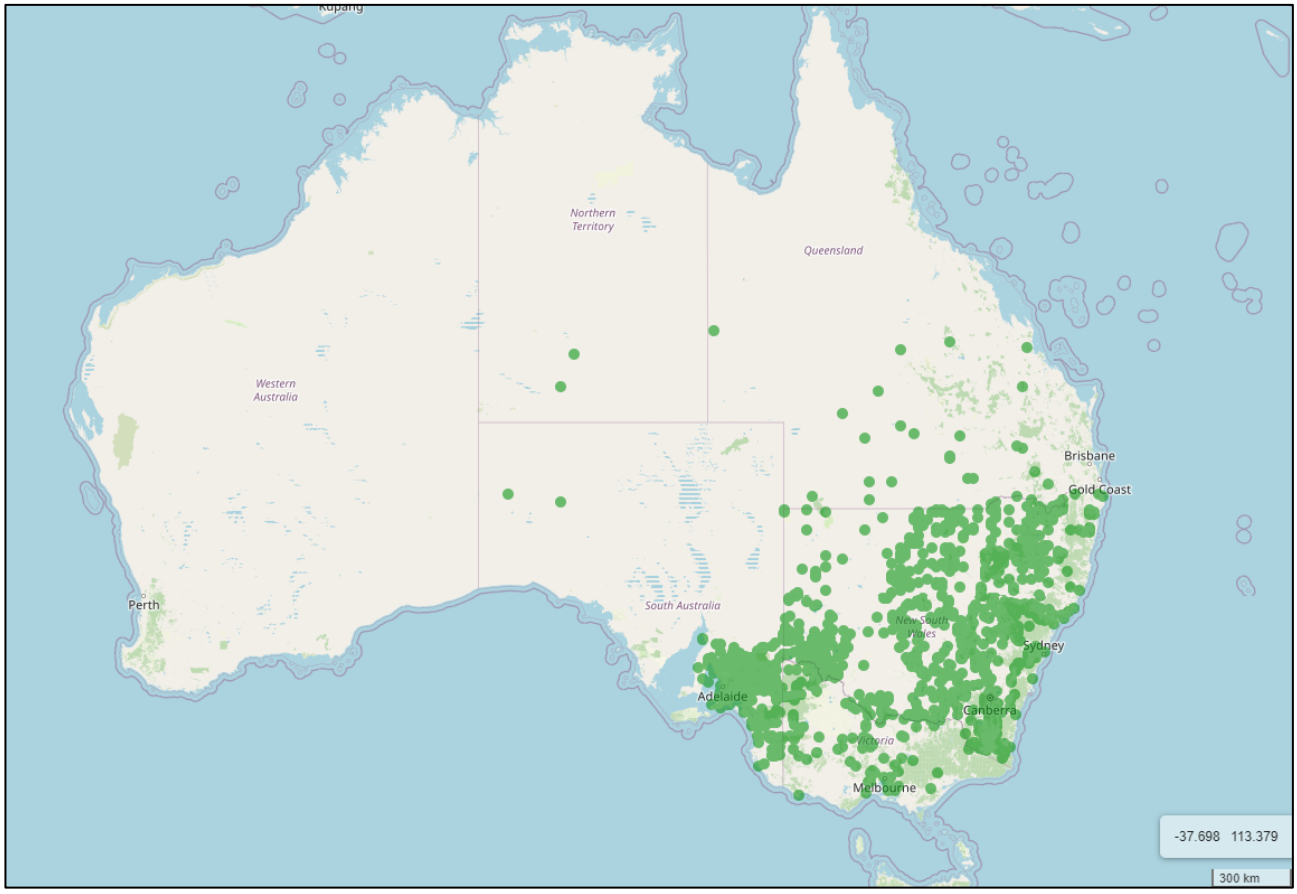


Figure 20: The distribution of South-eastern Hooded Robin sightings across Australia. Records obtained from Atlas of Living Australia (accessed 17/09/2024).

They are a shy and sedentary species, mostly seen in pairs or small groups within dry eucalypt and acacia woodlands and shrublands. They prefer areas with an open understorey, some grassy areas and a complex ground layer. In agricultural landscapes, they prefer patches of native vegetation greater than 10 ha in size with moderately deep to deep soils.

Habitat considered critical to the survival of the South-eastern Hooded Robin include areas of:

- dry eucalypt and acacia woodlands and shrublands remnants with an open understorey, some grassy areas and a complex ground layer, often in or near clearings or open areas;
- structurally diverse habitats featuring mature eucalypts, saplings, some small shrubs and a ground layer of moderately tall native grasses;

- standing dead or live trees and tree stumps are also essential for nesting, roosting and foraging;
- moderately deep to deep soils, rocks and fallen timber which provides essential foraging habitat.

The conservation advice states that habitat critical to the survival should not be cleared, fragmented or degraded and any known or likely habitat should be considered as habitat critical to the survival of the subspecies (Figure 21)(DCCEEW 2023a). Additionally, areas that are not currently occupied by the species due to recent disturbance (e.g. fire, grazing or human activity), but should became suitable again in the future, should also be considered habitat critical to the survival of the species (Figure 21).

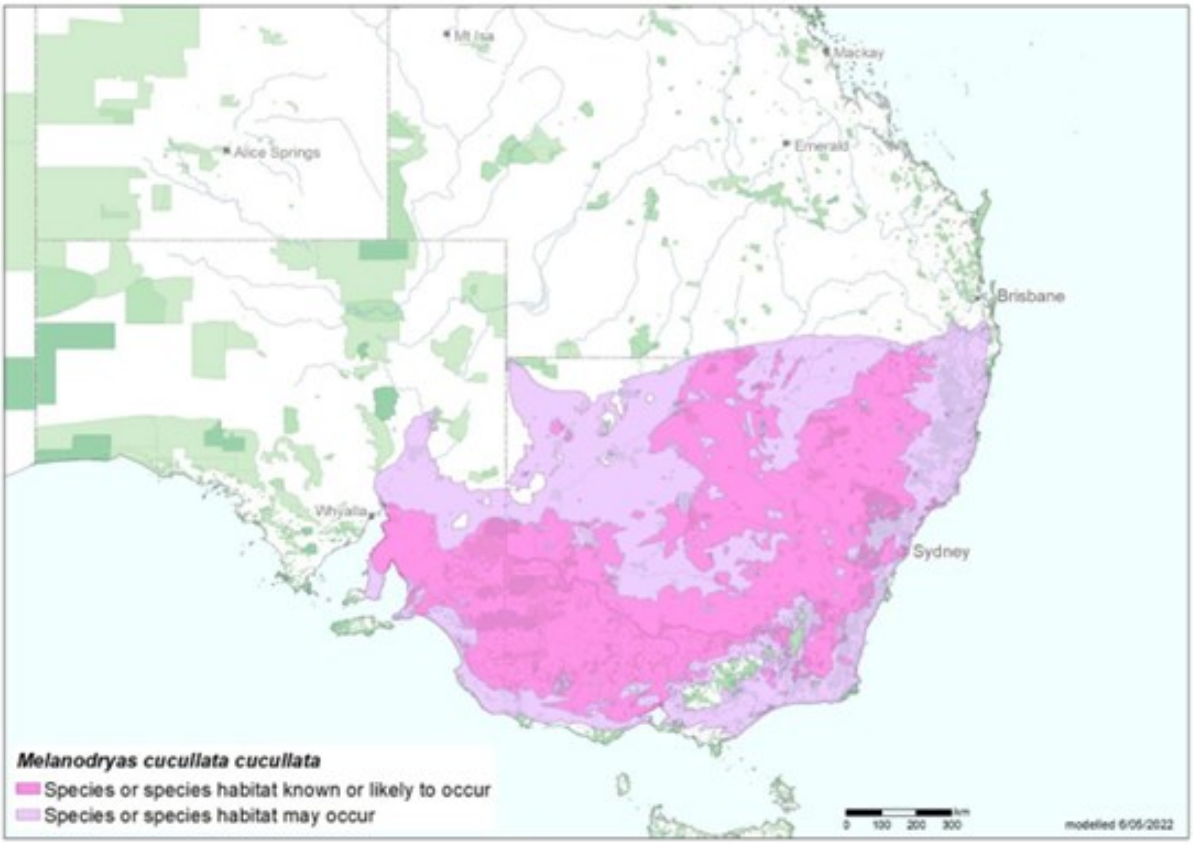


Figure 21: Distribution of modelled critical habitat for South-eastern Hooded Robin, defined as any area of known or likely habitat, map source: (DCCEEW 2023a).

Threats

Habitat fragmentation is considered to be the key threatening process for this species, with historical clearance resulting in legacies of fragmentation and degradation in now increasingly isolated populations. By-products of past clearance and fragmentation include other threats such as altered fire-regimes resulting in different understorey structure and assemblages. Removal of complexity in the habitat through overgrazing and tidying of farmland and adjacent bush blocks, and increased exposure to predation by cats and foxes are also key threats. Weed invasion has also been estimated to increase in isolated patches while periodic drought in arid zones has had an exacerbated impact on already isolated and unstable populations.

Local populations

This species was observed on site by Succession Ecology. The distribution of the South-eastern Hooded Robin overlaps with the project site, and the nearest record is roughly 1 km to the north, albeit from 1992. Other records are further than 5 km away from protected areas in Hallelujah Hills. Although some habitat in the project area is suitable for this species, the majority of clearing will be in VAs not suitable for this species, and only 3.7 ha will be in mallee patches. Those patches of mallee are limited in understorey complexity that make them unsuitable to be deemed critical habitat to the survival of this species.

4.2.3 Threatened flora

The desktop search identified a total of two threatened flora species within the search area; *Dodonaea subglandulifera,* which is listed as Endangered under the *EPBC Act* as known, or has habitat known to occur and *Myoporum parvifolium* which is listed as Rare under the *NPW Act*. An additional species *Maireana rohrlachii* was identified on site which is listed as Rare under the *NPW Act.* All three of these species have been included in the likelihood of use assessment (Table 8), using the site following the metric described in Table 1.

Table 8: A summary of the flora species observed on site or recorded within 5 km of the application area since 1995, or those listed as known to occur in the PMST.

Species (common name)	NPW Act	EPBC Act	Data source	Date of last record	Species known habitat preferences	Likelihood of use for habitat – Comments (Table 2)	Site
Dodonaea subglandulifera (Peep Hill Hop-bush)	E	EN	5, 3	2000	Found on the east side of the Mount Lofty Ranges and on Yorke Peninsula, growing on low hills on loamy soils associated with rocky outcrops in open woodland, open shrubland and mallee (Seeds of SA, 2021).	**Likely –** Species is known to occur to the northwest of the site at the Robertstown Solar Farm (Figure 1). Was not identified during field surveys at RTE.	
Maireana rohrlachii (Rohrlach's Bluebush)	R		4	2022	Found on heavy soils or in seasonally wet areas (Royal Botanical Gardens Victoria 2021).	**Known**. This species was observed in the field growing in the degraded chenopod shrubland.	VA 1.3
Myoporum parvifolium (Creeping Boobialla)	R		3	2008	Grows in a range of soils, including saline (Atlas of Living Australia, 2020).	Possible – Given the broad ecological requirements of the species and a recent record, dated 2008 of the species northwest of the site.	None
Source; 1- BDBSA, 2 - AoLA, 3 – NatureMaps 4 – Observed/recorded in the field, 5 - Protected matters search tool, 6 – others NPW Act; E= Endangered, V = Vulnerable, R= Rare EPBC Act; Ex = Extinct, CR = Critically endangered, EN = Endangered; VU = Vulnerable							

Previous records of threatened species with a likelihood of occurrence as Likely or above are discussed below.

***Dodonaea subglandulifera* (Peep Hill Hop-bush) *EPBC Act (EN), NPW Act (Endangered)* - Likely**

Peep Hill Hop-bush is an erect perennial shrub growing between 1-2 m high. It occurs in isolated, semi-arid areas of south-east SA and is endemic to the state. It has been listed as Endangered under the *EPBC Act* since 2000, however there is currently no approved conservation advice or listing advice for this species. A recovery plan for this species has been developed (Moritz and Bickerton 2010).

Peep Hill Hop-bush is known to occur from locations such as Peep Hill north of Eudunda, Black and White Hill, Robertstown, Wallaroo, Walker Flat, Brookfield Conservation Park, and Peterborough among others (Figure 22). Populations occur on low hills on loamy soils associated with rocky outcrops. Native vegetation associations in these areas include low open woodland, open shrubland, and mallee with variable understorey. Common overstorey plants include *Eucalyptus porosa, Callitris gracilis, Acacia calamifolia, Eucalyptus Dumosa, Allocasuarina verticillata, Eucalyptus oleosa*. This shrub may also occur in association with and alongside other shrubs such as *Beyeria lechenaultii, Alectryon oleifolius, Acacia argyrophylla, Acacia hakeoides, Bursaria spinosa,* and *Geijera linearifolia*.

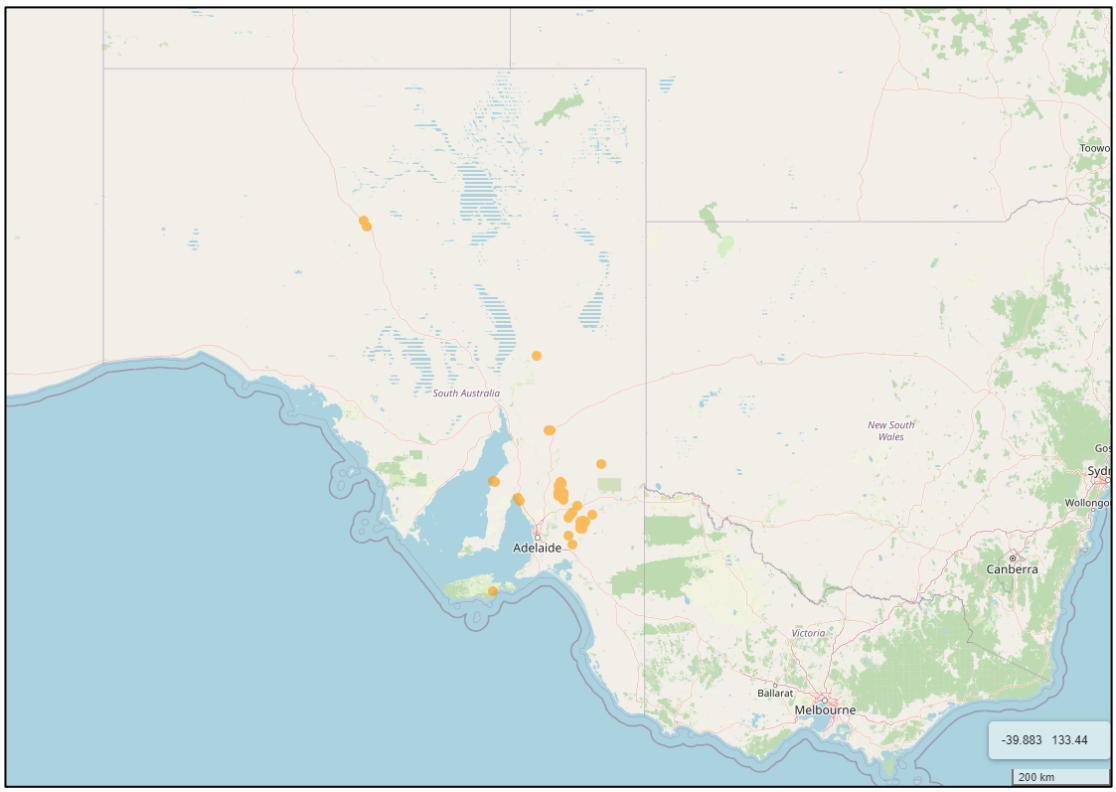


Figure 22: The distribution of Dodonaea subglandulifera *records from within South Australia. Records obtained from Atlas of Living Australia (accessed 18/09/2024)*

Threats

Threats to Peep Hill Hop-bush include inappropriate grazing regimes by domestic stock and native animals, roadside activities and maintenance including slashing and rubbish dumping, invasion by exotic weeds both agricultural and environmental, and habitat fragmentation and declining genetic variability. The species lacks populations that are protected by formal reserves and as such many threats are not adequately managed. Recovery actions recommended in the recovery plan (Moritz and Bickerton 2010) include:

- Survey and monitor existing populations recording details of location, area of occupancy, number of plants, life history structure, survival rates, sex ratios and habitat type.
- Assess major threats to each population.

- Identify further priority sites to conserve by evaluating information gained in Action 1.
- Liaise with appropriate stakeholders including landowners, councils, the Department of Transport, Energy and Infrastructure.
- Negotiate Heritage Agreements or binding conservation covenants if appropriate.

Local populations

A local population of this species has been recorded from four sites along Eagle Hawke Gate Rd that begins near Mimbara Conservation Park north of Bright and runs south to near the Robertstown Substation. This road runs through the RSF site and a small number of individuals were observed by Succession Ecology in the road reserve during the September 2024 survey. The areas known to be occupied by this species are excluded from the clearance areas for the RSF, however they are situated close by.

***Maireana rohrlachii* (Rohrlach's Bluebush) *NPW Act (R)* - Known**

Rohrlach's Bluebush is a perennial spindly shrub growing up to 1 m high. It has fine hairs on the stem and fleshy alternate leaves. This species is considered Rare across the Mid-North of South Australia and becomes more common toward the Murray River (Figure 23). It occurs on heavy soils across chenopod shrublands.

Local populations

It was widely distributed across the chenopod shrublands on site. Individual plants were so plentiful that they were not mapped. Consequently, the local population is unlikely to be considered as a critical breeding population for maintaining genetic diversity and therefore is not considered to be an important population for the survival of the species.

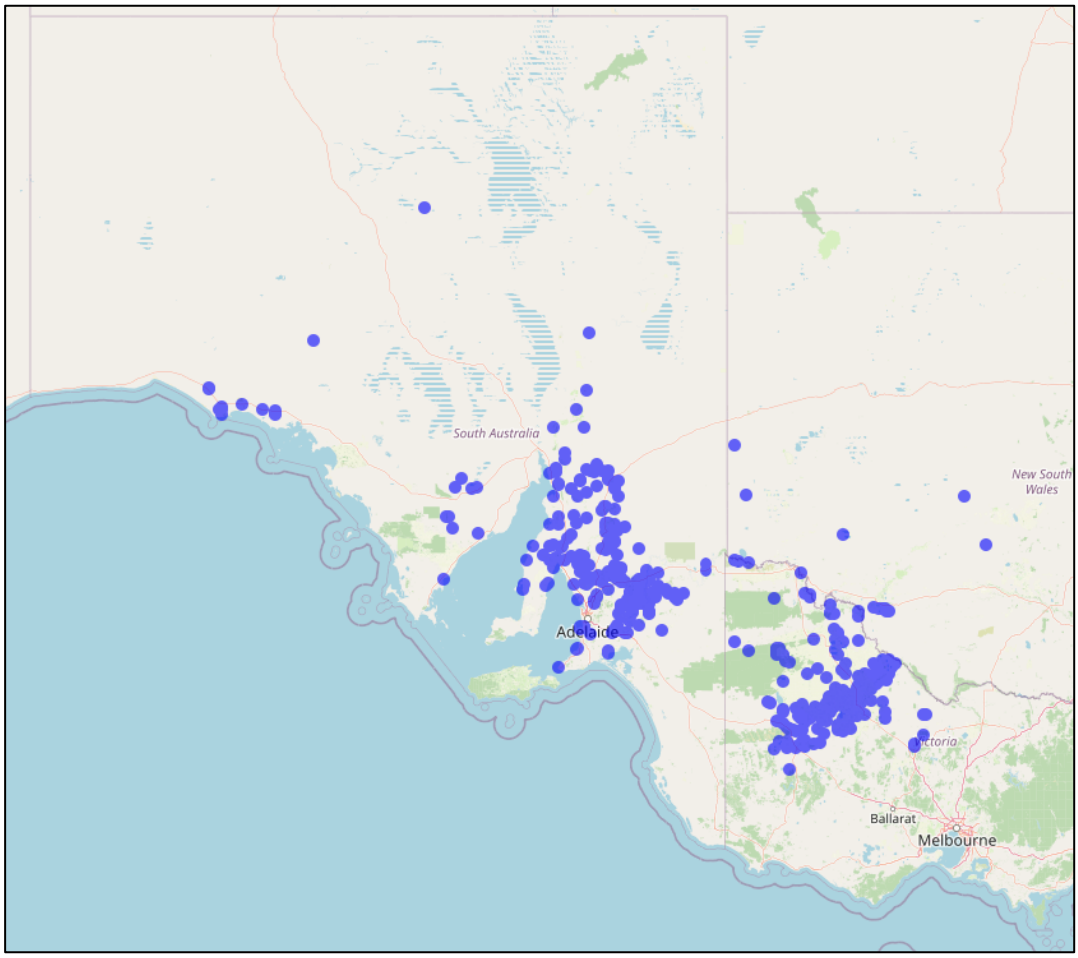


Figure 23: Distribution of Maireana rohrlachii across its native range. Source: Atlas of Living Australia accessed 31 October 2024.

4.3 Cumulative impact

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

The cumulative impact of clearing is the gradual reduction of remnants in the area, a loss of connectivity between remnant patches and reduction of available habitat to threatened flora and fauna. Patches of remnant vegetation provide important habitat for native flora and fauna and are at high risk of degradation from clearance and other impacts such as weed incursion. This data report considers all sources of impact to native vegetation posed by the project. This includes construction activities requiring clearance, weed incursion, and the production of noise and dust.

The vegetation remnancy within the project area is high, with 47 % remnancy in the Sutherlands IBRA Association. However, almost none of the native vegetation in the Sutherlands IBRA Association is protected.

The Project was designed to avoid impacts to highest-value native vegetation by placing 98 % of the footprint in previously cleared paddocks subject to agricultural use. However, 251.8 ha of these paddocks were assessed to contain regenerating chenopod vegetation due to breaks between cropping cycles. Currently, 156.6 ha of the proposed project will be located in Farmland. Remaining impacts to native vegetation is limited to approximately 11 small patches totalling approximately 4 ha. These patches are scattered through the landscape, most of which border paddocks or will be utilised for the purpose of access. The majority of patches of vegetation have been highly disturbed, particularly by livestock grazing. As such, impacts to native vegetation from the proposed works are unlikely to substantially reduce available habitat to threatened flora and fauna in the region or affect connectivity between remnant patches.

The clearing of vegetation and addition of vehicle tracks has the potential to increase the access of weed species and introduced pest species in the region. However, given that all patches have cleared perimeters along with existing high density weed cover, this impact is not expected to be significant. The proposed development will offer the opportunity to manage Declared weeds such as Artichoke Thistle (*Cynara cardunculus* ssp. *flavescens*) and African Boxthorn (*Lycium ferocissimum*), with the effect of improving the remaining habitat quality for native flora and fauna.

Site preparation for the construction of the Robertstown East Solar Farm will require the clear grading of vegetation, which will result in impacts to the Biological Soil Crust (BSC). BSC is a community of living organisms including moss, liverworts, lichen, and bacteria, and has important ecological functions, such as fixing nitrogen, increasing soil fertility, absorbing rainfall, decreasing runoff, binding soil, and reducing erosion (Australian National Botanic Gardens 2018). The removal of the BSC and vegetative material can reduce soil stability and increase erosion potential. Exposing soil to direct heat from the sun increases surface evaporation and results in drier soils, again increasing erosion potential. A further consideration for a solar farm is the increasing ambient temperatures that occur with bare soil and the resulting reduction in panel production. Alternative site preparation methods will be considered to mitigate these impacts, including the rolling of vegetation.

Vegetation removal for the solar farm might change the hydrological balance of the site by reducing the extent that water is taken up from the water table (leading to a rise in the water table), reducing the rate that moisture is able to penetrate the soil (clearing brings soil compaction) creating a smooth soil surface leading to runoff and soil erosion. As there are no substantial creek lines on-site, changes to hydrology are not expected.

Other impacts include production of dust and noise from vehicles and heavy machinery during construction of the solar farm, which will also require appropriate management strategies.

RSF is considered under a separate application for the clearance of native vegetation, however cumulative impacts to remnant vegetation should be considered together with RTE. Impacts from the associated RSF development include an additional 7 ha of native vegetation clearance. Refinements to RSF designs have resulted in 99% of the proposed development to be situated in Farmland to avoid impacts to native vegetation where possible. All project works and associated risks described above also apply to the RSF development.

4.4 Address the mitigation hierarchy

When exercising a power or making a decision under Division 5 of the Native Vegetation Regulations (NV) 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 NPW Act.

The following text describes the steps taken by the Project proponent in minimising potential impacts on biological diversity, natural resources, and threatened species. These address the mitigation hierarchy with reference to the NV Regulations Section 5, Mitigation hierarchy (a) – (d):

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

The proposed Project location encompasses areas of natural vegetation with varying degrees of quality (UBS 55.58-115.71), as well as farmland used for cropping and livestock grazing. Much of the project footprint has been designed to fit within areas historically used for dryland farming in order to reduce the need for high value vegetation clearance. Due to recent poor seasonal conditions to support field crops, areas that have previously had regular cycles of cropping and grazing have not been cropped since 2021-2022. This has resulted native regenerating chenopod vegetation being present broadly across the site, while other areas which have been more regularly grazed feature degraded farmland with little native vegetation (farmland areas).

The RTE sites have been explored as an additional area for development of the broader Robertstown Solar Project (RSF and RTE) due to the extended planning stage that took place at RSF. Through multiple design iterations, the proponent refined and reduced the design to avoid clearance of impacts to almost all native vegetation. In order to avoid high quality vegetation at the RSF site with UBS scores above 180, over 99 % of the development has been sited in Farmland. Large patches of higher quality vegetation threatened flora and fauna species, wombat warrens, and the Mallee Bird Threatened Ecological Community have been avoided through the design refinement process. Due to these refinements and reductions, additional land was explored and is proposed for clearance at RTE to ameliorate overall generation requirements across the entire project.

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

The Robertstown East Solar Farm has been designed to maximise panel area and streamline logistics within the smallest possible footprint. A detailed site assessment has been undertaken and incorporated into the planning of infrastructure works to ensure the minimum amount of vegetation disturbance. Where practical, the project footprint has been designed to fit within areas of farmland (already cleared areas) to reduce the need for vegetation clearance and minimise the extent of habitat loss and disturbance in the area. Where practical, project designs minimise the amount of clearance required by locating temporary project components, such as construction laydowns, in areas designated for longer-term components, such as solar arrays.

Desktop assessments identified four threatened bird species were identified as potentially using the vegetation present within the clearance footprint. Of these, three were observed during site visits (Southern Whiteface, White-winged Chough, and Jacky Winter). To minimise impacts to nesting birds and breeding cycles, vegetation clearance will be implemented between January and May, to avoid the breeding seasons of these threatened bird species (Zoos SA 2008, DCCEEW 2023, Birdlife Australia n.d). When clearance occurs, it should be performed from the centre to the margin to the margin of each patch, to give fauna opportunities to disperse, rather than finding themselves trapped in an isolated point, as can occur if a patch is cleared from the margin inwards. Finally, access tracks have been designed to be as narrow as possible to avoid any indirect impacts, such as spreading of Declared and environmental weeds.

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.

Some of the areas cleared to facilitate construction phase but not required during the operational phase (e.g., temporary site offices) will be rehabilitated, reducing the total amount of long-term vegetation loss from the area. Where practical, vegetation clearance in shrublands will utilise vegetation rolling, rather than complete clearance. This clearance method can facilitate faster vegetative regrowth. Where practical, vegetation regrowth around solar arrays and underneath solar panels will be encouraged. However, vegetation underneath solar panels and between strips of panels will not include any larger shrubs, as these may impede maintenance work on panels and cause shading of panels.

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 opportunity for an on-ground SEB offset area will be explored in the local project area and the specific details including the location, will be included in the final version of the NVC application. A detailed SEB Management Plan will be prepared that outlines the restoration efforts necessary to achieve the conservation outcomes required for an SEB.

A payment into the Native Vegetation Fund is also required to account for the difference in SEB offset required and the SEB points available from the on-ground SEB offset area.

The NVC will only consider an offset once avoidance, minimization and restoration have been documented and fulfilled. The NVC *Policy for Significant Environmental Benefit* (Native Vegetation Council 2020b) explains the biodiversity offsetting principles that must be met.

4.5 Principles of clearance (*Schedule 1, Native Vegetation Act 1991*)

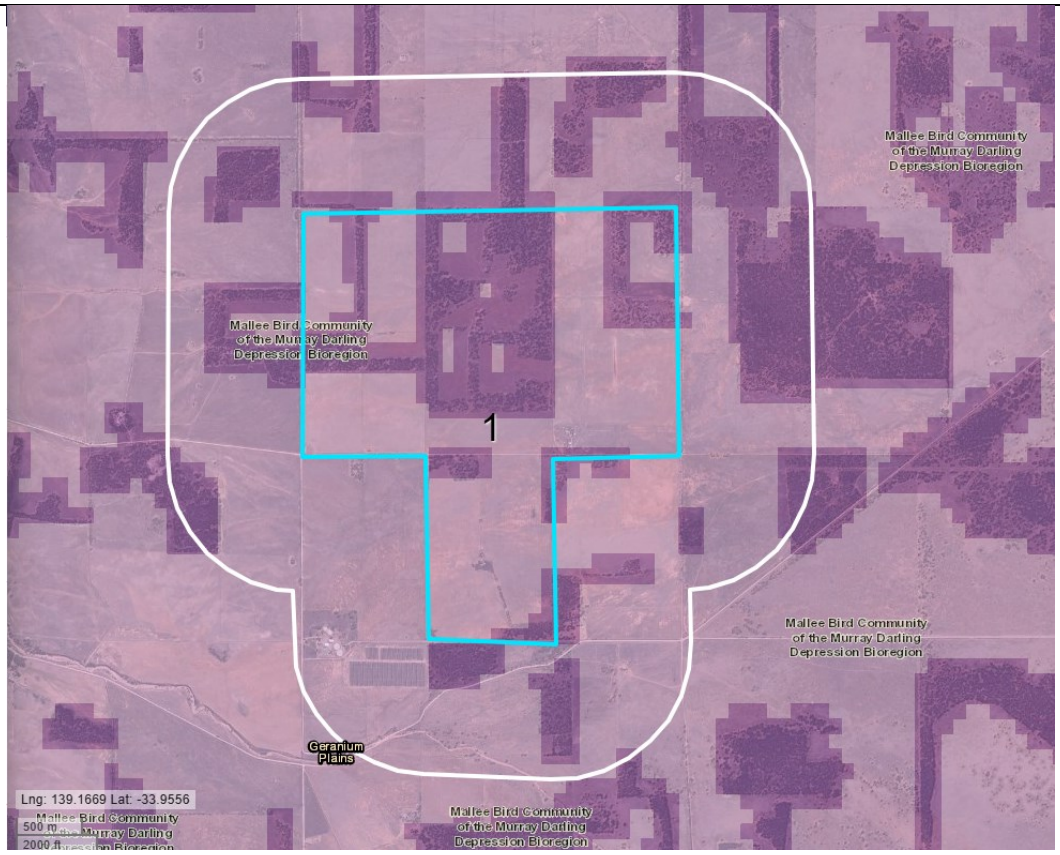
Principle of clearance	Considerations
Principle 1(a) - it comprises a high level of diversity of plant species	Relevant information -VA1.1 has a total of 38 species, of these 34 are native and 4 are introduced. Native Plant Diversity Score = 30 -VA1.2 has a total of 23 species, of these 19 are native and 4 are introduced. Native Plant Diversity Score = 26 -VA1.3 has a total of 40 species, of these 29 are native and 11 are introduced. Native Plant Diversity Score = 30 -VA1.4 has a total of 19 species, of these 16 are native and 3 are introduced. Native Plant Diversity Score = 26
	Assessment against the principles Seriously at Variance - VA1.1 - VA1.2 - VA1.3 - VA1.4
	Moderating factors that may be considered by the NVC Using the NatureMaps tool to calculate total native remnancy in a 5 km radius, 28 % of native vegetation remains which is equal to 2199.12 hectares. - Clearance in VA1.1 accounts for 0.099 % of remnant vegetation within 5 km. - Clearance in VA1.2 accounts for 0.077 % of remnant vegetation within 5 km. - VA1.3 is not considered remnant vegetation as it is regenerating farmland and should not count towards removing any of the 28 % of remnant vegetation within 5 km. - Clearance in VA1.4 accounts for 0.008 % of remnant vegetation within 5 km. The total native remnant vegetation to be cleared accounts for 0.184 % of the remaining 2199.12 hectares. This accounts for less than 0.25% of remnant native vegetation within a 5 km radius to be impacted by the project and would justify lowering the impact from 'Seriously at variance' to 'At variance'.
Principle 1(b) - significance as a habitat for wildlife	Relevant information State and federally listed species that were observed on site during the surveys: – *Aphelocephala leucopsis* (Southern Whiteface) (*Vulnerable: EPBC Act*): **Known**; – *Corcorax melanorhamphos* (White-winged Choughs) (Rare: NPW Act): **Known**; – *Microeca fascinans fascinans* (Jacky Winter) (Rare: NPW Act): **Known**; – *Melanodryas cucullata cucullata* (South-eastern Hooded Robin) (Rare: NPW Act, Endangered: EPBC Act): **Known.** VA1.1:

	The vegetation within this association is of high quality and would support a high diversity of fauna species. The association serves as a corridor and would facilitate movements between other areas of native vegetation, especially the heavily cleared surrounding farmland. VA1.1 provides and would provide habitat refuge to a suit of avian, reptile and mammalian species. All four of the threatened species were observed in VA1.1 VA1.2: Though this vegetation association is of lesser quality mallee woodland to VA1.1, the vegetation would likely support a moderate to high diversity of fauna species. VA1.2 serves as a valuable corridor between habitat, and would provide refuge to bird, reptile and mammal species from the adjacent heavily cleared farmland and regenerating chenopod. All the known threatened species were observed within VA1.2. VA1.3: Some areas within this VA were observed supporting fauna species, although it is unlikely to support a high diversity of fauna. The vegetation provides low to moderate value as a corridor. During times of environmental stress, this association would provide limited refuge to small species VA1.4: VA1.4 at Robertstown east only occurs along the roadside. The habitat present within the vegetation association would support a low diversity of fauna species. The vegetation was of good condition and would provide corridor benefits to fauna moving between habitats. During times of stress VA1.4 would unlikely provide refuge to fauna. Patches; VA1.1 Threatened Fauna Score – 0.10 Unit biodiversity Score – 115.71 VA1.2 Threatened Fauna Score – 0.10 Unit biodiversity Score – 82.98 VA1.3 Threatened Fauna Score – 0.10 Unit biodiversity Score – 55.58 VA1.4 Threatened Fauna Score – 0.10 Unit biodiversity Score – 73.67 Scattered Trees; T03 = Fauna Habitat Score – 1.80 Biodiversity Score – 0.07 T04 = Fauna Habitat Score - 1.80 Biodiversity Score - 0.09 T05 = Fauna Habitat Score - 1.80 Biodiversity Score - 0.44 T06 = Fauna Habitat Score - 1.80 Biodiversity Score – 0.18 T07 = Fauna Habitat Score - 1.80 Biodiversity Score - 0.09

	T08 = Fauna Habitat Score - 1.80 Biodiversity Score - 0.50 T09 = Fauna Habitat Score - 1.80 Biodiversity Score -1.37 T10 = Fauna Habitat Score - 1.80 Biodiversity Score – 2.21 T11 = Fauna Habitat Score - 1.80 Biodiversity Score – 0.22 T12 = Fauna Habitat Score - 1.80 Biodiversity Score – 0.37 T13 = Fauna Habitat Score - 1.80 Biodiversity Score – 0.44
	Assessment against the principles Seriously at Variance: - VA1.1 - VA1.2 - VA1.3 - VA1.4 - T09 - T10 At Variance: - T03 - T04 - T05 - T06 - T07 - T08 - T11 - T12 - T13
	Moderating factors that may be considered by the NVC The total area proposed to be cleared in VA1.1 and VA1.2 is 1.89% and 4.06% of those respective vegetation associations within the project area. Within these two vegetation associations four threatened fauna species were observed during the field surveys, South-eastern Hooded Robin, Southern Whiteface, Jacky Winter, and White-winged Chough. It may be considered that these small areas of clearance are unlikely to cause significant impacts upon those species. These small areas of clearance are considered unlikely to reduce the size of a population, the area of occupancy of the species, fragment any populations, adversely impact or modify the habitat, or interfere with recovery efforts for these species.

	VA1.3 will have 89.92% of its vegetation cleared for the solar farm. Currently VA1.3 provides low to moderate value as habitat to threatened species and would require time, change in land use and restoration works to restore its habitat value. Currently VA1.3 likely only provides habitat to common species and area of clearance is not considered essential habitat to maintain the populations of any species present. VA1.4 consists of roadside vegetation and its value comes from its benefits as a corridor between habitats. Only 5.96 % of this vegetation will be cleared and is considered unlikely to have significant impacts upon the local threatened and common fauna community. This narrow corridor is considered to be non-essential habitat for any threatened fauna species as none were identified using this habitat during the bird surveys.
Principle 1(c) - plants of a rare, vulnerable or endangered species	Relevant information Threatened flora observed at the site: • Rohrlach's Bluebush - *Maireana rohrlachii* *Maireana rohrlachii* was widely but sparsely distributed throughout the chenopod shrublands on site (VA 1.3 and VA 1.4). Threatened flora identified within 5 km of The Project since 1995, but were not identified during surveys: • Peep Hill Hop-bush, *Dodonaea subglandulifera* – ***likely*** *to occur* • Creeping Boobialla, *Myoporum parvifolium* – ***possible*** *to occur* Threatened Flora Score(s) Vegetation Associations: VA1.1 = 0 VA1.2 = 0 VA1.3 = 0.04 VA1.4 = 0 Scattered Trees: T03 = 0 T04 = 0 T05 = 0 T06 = 0 T07 = 0 T08 = 0 T09 = 0 T10 = 0 T11 = 0 T12 = 0 T13 = 0
	Assessment against the principles At variance: VA1.3 Not At Variance: VA1.1 VA1.2 VA1.4 All scattered trees (T03-T13)

	Moderating factors that may be considered by the NVC Vegetation clearance will result in the removal of a few regenerating *Maireana rohrlachii*. These plants are small and present within an area that has been heavily grazed and cropped in the past. Given the few small individuals observed, the proposed clearance in this vegetation association is unlikely to lead to a long-term decrease in the area of occupancy, nor fragment an existing population, nor interfere with the recovery of the species.
***Principle 1(d) - the vegetation comprises the whole or part of a plant community that is Rare, Vulnerable or endangered*:**	Relevant information One threatened ecological community is likely to occur at the Project site. The Mallee Bird Community of the Murray Darling Depression Bioregion is classified as Endangered under the EPBC Act and occurs across the north-eastern section of the Broader Project Area (VA1.1 and VA1.2). White-plumed Honeyeater and White-fronted Honeyeater were identified within The Project footprint, both of which are classified as mallee dependent species. None of the scattered trees under application are part of a threatened plant community. Threatened Community Scores: VA1.1 = 1.4 VA1.2 = 1.4 VA1.3 = 1 VA1.4 = 1
	Assessment against the principles VA1.1 = Seriously at variance VA1.2 = Seriously at variance VA1.3 = Not at Variance VA1.4 = Not at Variance
	Moderating factors that may be considered by the NVC Project design revisions have minimised the size of the TEC to be impacted (3.87 ha cumulative clearance in VA1.1 and VA 1.2). The proposed clearance will slightly reduce the size of the community present but is unlikely to fragment the community or adversely affect critical habitat for the survival of the mallee community or the species that depend on it. The implementation of weed hygiene protocols as part of the Construction Environmental Management Plan (CEMP) for the project minimise the risk of introducing new weeds into the area which will degrade the community. Based on TEC mapping provided as part of the Protected Matters Search Tool, an area of ~ 1,976.11 ha of the Mallee Bird Community is present within a 1 km radius of The Project (Figure 24). Therefore, the required clearance equates to < 1 % of the vegetation community within the immediate vicinity of The Project. The vegetation present within VA1.1 is relatively intact. In contrast, VA1.2 consists of degraded vegetation, with a sparse to open canopy and evidence of disturbance from historic agricultural activities.

	 *Figure 24: Map showing the Robertstown East Solar Farm Project Boundary (blue outline), a 1 km radius around The Project (white outline) and the extent of the Mall Bird Community of the Murray Darling Depression Bioregion (light and dark purple; sourced from the Protected Matters Search Tool).*
Principle 1(e) - it is significant as a remnant of vegetation in an area which has been extensively cleared.	<u>Relevant information</u> Sutherlands IBRA Association = 47 % Murray Mallee IBRA Subregion = 21 % Total Biodiversity Score = 14,399.48
	<u>Assessment against the principles</u> Local level appropriateness (IBRA Association) = At Variance Sub-regional level appropriateness (IBRA Subregion) = Seriously at Variance
	<u>Moderating factors that may be considered by the NVC</u> The total clearance area for The Project is 255.904 ha. There is 47 % native vegetation remnancy across the Sutherlands IBRA Association. However, clearance will consist of small patches of native vegetation surrounded by cleared farmland. Most of these patches are heavily disturbed by grazing, farm equipment dumping and vehicle tracks. Furthermore, there is no selective impact on a certain tree species or vegetation community, and impacts to vegetation that is of high value have been largely avoided in the final project designs.
Principle 1(f) – it is growing in, or in association with, a wetland environment.	<u>Relevant information</u> The vegetation is not associated with a wetland.
	<u>Assessment against the principles</u> Not at Variance
	<u>Moderating factors that may be considered by the NVC</u> N/A
Principle 1(g) - it	<u>Relevant information</u> The site is unlikely to have any significant contributions to the amenity of the region.

contributes significantly to the amenity of the area in which it is growing or is situated.	Assessment against the principles Not at Variance
	Moderating factors that may be considered by the NVC The site is not situated along a main road nor tourist route, therefore unlikely to hold any substantive amenity value to the local community or visitors.

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

4.6 Risk assessment

Determine the level of risk associated with the application

Total clearance	No. of trees	11
	Area (ha)	255.824
	Total Biodiversity Score	14,399.48
Seriously at variance with principle 1(b), 1(c) or 1 (d)		Principle 1(b): VA 1.1, VA 1.2. VA 1.3, VA 1.4, two scattered trees. Principle 1(c): VA 1.3 Principle 1(d): VA 1.1, VA 1.2
Risk assessment outcome		Level 4

4.7 NVC guidelines

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

NA

5. Clearance summary

Clearance area(s) summary table

Vegetation Association	Species diversity score	Threatened Ecological community Score	Threatened plant score	Threatened fauna score	UBS	Area (ha)	Total Biodiversity score	Loss factor	Loadings	Reductions	SEB Points required	SEB payment (GST exclusive)	Admin Fee
VA1.1	30.0	1.4	0.00	0.10	115.71	2.183	252.59	1.0	0	0	277.85	$93,439.60	$5,139.18
VA1.2	26.0	1.4	0.00	0.10	82.98	1.687	139.99	1.0	0	0	153.99	$51,786.09	$2,848.23
VA1.3	30.0	1.0	0.04	0.10	55.58	251.772	13,993.49	1.0	0	0	15,392.84	$5,176,536.97	$284,709.53
VA1.4	26.0	1.0	0.00	0.10	73.67	0.182	13.41	1.0	0	0	14.75	$4,960.35	$272.82
					Total	**255.824**	**14,399.48**				**15,839.43**	**$5,326,723.01**	**$292,969.76**

Scattered trees summary table

Tree or Cluster ID	Number of trees	Fauna Habitat score	Threatened flora score	Total Biodiversity score	Loss factor	SEB Points required	SEB Payment (GST inclusive)	Admin Fee
T03	1	**1.80**	**0.00**	0.07	1	0.08	$28.38	-
T04	1	**1.80**	**0.00**	0.09	1	0.10	$35.48	-
T05	1	**1.80**	**0.00**	0.44	1	0.48	$170.30	-
T06	1	**1.80**	**0.00**	0.18	1	0.20	$70.96	-
T07	1	**1.80**	**0.00**	0.09	1	0.10	$35.48	-
T08	1	**1.80**	**0.00**	0.50	1	0.55	$195.14	-
T09	1	**1.80**	**0.00**	1.37	1	1.51	$535.73	-
T10	1	**1.80**	**0.00**	2.21	1	2.43	$862.14	-
T11	1	**1.80**	**0.00**	0.22	1	0.24	$85.15	-
T12	1	**1.80**	**0.00**	0.37	1	0.41	$145.46	-
T13	1	**1.80**	**0.00**	0.44	1	0.48	$170.30	-
Total				5.98		6.58	**$2,334.53**	**$121.71**

Total summary table

Economies of Scale Factor	0.35
Rainfall (mm) Factor	291
SEB Points of Gain/ha Factor	7.5

SEB Uplift Factor	1.10
Management Cost ($/ha)	$24,764

	Total Biodiversity score	Total SEB points required	SEB Payment (GST exclusive)	Admin Fee	Total Payment
Application	14,405.46	15,846.01	$5,328,935.83	$293,091.47	**$5,622,027.30**

6. Significant Environmental Benefit

A Significant Environmental Benefit (SEB) is required for approval to clear under Division 5 of the Regulations. The NVC must be satisfied that as a result of the loss of vegetation from the clearance that a SEB will result in a positive impact on the environment that is over and above the negative impact of the clearance.

6.1 Achieving a SEB

The SEB required for the Robertstown East Project will be achieved:

☒ 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 a 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.

6.2 Payment SEB

6.2.1 Investigation into On-ground SEB

Currently the vegetation clearance required for the Robertstown East Solar Farm Project will result in > 150 SEB points required to offset impacts. As per the SEB Policy, an investigation was implemented to assess potential on-ground SEB sites. This policy requires that a reasonable attempt be made to identify potential on-ground SEB areas prior to accepting payment into the Native Vegetation Fund as an offset option. The purposes of this document are to support a Development Application and there are no short-term plans to begin clearance. Therefore, the details of this investigation are incomplete in the current document. They will be finalised prior to the official submission of this clearance application. SEB points gained from three example sites in the region and their effectiveness as an offset are shown in Table 9.

A SEB Management plan will be drafted closer to the official submission for the project being commenced once areas to be designated as an on-ground SEB offset have been determined.

*Table 9: Approximate SEB points gained from three example SEB sites in the region. *A payment into the Native Vegetation Fund is also required to account for the difference in SEB points required to offset project impacts and SEB points available from the on-ground SEB offset area.*

Vegetation Association	Option 1				Option 2				Option 3			
	Offset Area (ha)	Total SEB Points Gained	SEB Points of Clearance	SEB Points Remaining *	Offset Area (ha)	Total SEB Points Gained	SEB Points of Clearance	SEB Points Remaining *	Offset Area (ha)	Total SEB Points Gained	SEB Points of Clearance	SEB Points Remaining *
Various vegetation associations (mallee woodland and chenopod shrubland)	~112	944	15839	14895	~85	506	15839	15333	~294	1049	15839	14790

6.2.2 Payment SEB

A total of 15,839.43 SEB points is required to offset The Project. The Project proponent will make a payment into the Native Vegetation Fund, equivalent to the SEB points remaining (XX). A total payment of $XX is required, which includes an SEB payment of $XX and an admin fee of $XX.

6.3 On-ground SEB

An on-ground SEB area will be established within XXXXXXX

Ownership:	[Details to be added]		
Site Address:	[Details to be added]		
Local Government Area:	[Details to be added]	Hundred:	[Details to be added]
Title ID:	[Details to be added]	Parcel ID	[Details to be added]

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

As per the SEB policy, the on-ground SEB area will be located within the same region as the development in South Australia's Mid-North region within the Murray Darling Depression Interim Biogeographic Regionalisation for Australian (IBRA) Region, the Murray Mallee Sub-region and the Sutherlands Association. The vegetation will be of the same associations as those proposed to be cleared.

[Additional details regarding the regional context, landscape, vegetation associations and their condition will be added once an SEB option is chosen]

6.3.2 Information relating to the relevant land

[Details to be added once an SEB option is chosen]

6.3.3 General location map

[Details to be added once an SEB option is chosen]

6.3.4 Description of the Vegetation

[Details to be added once an SEB option is chosen]

6.3.5 Site Map showing areas of the proposed SEB

[Details to be added once an SEB option is chosen]

6.3.6 Photo Log

[Photos to be added once an SEB option is chosen]

6.3.7 Flora and fauna assessment

[Details to be added once an SEB option is chosen]

6.3.8 Environmental Benefits

A large proportion of the region where a proposed on-ground SEB area is to be explored is comprised of cleared or disused farmland that has regenerated from a break in regular cropping cycles. The selection of partially degraded areas and allowing the natural recruitment/regeneration of native vegetation within this area, coupled with a revegetation program, creates an opportunity for increasing the amount of native vegetation present within the region. This will increase the amount of habitat available for local fauna and improve connectivity with neighbouring patches of remnant vegetation.

[Details to be added once an SEB option is chosen]

- Decreased prevalence of weeds through implementation of a weed control program
- Increased flora diversity through revegetation
- Improved habitat quality through revegetation of multi-strata species, particularly the mid-storey and understorey layers in the degraded vegetation associations (VA 1.2 and VA 1.3)
- Increased canopy cover through revegetation

[Additional details to be added by Succession Ecology once an SEB option is chosen]

6.3.9 Summary Table

Block	Site	Vegetation Association	UBS	Gain Score	Area (ha)	SEB Point of Gain
[Details to be added once client confirms which SEB option to pursue]						
				Total		

6.3.10 SEB Management Plan

A Native Vegetation Management Plan is required as part of the Conditions of Consent for clearance. Once the proponent has settled on an option for an SEB area a Management Plan will be prepared and attached in the appendices.

7. References

Birdlife Australia. 2021. Species Profile: Microeca fascinans, Jacky Winter.

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DAWE. 2021b. Threatened Species Profile: Acacia spilleriana, Spiller's Wattle.

DAWE. 2021c. Conservation Advice: Platycercus elegans melanopterus (Kangaroo Island Crimson Rosella).

DCCEEW. 2022. Collaborative Australian Protected Areas Database.

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Moritz, K., and D. Bickerton. 2010. Recovery Plan for the Peep Hill Hop-bush Dodonaea subglandulifera. Recovery Plan, Canberra.

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8. Appendices & Attachments

Appendices

Appendix A: Complete species lists of species recorded during field surveys.

Appendix B: Additional site photos.

Appendix C: Threatened fauna and flora species excluded from assessment

Attachments

Attachment 1: Bushland and Scattered Tree assessment scoresheets associated with the proposed clearance

Attachment 2: Site maps as shape files

Attachment 3: Infrastructure designs – Robertstown Solar and BESS Master Plan

Appendix A – Complete list of flora and fauna species identified within the Project area.

SPECIES NAME	COMMON NAME	SITE			
Native Flora		**VA1.1**	**VA1.2**	**VA1.3**	**VA1.4**
Acacia oswaldii	Umbrella Wattle	✓			
Alectryon oleifolius ssp. canescens	Bullock Bush	✓	✓		✓
Atriplex acutibractea ssp.	Pointed Saltbush			✓	
Atriplex lindleyi ssp.	Baldoo	✓			
Atriplex semibaccata	Berry Saltbush			✓	
Atriplex stipitata	Bitter Saltbush	✓		✓	
Atriplex vesicaria	Bladder Saltbush	✓	✓	✓	✓
Austrostipa sp.	Spear-grass	✓	✓	✓	
Chenopodium curvispicatum	Cottony Goosefoot	✓		✓	✓
Chenopodium desertorum ssp.	Desert Goosefoot	✓	✓		
Convolvulus remotus	Grassy Bindweed			✓	✓
Dissocarpus paradoxus	Ball Bindyi	✓		✓	
Enchylaena tomentosa var.	Ruby Saltbush	✓	✓	✓	
Eremophila scoparia	Broom Emubush	✓			
Eucalyptus gracilis	Yorrell	✓	✓		✓
Eucalyptus oleosa ssp.	Red Mallee	✓	✓	✓	✓
Eucalyptus socialis ssp.	Beaked Red Mallee	✓		✓	
Exocarpos aphyllus	Leafless Cherry	✓	✓		
Geijera linearifolia	Sheep Bush	✓		✓	
Grevillea huegelii	Comb Grevillia	✓			
Lycium australe	Australian Boxthorn	✓			
Maireana aphylla	Cotton-bush	✓	✓		
Maireana brevifolia	Short-leaf Bluebush	✓	✓		✓
Maireana enchylaenoides	Wingless Fissure-plant			✓	
Maireana erioclada	Rosy Bluebush	✓		✓	
Maireana pentatropis	Erect Mallee Bluebush	✓			
Maireana pyramidata	Black Bluebush	✓	✓	✓	✓
Maireana radiata	Radiate Bluebush	✓	✓	✓	
Maireana rohrlachii	Rohrlach's Bluebush			✓	
Maireana sedifolia	Bluebush	✓	✓	✓	✓
Maireana trichoptera	Hairy-fruit Bluebush			✓	
Maireana turbinata	Top-fruit Bluebush			✓	
Maireana turbinata X Enchylaena tomentosa				✓	
Myoporum platycarpum ssp.	False Sandalwood		✓		
Nitraria billardierei	Nitre-bush	✓		✓	
Pittosporum angustifolium	Native Apricot				✓
Poaceae sp.	Grass				✓
Rhagodia crassifolia	Fleshy Saltbush				✓
Rhagodia spinescens	Spiny Saltbush	✓	✓		
Rhagodia ulicina	Intricate Saltbush	✓			
Roepera aurantiaca ssp.	Shrubby Twinleaf	✓			
Roepera sp.	Twinleaf	✓			
Salsola australis	Buck bush		✓		✓
Santalum acuminatum	Quandong	✓			
Scaevola spinescens	Spiny Fanflower		✓		

Sclerolaena obliquicuspis	Oblique-spined Bindyi	✓	✓	✓	✓
Sclerolaena patenticuspis	Spear-fruit Bindyi	✓	✓	✓	
Senna artemisioides ssp. *artemisioides x ssp. coriacea*	Desert Senna			✓	
Senna artemisioides ssp. *petiolaris*	Woody Cassia			✓	
Senna artemisioides ssp. *zygophylla*	Twin-leaf Desert Senna	✓			✓
Sida corrugata var.	Corrugated Sida			✓	✓
Vittadinia gracilis	Woolly New Holland Daisy			✓	
Exotic Flora		**VA1**	**VA2**	**VA3**	**VA4**
Asphodelus fistulosus	Onion Weed				✓
Brassica sp.		✓	✓		
Carrichtera annua	Ward's Weed	✓	✓	✓	✓
Hordeum sp.	Barley Grass			✓	
*Lycium ferocissimum**	African Boxthorn	✓	✓	✓	
Malva sp.	Mallow			✓	
*Marrubium vulgare**	Horehound			✓	
Medicago sp.	Medic			✓	
Mesembryanthemum nodiflorum	Slender Ice plant	✓	✓	✓	
Onopordum acaulon	Stemless Thistle/ Horse Thistle			✓	
*Reseda lutea**	Cut -leaf Mignonette			✓	
Solanum nigrum	Black Nightshade			✓	
Sonchus asper	Spiny Thistle/ Rough Sow-thistle			✓	
Sonchus sp.	Sow Thistle			✓	

*** = Declared weed**

Fauna	
Aves	
Acanthagenys rufogularis	Spiny-cheeked Honeyeater
Acanthiza chrysorrhoa	Yellow-rumped Thornbill
Acanthiza sp.	Thornbill
Anthochaera carunculata	Red wattlebird
Anthus novaeseelandiae	Australasian Pipit
Aphelocephala leucopsis	Southern Whiteface
Aquila audax	Wedge-tailed Eagle
Artamus cyanopterus	Dusky Woodswallow
Artamus personatus	Masked Woodswallow
Barnardius zonarius barnardi	Mallee Ringneck
Chenonetta jubata	Australian Wood Duck
Climacteris picumnus	Brown Treecreeper
Colluricincla harmonica	Grey Shrike-thrush
Coracina novaehollandiae	Black-faced Cuckoo-shrike
Corcorax melanorhamphos	White-winged Chough
Corvus coronoides	Australian Raven
Corvus mellori	Little Raven
Cracticus nigrogularis	Pied Butcherbird
Cracticus torquatus	Gray Butcherbird
Eolophus roseicapilla	Galah
Falco cenchroides	Nankeen Kestrel
Gavicalis virescens	Singing Honeyeater
Grallina cyanoleuca	Magpie-lark

Gymnorhina tibicen	Australian Magpie
Hirundo neoxena	Welcome Swallow
Lichenostomus ornatus	Yellow-plumed Honeyeater
Manorina flavigula	Yellow-throated Miner
Melanodryas cucullata cucullata	South-eastern Hooded Robin
Merops ornatus	Rainbow Bee-eater
Microeca fascinans assimilis	Jacky Winter
Microeca fascinans fascinans	Jacky Winter
Ocyphaps lophotes	Crested Pigeon
Pachycephala rufiventris	Rufus Whistler
Pardalotus striatus	Striated Pardalote
Petrochelidon nigricans	Tree Martin
Petroica goodenovii	Red-capped Robin
Pomatostomus ruficeps	Chestnut-crowned Babbler
Pomatostomus superciliosus	White-browed Babbler
Psephotus haematonotus	Red-rumped Parrot
Psephotus varius	Mulga Parrot
Ptilotula ornata	Yellow-plumed Honeyeater
Rhipidura leucophrys	Willie Wagtail
Smicrornis brevirostris	Weebill
Todiramphus pyrrhopygius	Red-backed Kingfisher
Vanellus tricolor	Banded Lapwing
Mammalia	
Lasiorhinus latifrons	Southern Hairy-nosed Wombat
Macropus rufus	Red Kangaroo
*Oryctolagus cuniculus**	European Rabbit
Reptilia	
Cryptoblepharus pannosus	Ragged Snake-eyed Skink
Eremiascincus richardsonii	Broad-banded Sand Swimmer
Gehyra lazelli	Southern Rock Dtella
Lerista sp.	Slider
Menetia greyii	Common Dwarf Skink
Morethia boulengeri	Boulenger's Skink
Morethia sp.	Morethia Skink
Pogona vitticeps	Central Bearded Dragon
Tiliqua rugosa	Sleepy Lizard
Unknown Scincidae	Skink

*** = introduced species**

Appendix B: Additional site photos.

Scattered Tree Assessment Photos

T03

T04

T05

T06

T07

T08

T09

T10

T11

T12

T013

VA 1.1 – Intact mallee woodland with chenopod understorey

VA 1.2 – Degraded Mallee Woodland with chenopod understorey

VA 1.3 – Regenerating chenopod shrubland

VA 1.4 - Relatively intact chenopod shrubland with emergent scattered overstorey

Appendix C – Threatened fauna and flora species excluded from assessment

A number of species which were identified in the threatened species search have been excluded from assessment here, as the habitat under application was considered completely unsuitable and would not support the species, or the threatened subspecies does not occur within the vicinity of the application area. Such species include:

Species (common name)	NPW Act	EPBC Act	Data source	Date of last record	Species known habitat preferences	Likelihood of use for habitat – Comments (Table 2)
AVES						
Platycercus elegans melanopterus (Kangaroo Island Crimson Rosella)		VU	3	2024	Occurs across Kangaroo Island occupying mesic forests and woodlands with dense, open or grassy understoreys, as well as remnant vegetation on private land, alongside fences and creeks, and roadsides (DAWE 2021c).	**Unlikely –** Subspecies in question is only found on Kangaroo Island, with the mainland population not of concern.
Strepera versicolor plumbea (Grey Currawong far-western subspecies)	EN		3	2019	Known to occur in the far NW corner of the State (Atlas of Living Australia, 2021).	**Unlikely –** Subspecies in question is only found in the far NW corner of SA along the WA border.
MAMMALIA						
Tachyglossus aculeatus multiaculeatus (Kangaroo Island Short-beaked Echidna)	EN	EN	3	2024	Occurs across Kangaroo Island, they prefer woodlands and other natural areas they are also seen on farmland and roadsides.	**Unlikely –** Subspecies in question is only found on Kangaroo Island, mainland species is not of concern.

Source; 1- BDBSA, 2 - AoLA, 3 – NatureMaps 4 – Observed/recorded in the field, 5 - Protected matters search tool, 6 – others
NPW Act; E= Endangered, V = Vulnerable, R= Rare
EPBC Act; Ex = Extinct, CR = Critically endangered, EN = Endangered; VU = Vulnerable

Attachment 1: Bushland / scattered tree assessment scoresheets associated with the proposed clearance.

Attachment 2: Site maps as shape files.

Attachment 3: Infrastructure designs – Robertstown Solar and BESS Master Plan

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