



Willogoleche 2 Wind Farm

Ecological Constraints Assessment

Final

December 2025

Willogoleche 2 Wind Farm

Ecological Constraints Assessment

Final

Prepared by
Umwelt (Australia) Pty Limited

On behalf of
Environmental Resources Management Pty Limited

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Acknowledgement of Country

Umwelt acknowledges the Traditional Owners of Country throughout Australia and their continuing values, culture and connection to the land, waters and sky.

We pay our respects to Elders past and present.

The below image is from the artwork *Yapung Maryiyang* (Pathway Forward) by Saretta Fielding.



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Executive Summary

ENGIE is planning a wind farm expansion of Willogoleche Wind Farm, referred to as Willogoleche Stage 2 Wind Farm (the Project). Updated Project designs were sent to Umwelt on 13 November 2025. The Project represents an extension to the existing Willogoleche Wind Farm (WWF) located approximately 6 kilometres (km) north-west of the Hallett township in South Australia. The WWF was constructed in November 2019 and operates 32 wind turbine generators (WTG) with a capacity of 119 megawatts (MW). The Project will comprise up to 20 WTG and ancillary infrastructure with an installed capacity between 110–160 MW.

The Project is immediately north-east of the WWF (separated by the Wilkins Highway), incorporating an area of approximately 1,550 hectares (ha) and located within the Goyder Regional Council Local Government Area (LGA) (the Project Area). The Project includes a range of ancillary infrastructure, including roads, electrical infrastructure, a permanent site operation and maintenance (O&M) facility, meteorological masts (met masts) and temporary construction facilities. ENGIE is also proposing the installation of a Battery Energy Storage System (BESS), which will be located in proximity to the Willalo Substation adjacent to the WWF site.

Umwelt has been engaged by Environmental Resources Management Australia Pacific Pty Ltd (ERM) to undertake the following for the Project:

- Review all the previous ecological studies that have been undertaken for the Willogoleche Wind Farm Project Area to:
- Identify and update flora and fauna values of Commonwealth significance (Matters of National Environmental Significance (MNES)) under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and state significance under the *National Parks and Wildlife Act 1972* (NPW Act), and the updated status for threatened species as they may have changed since previous surveys.
- Identify 'key ecological risk areas' within the Project Area and any areas to be excluded.
- Undertake a native vegetation survey across the Project Area (as per *Native Vegetation Act 1991* requirements).
- Determine the possible presence of MNES including, but not restricted to, Iron-grass Natural Temperate Grassland of South Australia (INTG) Threatened Ecological Community (TEC) and Pygmy Blue-tongue Lizard (PBTL) (*Tiliqua adelaidensis*).
- Undertake a bird/raptor survey across the site.
- Determine whether further ecological surveys are required to meet approval requirements.

Database searches were undertaken to determine the potential for threatened flora and fauna species and TECs (both Commonwealth and state listed) to occur within the Project Area, to provide an overall picture of the ecological constraints for this Project.

A total of eight vegetation associations (VAs) were mapped across the Project Area, which consisted of grasslands, shrublands and exotic vegetation (planted trees, pasture, and cropping). Targeted surveys of INTG were undertaken within the Project Area that identified this TEC in the Project Area, in VA A1. Different condition classes were identified with four patches qualifying as the EPBC Act TEC – Condition Class B. Based on the current design, Condition Class B Lomandra has been avoided.

A total of 0.94 ha of Condition Class C will be impacted based on the current designs. A total of six patches were assessed as Condition Class C as they did not meet the criteria for the TEC and therefore do not trigger the 'significance test' of the EPBC Act.

To observe and record bird and bat species that occur within the Project Area, Bird and Bat Utilisation Survey (BBUS) sites were set up across the Project Area, consisting of eight 2-ha bird survey sites and two bat survey sites. Targeted Wedge-tailed Eagle (WTE) (*Aquila audax*) and Little Eagle (*Hieraaetus morphnoides*) nest searches were conducted in vegetated areas within the Project Area.

Native vegetation throughout the Project Area provides habitat for threatened species, with one fauna species listed under the EPBC Act, identified as known to occur in the Project Area:

- Southern Whiteface (*Aphelocephala leucopsis*) – nationally Vulnerable.

An additional one species were identified in the desktop assessment as likely to occur within the Project Area:

- Pygmy Blue-tongue Lizard (*Tiliqua adelaidensis*) – nationally and state Endangered.

No EPBC Act listed threatened flora species were identified as likely or highly likely to occur in the Project Area.

A total of four state threatened species listed under the NPW Act are known to occur in the Project Area:

- *Cryptandra campanulata* (Long-flower Cryptandra) – state Rare.
- Black Falcon (*Falco subniger*) – state Rare.
- Little Eagle (*Hieraaetus morphnoides*) – state Vulnerable.
- Peregrine Falcon (*Falco peregrinus*) – state Vulnerable.

The desktop assessment identified an additional three flora species listed as threatened under the NPW Act as likely / highly likely to occur in the Project Area:

- *Maireana rohrlachii* (Rohrlach's Bluebush) – state Rare.
- *Maireana excavata* (Bottle Fissure-plant) – state Vulnerable.
- *Rumex dumosus* (Wiry Dock) – state Rare.

Additional constraints identified by the desktop assessment and field surveys conducted within the Project Area include raptors and introduced weeds that are Declared under the *Landscape South Australia Act 2019*.

Ecological constraints relevant to the Project Area are summarised in the Table below. Recommendations on how these constraints may be mitigated, are also listed below.

Constraint Summary	Constraint Details	Recommendations
Native vegetation	Five native vegetation associations occur within the Project Area.	• Consider the mitigation hierarchy at all stages of the Project design phase. • Utilise existing disturbed areas (such as pasture or cropping land) for Project infrastructure where possible.

Constraint Summary	Constraint Details	Recommendations
		- Where possible, avoid vegetation association A4: <i>Cryptandra campanulata</i> shrubland as this is a state listed threatened species, and it occurs in high numbers in these areas. - Seek native vegetation clearance approval under the NV Act. This includes the preparation of a Clearance Data Report and calculation of offset requirements. - Prior to the commencement of construction, develop a Construction Environmental Management Plan (CEMP) that implements measures to minimise, rehabilitate and offset unavoidable impacts to native vegetation.
EPBC Act listed species and habitat	- Iron-grass Natural Temperate Grassland of South Australia TEC - Southern Whiteface - Pygmy Blue-tongue Lizard - Flinders Ranges Worm-Lizard	- Minimise impact to native vegetation by applying the mitigation hierarchy during the project design phase and implementing a CEMP. - Avoid impacting areas assessed as likely PBTL habitat and minimise clearance in areas assessed as possible PBTL habitat, where possible. If impacting on these areas, consider undertaking targeted pre-construction PBTL surveys in March. - Minimise unnecessary clearance where possible, such as by including medium voltage cables in access tracks to limit impacts on high value fauna vegetation, in particular vegetation that may provide habitat for PBTL (grassland) and consider Project design that avoids this constraint consider undertaking targeted PBTL surveys in likely and possible habitat. - Undertake an assessment of potential impacts to MNES against the EPBC Act Significant Impact Guidelines and refer the Project to <i>Department of Climate Change, Energy, the Environment and Water</i> (DCCEEW) for assessment once Project designs are finalised. - Undertake targeted surveys during winter 2026 for Flinders Ranges Worm Lizard in suitable habitat in the Project Area to determine presence or absence.
NPW Act listed fauna	- Black Falcon - Little Eagle - Peregrine Falcon	- Consider the mitigation hierarchy at all stages of the Project design phase. - Prior to the commencement of construction, develop a CEMP that implements measures to minimise unavoidable impacts to native vegetation that provides habitat to NPW Act threatened species.
NPW Act listed flora	<i>Cryptandra campanulata</i> <i>Maireana rohrlichii</i> <i>Maireana excavata</i>	Avoid/minimise works in vegetation association A4 to avoid areas of high density <i>Cryptandra campanulata</i>.

Constraint Summary	Constraint Details	Recommendations
	<i>Rumex dumosus</i>	Microsite infrastructure to avoid known threatened flora and maintain protection buffers as far as practicable.
Declared weeds	<i>Chondrilla juncea</i> <i>Cynara cardunculus</i> ssp. <i>flavescens</i> <i>Echium plantagineum</i> <i>Lycium ferocissimum</i> <i>Marrubium vulgare</i> <i>Pinus halepensis</i> <i>Silybum marianum</i> <i>Xanthium spinosum</i>	- A CEMP and Operational Environmental Management Plan (OEMP) should be developed to mitigate spread of weeds including developing biosecurity measures relevant to the Project Area. - Comply with any legislative requirements during the Project's construction and operation.

Glossary and Abbreviations

Term/Abbreviation	Definition
AERS	Australian Ecological Research Services
ALA	Atlas of Living Australia
BAM	Bushland Assessment Method
BESS	Battery Energy Storage System
BDBSA	Biological Database of South Australia
BOM	Bureau of Meteorology
BBUS	Bird and Bat Utilisation Survey
CEMP	Construction Environmental Management Plan
DCCEEW	Department of Climate Change, Energy, the Environment and Water (Commonwealth)
DEM	The Department for Energy and Mining
DEW	Department of Environment and Water (South Australia)
EBS Ecology	Environmental and Biodiversity Services Pty Ltd
ENGIE	The proponent building Willogoleche Wind Farm Stage 2
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
ERM	Environmental Resources Management Pty Ltd (lead Environmental Approvals Consultant)
GDA2020	Geocentric Datum of Australia 2020
FRWL	Flinders Ranges Worm Lizard (<i>Aprasia pseudopulchella</i>)
HRE Act	<i>Hydrogen and Renewable Energy Act 2023</i> – renewable energy generation projects that have a storage capacity of more than 5 MW need approval under the HRE Act (replaces the PDI Act)
IBRA	Interim Biogeographical Regionalisation of Australia
INTG	Iron-grass Natural Temperate Grassland of South Australia
LGA	Local Government Area
LSA Act	<i>Landscape South Australia Act 2019</i>
MGA2020	Map Grid of Australia 2020
MNES	Matters of National Environmental Significance, as defined under the EPBC Act
Native vegetation	A plant or plants of a species indigenous to South Australia (including dead trees as specified in the <i>Native Vegetation Regulations 2017</i> , and planted vegetation protected under the NV Act such as SEB or Heritage Agreements)
NPW Act	<i>National Parks and Wildlife Act 1972</i>
NV Act	<i>Native Vegetation Act 1991</i>
NVC	Native Vegetation Council
O&M	Operation and Maintenance Facility

Term/Abbreviation	Definition
OEMP	Operational Environmental Management Plan
OTL	Overhead Transmission Line
PBTL	Pygmy Blue-tongue Lizard (<i>Tiliqua adelaidensis</i>)
PIRSA	Department of Primary Industries and Regions
PMST	Protected Matters Search Tool
The Project	Willogoleche Stage 2 Wind Farm
Project Area	Incorporates an area of approximately 1550 ha located within the Goyder Regional Council LGA
REIL	Renewable Energy Infrastructure Licence
SEB	Significant Environmental Benefit
Search Area	10 km buffer of the Project Area considered in the desktop assessment
TEC(s)	Threatened Ecological Community
WoNS	Weed of National Significance
WTE	Wedge-tailed Eagle (<i>Aquila audax</i>)
WTG	Wind Turbine Generators
WWF	Willogoleche Wind Farm (existing)

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1.0 Introduction

1.1 Willogoleche Stage 2 Wind Farm

The Willogoleche Stage 2 Wind Farm (the Project) represents an extension to the existing Willogoleche Wind Farm (WWF) located approximately six kilometres (km) north-west of the Hallett township in South Australia. The WWF was constructed in November 2019 and operates 32 wind turbine generators (WTG) with a capacity of 119 megawatts (MW). The Project will comprise up to 20 WTG and ancillary infrastructure with an installed capacity between 110–160 MW. Overhead Transmission Line (OTL) to nearby external transmission infrastructure, and other infrastructure associated with the wind farm.

Project design updates were provided to Umwelt by Environmental Resources Management Pty Ltd (ERM) on 13 November 2025.

1.2 Project Area

The Project Area is immediately north-east of the WWF (separated by the Wilkins Highway), incorporating an area of approximately 1,550 hectares (ha) and located within the Goyder Regional Council Local Government Area (LGA) (**Figure 1.1**). The Project includes a range of ancillary infrastructure, including roads, electrical infrastructure, a permanent site operation and maintenance (O&M) facility, meteorological masts (met masts) and temporary construction facilities. ENGIE is also proposing the installation of a Battery Energy Storage System (BESS), which will be in proximity to the Willalo Substation on the WWF site.

The Project will consist of the following key components:

- Up to 20 WTGs, with maximum blade tip height of up to 300 m, up to 209 m hub height, 182 m rotor diameter, and 91 m blade length.
- Ancillary infrastructure including roads and access tracks, WTG hardstands, met masts, underground cabling, overhead cabling, a substation, a BESS, and an O&M facility. The overhead transmission line (OTL) associated with the Project is proposed to run south, to the Willalo Substation, approximately 9 km from the Project Area boundary through Bluff Road.

1.3 Scope and Objectives

Umwelt has been engaged by ERM to undertake a detailed ecological assessment of the potential ecological impacts of the proposed Project, and where potential impacts have been identified, to propose recommendations for mitigation.

The scope of works for the Project included the following:

- Review all the previous ecological studies that have been undertaken for the Project Area to:
 - Identify and update flora and fauna values of Commonwealth (Matters of National Environmental Significance (MNES)) and state significance and determine the updated status of any threatened species.

- Identify 'key ecological risk areas' within the Project Area and any areas to be excluded.
- Undertake a native vegetation survey across the Project Area (as per *Native Vegetation Act 1991* requirements).
- Determine the possible presence of MNES including, but not restricted to, Iron-grass Natural Temperate Grassland (INTG) Threatened Ecological Community (TEC), Pygmy Blue-tongue Lizard (*Tiliqua adelaidensis*) and Southern Whiteface (*Aphelocephala leucopsis*).
- Report on Bird and Bat Utilisation Surveys (BBUS) undertaken in accordance with the Onshore Wind Farm Guidance (DCCEEW – *in draft* – May 2024).
- Determine whether further surveys are required to meet approval requirements.

1.3.1 Field Work and Reporting

Field work for the Project has been undertaken between 2023-2025. This included an initial assessment of the Project Area in spring of 2023, where BBUS surveys were initially determined (EBS 2024a), and have been undertaken on a seasonal basis for a period of two years thereafter finishing winter 2025 (**Table 1.1**) (as per the guidelines outlined in DCCEEW – *in draft* – May 2024).

An assessment of the various OTL route options was undertaken in spring of 2024 along with targeted surveys for INTG.

This report presents the updated results of the spring and spring 2024 surveys, including:

- A desktop assessment of the Project Area (encompassing both the wind farm and the OTL corridor) as described in **Section 1.3**.
- Details on the mapping of INTG within the Project Area, after further targeted surveys in spring of 2024 were completed.
- An update to ecological constraints initially summarised in the Draft Ecological Constraints Assessment from 2024 (EBS 2024a).
- Updated results of the eight BBUS surveys undertaken thus far in **Section 7.3.1**.

1.3.1.1 BBUS Surveys

All eight BBUS surveys have been undertaken within the Project Area. This is in line with the recommended number of seasonal surveys to be undertaken at any new proposed wind energy project, as per the Onshore Wind Farm Guidance (DCCEEW – *in prep* – May 2024). Separate detailed reports are available for each BBUS survey (**Table 1.1**). The results of all BBUS surveys to date are summarised in **Section 7.3.1** with a final BBUS report compiled separately (Umwelt, 2025a).

Table 1.1 BBUS Undertaken in the Wind Farm Project Area to Date

BBUS Survey Number	BBUS Survey	Reference
1	Spring 2023	EBS Ecology (EBS) (2023). Willogoleche Stage 2 Wind Farm Bird Utilisation Survey - Spring 2023. Report to Environmental Resources Management Australia Pty Ltd. EBS Ecology. Adelaide.

BBUS Survey Number	BBUS Survey	Reference
2	Summer 2024	EBS Ecology (EBS) (2024b) Willogoleche Stage 2 Wind Farm Bird Utilisation Survey - Summer 2024. Report to Environmental Resources Management Australia Pty Ltd. EBS Ecology, Adelaide.
3	Autumn 2024	EBS Ecology (EBS) (2024c) Willogoleche Stage 2 Wind Farm Bird and Bat Utilisation Survey - Autumn 2024. Report to Environmental Resources Management Australia Pty Ltd. EBS Ecology, Adelaide.
4	Winter 2024	Umwelt (Australia) Pty Ltd (Umwelt) (2024a). Willogoleche Stage 2 Wind Farm Bird Utilisation Survey - Winter 2024. Report to Environmental Resources Management Australia Pty Ltd. Umwelt, Adelaide.
5	Spring 2024	Umwelt (Australia) Pty Ltd (Umwelt) (2024b). Willogoleche Stage 2 Wind Farm Bird Utilisation Survey - Spring 2024. Report to Environmental Resources Management Australia Pty Ltd. Umwelt, Adelaide.
6	Summer 2025	Umwelt (Australia) Pty Ltd (Umwelt) (2025b). Willogoleche Stage 2 Wind Farm Bird Utilisation Survey - Summer 2025. Report to Environmental Resources Management Australia Pty Ltd. Umwelt, Adelaide.
7	Autumn 2025	Umwelt (Australia) Pty Ltd (Umwelt) (2025c). Willogoleche Stage 2 Wind Farm Bird Utilisation Survey - Autumn 2025. Report to Environmental Resources Management Australia Pty Ltd. Umwelt, Adelaide.
8	Winter 2025	Umwelt (Australia) Pty Ltd (Umwelt) (2025d). Willogoleche Stage 2 Wind Farm Bird Utilisation Survey - Autumn 2025. Report to Environmental Resources Management Australia Pty Ltd. Umwelt, Adelaide.

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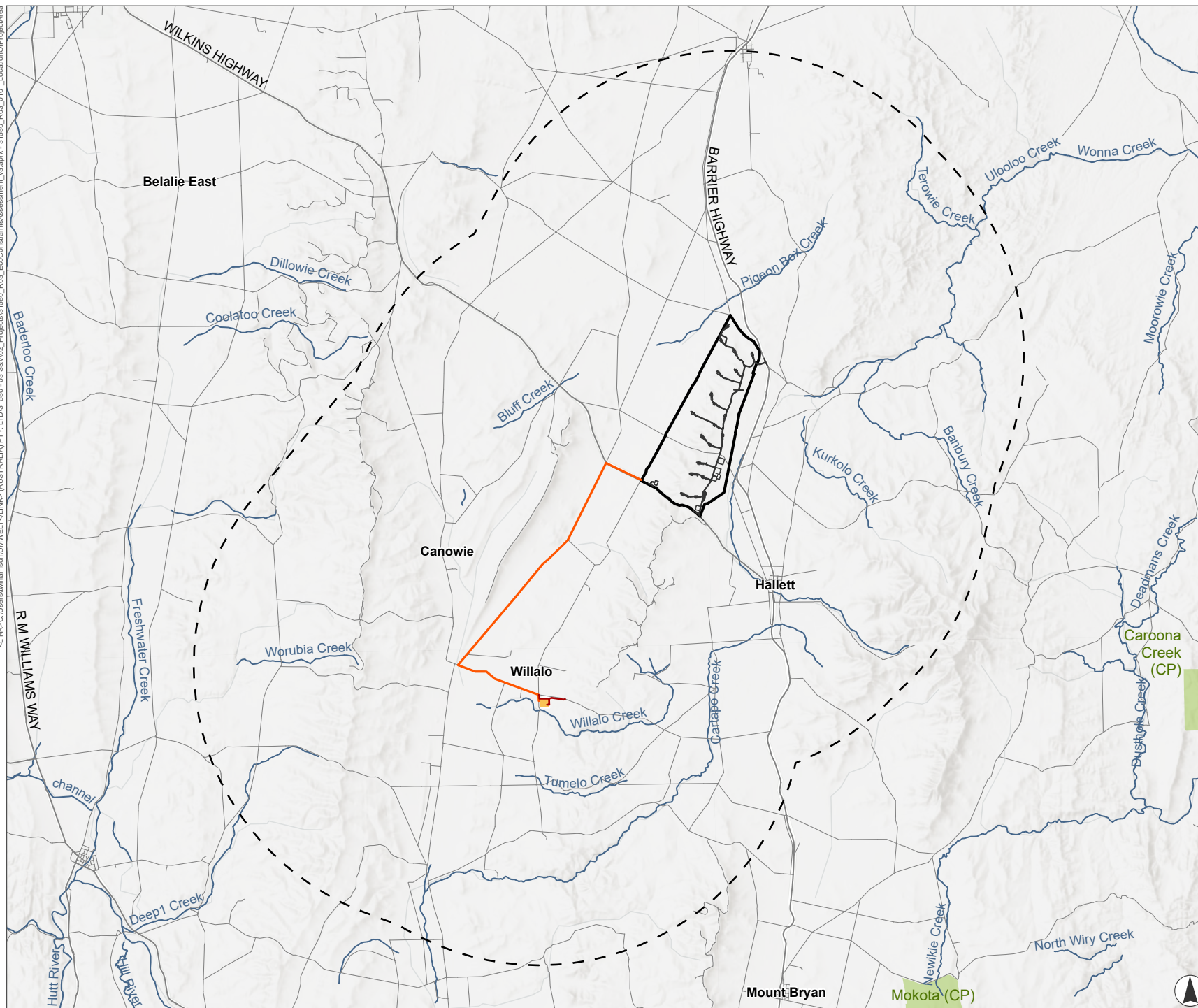
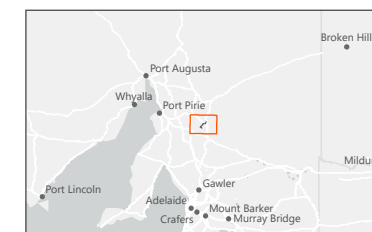


FIGURE 1.1
Location of the Project Area

- Legend**
- Wind Farm Project Area
 - Search Area (10km)
 - Civil Layout
 - OTL Corridor
 - BESS Footprint
 - BESS Transmission Line
 - Main road
 - Local road
 - Watercourse
 - NPSWA Reserve



0 2.5 5
Kilometres

Scale 1:200,000 at A4
GDA2020 MGA Zone 54



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2.0 Compliance and Legislative Summary

Impacts on ecological matters resulting from the Project, including clearing of vegetation and potential impact to threatened species and ecological communities, are subject to Commonwealth and state (South Australian) legislation (**Table 2.1**). The relevance of this legislation to the Project is discussed further in the following sections.

Table 2.1 Commonwealth and South Australian Legislation Relevant to Biodiversity Impacts of the Project

Authority	Legislation
Commonwealth	<i>Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)</i>
South Australia	<i>National Parks and Wildlife Act 1972 (NPW Act)</i>
	<i>Native Vegetation Act 1991 (NV Act)</i>
	<i>Landscape South Australia Act 2019 (LSA Act)</i>
	<i>Hydrogen and Renewable Energy Act 2023 (HRE Act)</i>

2.1 Environment Protection and Biodiversity Conservation Act 1999

The EPBC Act and the Environment Protection and Biodiversity Conservation Regulations 2000 provide a legal framework to protect and manage Nationally and Internationally important flora, fauna, ecological communities and heritage places – defined in the Act as MNES (DotE 2013a). The nine MNES protected under the Act are:

1. World Heritage properties.
2. National Heritage places.
3. Wetlands of international importance (listed under the Ramsar Convention).
4. Listed threatened species and ecological communities.
5. Migratory species protected under international agreements.
6. Commonwealth marine areas.
7. The Great Barrier Reef Marine Park.
8. Nuclear actions (including uranium mines).
9. A water resource, in relation to coal seam gas development and large coal mining development.

Two of the nine MNES protected under the Act are of relevance to the Project Area:

- Listed threatened species and ecological communities.
- Migratory species protected under International Agreements.

Any action that has, will have, or is likely to have a significant impact on MNES requires referral under the EPBC Act. Substantial penalties apply for undertaking an action that has, will have, or is likely to have a significant impact on a MNES without approval.

The EPBC Act Significant Impact Guidelines (DotE 2013a) provide overarching guidance on determining whether an action is likely to have a significant impact on a MNES.

2.2 National Parks and Wildlife Act 1972

Native plants and animals in South Australia are protected under the NPW Act. It is an offence to take a native plant or protected animal without approval. Threatened plant and animal species are listed in Schedules 7 (Endangered species), 8 (Vulnerable species) and 9 (Rare species) of the Act. Persons must not:

- Take a native plant on a reserve, wilderness protection area, wilderness protection zone, land reserved for public purposes, a forest reserve or any other Crown land.
- Take a native plant of a prescribed species on private land. Take a native plant on private land without the consent of the owner (such plants may also be covered by the NV Act).
- Take a protected animal or the eggs of a protected animal without approval.
- Keep protected animals unless authorised to do so.
- Use poison to kill a protected animal without approval.

Conservation rated flora and fauna species listed on Schedules 7, 8, or 9 of the NPW Act may occur within the Project Area. Persons must comply with the conditions imposed upon permits and approvals.

2.3 Native Vegetation Act 1991

The Project Area is subject to the NV Act. Native vegetation within the Project Area is protected under the NV Act and *Native Vegetation Regulations 2017*. Any proposed clearance of native vegetation in South Australia (unless exempt under the Native Vegetation Regulations 2017) is to be assessed against the NV Act Principles of Clearance and requires approval from the Native Vegetation Council (NVC). A net environmental benefit, either through contribution to the Native Vegetation Fund or via implementation of an on-ground Significant Environmental Benefit (SEB), is generally conditional on an approval being granted.

Native vegetation refers to any naturally occurring local plant species that are indigenous to South Australia, from small ground covers and native grasses to large trees and water plants.

“Clearance”, in relation to native vegetation, means:

- The killing or destruction of native vegetation.
- The removal of native vegetation.
- The severing of branches, limbs, stems, or trunks of native vegetation.
- The burning of native vegetation.

- Any other substantial damage to native vegetation, including the draining or flooding of land, or any other act or activity, that causes the killing or destruction of native vegetation, the severing of branches, limbs, stems or trunks of native vegetation or any other substantial damage to native vegetation.

Approval must be obtained before performing any activity that could cause substantial damage to native plants. This also applies to dead trees that may provide habitat for animals. These activities include but are not limited to:

- The cutting down, destruction or removal of whole plants.
- The removal of branches, limbs, stems, or trunks (including brush cutting and woodcutting).
- Burning.
- Poisoning.
- Slashing of understorey.
- Drainage and reclamation of wetlands.
- Grazing by animals (in some circumstances).
- Change of land use.

Under the NV Act, the NVC considers applications to clear native vegetation under ten principles. Native vegetation should not be cleared if it is significantly at odds with these principles:

1. It contains a high level of diversity of plant species.
2. It is an important wildlife habitat.
3. It includes rare, vulnerable, or endangered plant species.
4. The vegetation comprises a plant community that is rare, vulnerable, or endangered.
5. It is a remnant of vegetation in an area which has been extensively cleared.
6. It is growing in, or association with, a wetland environment.
7. It contributes to the amenity of the area.
8. The clearance of vegetation is likely to contribute to soil erosion, salinity, or flooding.
9. The clearance of vegetation is likely to cause deterioration in the quality of surface or underground water.
10. After clearance, the land is to be used for a purpose which is unsustainable.

The principles apply in all cases, except where the clearance of native vegetation fits an exemption set out in the Native Vegetation Regulations 2017 or can be classified as an 'intact stratum'. 'Intact stratum' means that applications will usually be denied when the vegetation has not been seriously degraded by human activity within the last 20 years.

All approved vegetation clearance must also be conditional on achieving a SEB to offset the clearance. The requirement for a SEB also applies to several of the exemptions. Potential SEB offsets include:

- The establishment and management of a set-aside area to encourage the natural regeneration of native vegetation.

- The protection and management of an established area of native vegetation.
- Entering into a Heritage Agreement on land where native vegetation is already established to further preserve or enhance the area in perpetuity.
- A payment to the Native Vegetation Fund – this is considered by the Native Vegetation Branch to be a last measure, if all other measures have been investigated and exhausted.

2.4 Landscape South Australia Act 2019

Under the LSA Act, regional landscape boards have been established. The aim is to deliver landscape related services to regional communities, including effective water management, pest plant and animal control, soil and land management and support for broader sustainable primary production programs. Under the LSA Act, landholders have a legal responsibility to manage declared pest plants and animals and prevent land and water degradation.

2.5 Hydrogen and Renewable Energy Act 2023 (HRE Act)

The Department for Energy and Mining (DEM) is the State Agency responsible for administering the *Hydrogen and Renewable Energy Act 2023* (HRE Act) and applications for a Renewable Energy Infrastructure Licence (REIL).

Under the new HRE legislation the ‘administrative unit of the Public Service, under a Minister, responsible for the administration of a prescribed Act’ is considered a prescribed body, which means that applications for licenses will be referred to the Department for Environment and Water (DEW) for review and comment on matters relevant to the legislation DEW administers. The relevant prescribed Acts administered by DEW related to this Project are:

- *Heritage Places Act 1993.*
- *Landscape South Australia Act 2019.*
- *National Parks and Wildlife Act 1972.*

3.0 Background Information

3.1 Administrative Boundaries

The Project Area occurs within the Regional Council of Goyder as well as within the Northern and Yorke Landscape Management Region (DEW 2024b).

3.2 Interim Biogeographical Regionalisation of Australia

Interim Biogeographical Regionalisation of Australia (IBRA) is a landscape-based approach to classifying the land surface across a range of environmental attributes, which is used to assess and plan for the protection of biodiversity (DCCEEW 2024a). Land is classified into bioregions, which is further divided into subregions, and then environmental associations. The Project Area occurs within the Flinders Block IBRA Region and the Broughton IBRA subregion (**Table 3.1**). The Project Area occurs predominantly within the Bald Hill IBRA Association and partially occurs within the Hansen IBRA Association and Clare IBRA Association.

Table 3.1 IBRA Bioregion, Subregion, and Environmental Association Environmental Landscape Summary

Flinders Lofty Block IBRA Bioregion	
Temperate to arid Proterozoic ranges, alluvial fans and plains, and some outcropping volcanics, with the semi-arid to arid north supporting native cypress, black oak (belah) and mallee open woodlands, Eremophila and Acacia shrublands, and bluebush/saltbush chenopod shrublands on shallow, well-drained loams and moderately-deep, well-drained red duplex soils. The increase in rainfall to the south corresponds with an increase in low open woodlands of <i>Eucalyptus obliqua</i> and <i>E. baxteri</i> on deep lateritic soils, and <i>E. fasciculosa</i> and <i>E. cosmophylla</i> on shallower or sandy soils.	
Broughton IBRA Subregion	
This subregion is characterised by a series of wide undulating intramontane basins with red duplex soils, separated by low but distinct northerly trending strike ridges. In the north the region leads into the Southern Flinders Ranges with no sharply defined landform boundary but a land use boundary marking the northern extremity of wheat cultivation. Due to widespread clearing for farming the only significant remnant of native vegetation is found in the Mt Remarkable area, where an open forest dominated by <i>Eucalyptus cladocalyx</i> or by <i>E. goniocalyx</i> and <i>E. leucoxyton</i> on reddish dense loams remains. Degraded remnants of <i>E. leucoxyton</i> and <i>E. odorata</i> woodlands can still be found on stony crests and steep slopes.	
Remnant vegetation	Approximately 10% (106,330 ha) of the subregion is mapped as remnant native vegetation, of which 3% (3,064 ha) is formally conserved.
Landform	Hills and valleys; alternating subparallel hilly ridges and valleys with a general N–S trend in north. In the south, hilly dissected tableland.
Geology	Dissected lateritized surface in south.
Soil	Hard setting loams with red clayey subsoils, highly calcareous loamy earths, Hard setting loams with mottled yellow clayey subsoil, Coherent sandy soils, Cracking clays.
Vegetation	Assumed native vegetation cover.
Conservation significance	55 species of threatened fauna, 113 species of threatened flora. 0 wetlands of national significance.

Flinders Lofty Block IBRA Bioregion	
Bald Hill IBRA Environmental Association	
Remnant vegetation	Approximately 30% (4,431 ha) of the association is mapped as remnant native vegetation, of which 0% (0 ha) is formally conserved.
Landform	Northerly trending strike ridges with dissected foot slopes on shale.
Geology	Quartzite, colluvium and shale.
Soil	Grey friable loams and hard pedal red duplex soils.
Vegetation	Open tussock sedgeland of Lomandra.
Conservation significance	1 species of threatened fauna, 12 species of threatened flora. 0 wetlands of national significance.
Clare IBRA Environmental Association	
Remnant vegetation	Approximately 30% (12,631 ha) of the association is mapped as remnant native vegetation, of which 0% (0 ha) is formally conserved.
Landform	A series of narrow crested ridges and gentle footslopes on metasediments.
Geology	Colluvium, metasediments and alluvium.
Soil	Hard pedal mottled-yellow soils, hard pedal red duplex soils, reddish powdery calcareous loams and brown self-mulching cracking clays.
Vegetation	Woodland of SA bluegum.
Conservation significance	34 species of threatened fauna, 58 species of threatened flora. 0 wetlands of national significance.
Hansen IBRA Environmental Association	
Remnant vegetation	Approximately 3% (3,738 ha) of the association is mapped as remnant native vegetation, of which 1% (28 ha) is formally conserved.
Landform	Gentle foot slopes forming extensive intramontane plains, with occasional narrow strike ridges on metasediments.
Geology	Colluvium, metasediments and alluvium.
Soil	Hard pedal red duplex soils, reddish powdery calcareous loams, brown self-mulching cracking clays and black self-mulching cracking clays.
Vegetation	Low shrubland of samphire.
Conservation significance	24 species of threatened fauna, 43 species of threatened flora. 0 wetlands of national significance.

3.3 Current and Historical Land Use

Land use within the area is predominantly agricultural (e.g., grazing for sheep and cattle and cropping). Native vegetation within the broader region has been extensively cleared for cropping or pasture. The Project Area is predominantly agricultural cleared land. The Project Area predominantly contains shrublands or grasslands along the western boundary while cropping and pasture dominates the eastern boundary. The area contains sparsely scattered trees along creek lines, with the majority of vegetated areas having been planted and consisting of non-local native species. Roadside vegetation mainly consists of degraded grasslands with some planted vegetation, mainly around infrastructure.

3.4 Historical Works Undertaken

Environmental Biodiversity Services (EBS Ecology) (now Umwelt) has previously conducted ecological surveys within the vicinity of the Project as part of Willogoleche Wind Farm (WWF - Stage 1). The results of this ecological work can be found in the following two reports:

- Hallett Wind Farm Ecological Assessment, March 2004 (EBS Ecology 2004).
- Willogoleche Wind Farm WTG01 – WTG026, June 2010 (EBS Ecology 2010).

4.0 Desktop Assessment Methods

A desktop assessment was undertaken to determine the potential for any additional threatened flora and fauna species and Threatened Ecological Communities (TECs) (both Commonwealth and State listed) to occur within the Project Area. This was achieved by undertaking database searches using a 10 km buffer around the Project Area (the Search Area).

4.1 Database Searches

4.1.1 Protected Matters Search Tool

The Protected Matters Search Tool (PMST) was used to generate a report on 12 March 2025 (DCCEEW 2024b) to identify nationally threatened flora and fauna, migratory fauna and TECs under the EPBC Act relevant to the Project Area.

Species and TECs identified in the PMST report that are known or likely to occur within 10 km of the Project Area were assessed for their likelihood of occurrence.

Species listed as marine under the EPBC Act, which are also not listed as threatened or migratory, only require EPBC Referral if they are likely to be significantly impacted within a Commonwealth Marine Area. As Commonwealth Marine Areas commence three nautical miles from shore, marine species are not relevant to this Project and have been excluded from further assessment. Further, fauna that complete their life cycle in marine habitats, such as sharks and whales, have also been excluded from this assessment, due to their irrelevance to the Project which is located on terrestrial land.

4.1.2 Biological Databases of South Australia

A Biological Database of South Australia (BDBSA) search was obtained from the Department of Environment and Water (DEW) on 11 December 2024 (Recordset number: DEWNRBDBSA241211-1) to identify NPW Act threatened flora and fauna species previously recorded within 10 km of the Project Area (DEW 2024a). A 10 km buffer was used to supplement the survey effort in providing a comprehensive ecological assessment. Where the 10 km was considered inadequate based on prior knowledge of the area, flora and fauna records were searched outside of the 10 km buffer to account for the paucity of surveys in the area.

The BDBSA is comprised of an integrated collection of species records from the South Australian Museum, conservation organisations, private consultancies, Birds SA, Birdlife Australia and the Australasian Wader Study Group, which meet DEW's standards for data quality, integrity and maintenance.

4.2 Literature Review

Existing information and literature relevant to the Project Area was reviewed, including:

- Aerial imagery.
- Previous reports.

- Spatial datasets, e.g., DEW biological survey sites, IBRA, vegetation cover, protected areas, vegetation floristic mapping, surface and ground water and roadside significant sites from NatureMaps (DEW 2024b).
- Reports, plans and web-based information, including:
 - EPBC Act species profiles, conservation advice and recovery plans.

The aforementioned information was used to assess:

- Vegetation cover within the Project Area and immediate surrounds.
- Potential vegetation associations present (including TECs).
- Flora and fauna species of conservation significance known or likely to occur within the Project Area.

4.3 Likelihood of Occurrence Assessment

Threatened species and ecological communities identified as potentially occurring in the Project Area by desktop research were assessed as to their Likelihood of Occurrence. Each threatened species and ecological community was rated as either ‘Known’, ‘Highly Likely’, ‘Likely’, ‘Possible’, or ‘Unlikely’ to occur in the Project Area according to the criteria listed in **Table 4.1**.

Table 4.1 Criteria for the Likelihood of Threatened Species

Likelihood	Criteria
Known / Highly Likely	• The species was recorded in the Project Area during the field survey; or • Recorded in the Search Area in last 10 years, the species has specific habitat requirements, and that habitat occurs, or may occur, in the Project Area; or • Recorded in the Search Area in last 10 years, the species does not have specific habitat requirements and there is intact native vegetation in the Project Area.
Likely	• Recorded in the Project or Search Area between 11 and 20 years ago, the species has specific habitat requirements, and that habitat occurs, or may occur, in the Project Area; or • Recorded in the Project or Search Area between 11 and 20 years ago, the species does not have specific habitat requirements and there is intact native vegetation in the Project Area. • Recorded in the Search or Project Area in the last 21–40 years, the species does not have specific habitat requirements and there is intact native vegetation in the Project Area; or • Recorded in the Search or Project Area in the last 21–40 years, the species has specific habitat requirements, and that habitat occurs, or may occur, in the Project Area.
Possible	• Recorded in the Search Area in last 10 or 20 years, the species has specific habitat requirements, but that habitat does not occur in the Project Area; or • Recorded in the Search Area in last 10 or 20 years, the species does not have specific habitat requirements, but there is no intact native vegetation in the Project Area; or • Recorded in the Search or Project Area between 21 and 40 years ago, but there is no intact native vegetation in the Project Area; or • Recorded in the Search or Project Area in the last 21–40 years, the species has specific habitat requirements, but that habitat does not occur in the Project Area; or

Likelihood	Criteria
	- Records of the species in the Project or Search Area are more than 40 years old, survey effort is not considered adequate, suitable habitat for the species occurs, or may occur, in the Project Area, the species is difficult to detect, and species of similar habitat needs have been recorded; or - There are no historical records of the species in the Search or Project Areas, survey effort is not considered adequate suitable habitat for the species occurs, or may occur, in the Project Area, the species is difficult to detect, and species of similar habitat needs have been recorded.
Unlikely	- Records of the species in the Project or Search Area are more than 40 years old and survey effort is considered adequate to detect the species; or - Records of the species in the Project or Search Area are more than 40 years old, survey effort is not considered adequate, but suitable habitat for the species does not occur in the Project Area; or - There are no historical records of the species in the Search or Project Areas and survey effort is considered adequate to detect the species; or - There are no historical records of the species in the Search or Project Areas survey effort is not considered adequate, but suitable habitat for the species does not occur in the Project Area; or - There are no historical records of the species in the Search or Project Areas survey effort is not considered adequate, suitable habitat for the species occurs, or may occur, in the Project Area, but the species is not difficult to detect and no species that require similar habitat needs have been recorded.

4.4 Desktop Limitations

Flora and fauna records were sourced from the BDBSA. The BDBSA only includes verified flora and fauna records submitted to DEW or partner organisations. It is recognised that knowledge is poorly captured, and it is possible that threatened species occur that are not reflected by database records. Although much of the BDBSA data have been through a variety of validation processes, the lists may contain errors and should be used with caution. DEW gives no warranty that the data are accurate or fit for any particular purpose of the user or any person to whom the user discloses the information.

BDBSA flora and fauna records were limited to a 10 km buffer around the Project Area. The reliability of the BDBSA data ranges from 100 m to over 100 km. Fauna species, in particular birds, can traverse distances more than the 10 km search buffer, and therefore, additional species may occur.

The findings and conclusions expressed by Umwelt are based solely upon information in existence at the time of the desktop assessment.

4.4.1 Updated OTL Corridor and BESS Alignment

Umwelt received updated designs for the OTL corridor and Battery Energy and Storage System (BESS) alignment on 13 November 2025. OTL survey was based on an initial corridor alignment, which may be subject to change during detailed design. Only part of the BESS layout was surveyed, making vegetation mapping and calculations approximate and based solely on the provided designs (at the time of writing). Additional on-ground surveys are likely to verify vegetation on both sides for the road corridor.

5.0 Field Survey Methods

5.1 Vegetation Surveys

5.1.1 Bushland Assessment Method

Vegetation Associations and condition were surveyed according to the Bushland Assessment Method (BAM), which is derived from the Nature Conservation Society of South Australia's Bushland Condition Monitoring methodology (Croft *et al.* 2007). The BAM is used to assess areas of native vegetation requiring clearance and calculate the vegetation condition and SEB requirements. Details of site selection/stratification and assessment protocols, and the biodiversity value components assessed, are outlined in the NVC Bushland Assessment Manual (NVC 2024). Where possible, all plant species were identified in the field. Plants that could not be identified during any given survey period were collected as voucher specimens, stored appropriately and identified later.

A total of 32 sites were surveyed using BAM, with locations chosen based on differences in vegetation composition and condition. The locations of vegetation survey sites (or BAM sites) are summarised in **Table 5.1** and shown in **Figure 7.1**.

Table 5.1 The Locations of Vegetation Survey Sites (BAM sites)

BAM Site	Latitude	Longitude
A1a	-33.3517	138.8585
A1b	-33.3763	138.8575
A1c	-33.3710	138.8575
A1d	-33.3671	138.8556
A2a	-33.3593	138.8687
A2b	-33.3558	138.8691
A2c	-33.3534	138.8643
A2d	-33.3389	138.8814
A2e	-33.3440	138.8728
A2f	-33.3717	138.8318
A3a	-33.3392	183.8858
A3b	-33.3656	138.8505
A3c	-33.3565	138.8571
A3d	-33.3749	138.8400
A3e	-33.4441	138.7966
A3F	-33.4263	138.8043
A3g	-33.4038	138.8203
A3h	-33.3996	138.8156
A3i	-33.4350	138.7657
A3j	-33.4117	138.7902
A3k	-33.4020	138.8004
A3l	-33.3962	138.8079

BAM Site	Latitude	Longitude
A3m	-33.4466	138.7938
A3n	-33.4437	138.7850
A3o	-33.4430	138.7831
A4a	-33.3680	138.8600
A4b	-33.3460	138.8627
A4c	-33.4389	138.7966
A5a	-33.3566	138.8688
A5b	-33.3685	138.8636
A5c	-33.3711	138.8591
A8	-33.3922	138.8281

Vegetation associations A6 and A7 were not surveyed according to the Bushland Assessment Method as they are modified landscapes not considered to be native vegetation.

5.1.2 Threatened Ecological Community Surveys

5.1.2.1 Iron-grass Natural Temperate Grassland of South Australia

Targeted surveys were undertaken in areas of *Lomandra* sp. (Iron grass) grassland to determine if the areas qualified as a TEC under the EPBC Act. Surveys followed the criteria outlined in the EPBC Act Policy Statement 3.7: Peppermint Box (*Eucalyptus odorata*) Grassy Woodland of South Australia and Iron-grass Natural Temperate Grassland of South Australia (DEWR 2007).

The extent of *Lomandra* sp. grassland patches were mapped aerially on a tablet and then calculated. Species diversity totals were obtained from a 50 m x 50 m quadrat for each representative area. All species observed within the quadrats were recorded with totals compared against the benchmark criteria outlined in DEWR (2007).

Thirteen targeted surveys were undertaken in areas of *Lomandra* sp. (Iron grass) grassland during the 2023 spring survey to determine if the areas qualified as a TEC under the EPBC Act. During the 2024 spring survey, four sites (LOM 2, 7, 10 and 11) were resurveyed and two additional sites (LOM 14 and 15) were set up and surveyed. The locations of all 19 survey sites are provided in **Table 5.2**.

Table 5.2 The Locations of INTG Assessment Sites

INTG Site	Latitude	Longitude
LOM 1	-33.3418	138.8841
LOM 2	-33.3517	138.8585
LOM 2-RE	-33.35745	138.8633
LOM 3	-33.3343	138.8850
LOM 4	-33.3710	138.8576
LOM 5	-33.3671	138.8556
LOM 6	-33.3682	138.8602
LOM 7	-33.3530	138.8648
LOM 7-RE	-33.3528	138.8655

INTG Site	Latitude	Longitude
LOM 8	-33.3439	138.8766
LOM 9	-33.3446	138.8754
LOM 10	-33.3444	138.8715
LOM 10-RE	-33.3443	138.8716
LOM 11	-33.3655	138.8526
LOM 11-RE	-33.3654	138.8525
LOM 12	-33.3600	138.8558
LOM 13	-33.3763	138.8575
LOM 14	-33.3409	138.8698
LOM 15	-33.3511	138.8705

5.2 Fauna Surveys

5.2.1 Bird and Bat Utilisation Surveys

Ten Bird and Bat Utilisation Survey (BBUS) sites, comprising of eight bird and two bat survey sites (**Table 5.3**), were established in the Project Area during the 2023 spring survey (EBS Ecology 2023). The aim was to sample a range of habitats and to achieve a spread of sites across the wind farm Project Area. This was to ensure that relevant habitat types were represented to inform survey design, and to optimise the detection of bird assemblages. Bird and Bat Utilisation Surveys form part of the advice in the Onshore Wind Farm Guidance – Best practice approaches when seeking approval under Australia’s national environment law (devised by the Department for Climate Change, Environment, Energy and Water (DCCEE – *in prep* – May 2024)) that provides guidance for wind farm proponents for assessments under the EPBC Act. The location of each BBUS site is shown in **Figure 5.1**. A summary of the results of the eight seasonal BBUS undertaken is presented here (see **Section 7.3.1**) with the results of each individual BBUS presented individually in each seasonal summary report.

Table 5.3 Bird and Bat Survey Site Locations, Vegetation Associations and Broad Habitat Types

Site ID	Type	Vegetation association	Habitat	Latitude	Longitude
1	Bird	<i>Lomandra multiflora</i> grassland	Grassland	-33.3707	138.8489
2	Bird	<i>Maireana aphylla</i> shrubland	Shrubland	-33.3558	138.8691
3	Bird	<i>Austrostipa</i> sp. and <i>Rytidosperma</i> sp. grassland	Grassland	-33.3396	138.8852
4	Bird	Planted trees	Amenity trees	-33.3699	138.8442
5	Bird	<i>Austrostipa</i> sp. and <i>Rytidosperma</i> sp. grassland	Grassland	-33.3712	138.8580
6	Bird	<i>Maireana aphylla</i> shrubland	Shrubland	-33.3530	138.8630

Site ID	Type	Vegetation association	Habitat	Latitude	Longitude
7	Bird	<i>Maireana aphylla</i> shrubland	Shrubland	-33.3446	138.8736
8	Bird	Exotic grassland	Pasture / Cropping Land	-33.3685	138.8636
9 (Anabat 1)	Bat	<i>Austrostipa</i> sp. and <i>Rytidosperma</i> sp. grassland	Grassland	-33.3392	138.8866
10 (Anabat 2)	Bat	Exotic grassland	Pasture / Cropping Land	-33.3578	138.8780

5.2.1.1 Bird Survey Sites

Bird surveys were conducted utilising methods consistent with the Birdlife Australia systematic bird surveys (2 ha, 20-minute search) (Birdlife Australia 2024a) recommended survey method (as per the Guidelines for Detecting Birds Listed as Threatened under the *Environment Protection and Biodiversity Conservation Act 1999* (Magrath, Weston, Olsen, & Antos 2010) and Department of Environment and Water (DEW) biological survey methods (Owens 2000). The surveys were conducted twice at each site, once in the morning and once in the afternoon. Data collected for each observation were as follows:

- Species observed.
- Number of individuals.
- Height above ground (m) (minimum and maximum).
- Distance from observer (m).
- Behaviour:
 - Flying in a single direction.
 - Flying (hovering or circling) over or around a single point.
 - Foraging (feeding) on ground.
 - Perching/resting/walking on ground.
 - Perching/resting/climbing on trees or shrubs.
- Direction of flight where relevant.

All birds observed or heard while traversing the monitoring site were recorded, including those that were observed directly outside of the 2 ha area within the same vegetation association up to a distance where a positive species identification could reasonably be obtained. Birds outside of the 2 ha area were recorded as being offsite. Behaviour was assigned to birds as per the activity undertaken upon initially being observed, or if disturbed by surveyors, prior to being disturbed. For example, for birds commonly observed for the first time after being flushed, behaviour would be recorded as resting on ground or foraging on ground. If a bird flew off (such as leaving the area or flying between trees) subsequent flying information was also collected, such as maximum and minimum flight height. Recording flight height details can assist with assessing collision risk of bird species colliding with turning blades. As such, flight height and direction details were recorded for all bird species observed flying during the BBUS.

5.2.1.2 Bat Survey Sites

Bats were surveyed by recording calls of bats flying over the Project Area at night. Anabat recorders were used to detect the high frequency contact and hunting calls of micro-bat species. Two recorders were placed at locations, likely to be used by bats as flyways, or those that provide roosting habitat. This included areas such as drainage lines that provide clear flight paths and are surrounded by tree hollows and larger trees. The recorders were set to record continuously between sunset and sunrise and were placed securely at or near ground level with the units microphone aimed towards the sky. Sonograms collected by the Anabat recorders were analysed using Analook software. They were compared to reference calls of bat species known to occur in the relevant region of South Australia, for identification.

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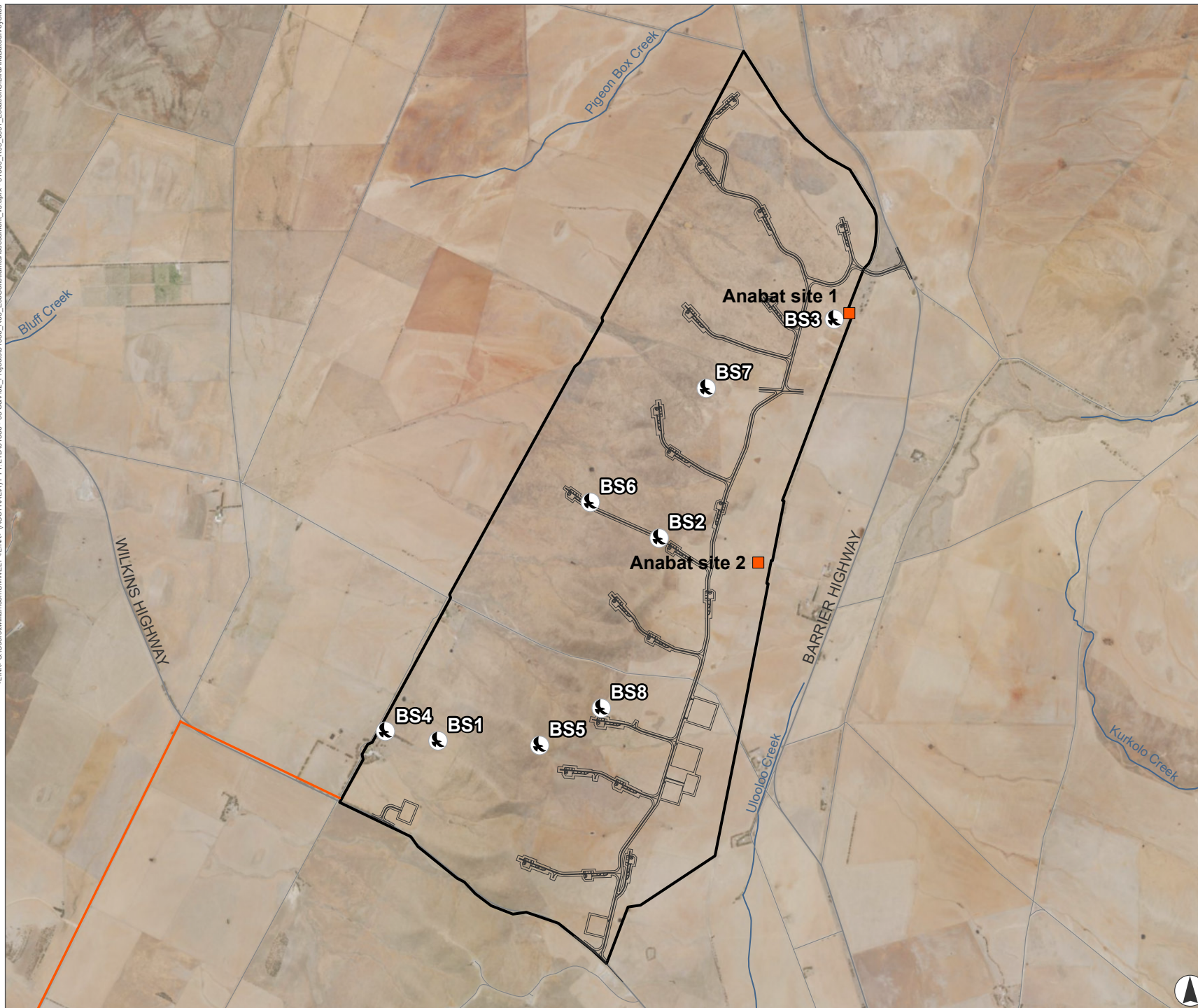


FIGURE 5.1
Location of Bird and Bat Survey Sites in the Project Area

Legend

- Wind Farm Project Area
- Civil Layout
- OTL Corridor
- Bat Survey Site
- Bird Survey Site
- Main road
- Local road
- Watercourse



Scale 1:44,170 at A4
GDA2020 MGA Zone 54



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5.2.2 Pygmy Blue-tongue Lizard Surveys

Grassland habitats recorded within the Project Area were broadly assessed for suitability for the Nationally Endangered Pygmy Blue-tongue Lizard (*Tiliqua adelaidensis*) (PBTL).

Broad PBTL surveys were undertaken to identify suitable PBTL habitat attributes as outlined in **Table 5.4**. A total of 1,070 spider burrows were inspected using a videoscope, which has an illuminated articulating insertion probe approximately 8 mm in diameter, and a digital video display screen (Yateks M-Series).

This survey method used was consistent with the *Survey Guidelines for Australia's Threatened Reptiles: Guidelines for Detecting Reptiles Listed as Threatened under the Environment Protection and Biodiversity Conservation Act 1999* (DSEWPC 2011).

Table 5.4 Suitable and Unsuitable Pygmy Blue-tongue Lizard Habitat Attributes

Suitable habitat attributes	Unsuitable habitat attributes
Spider burrows within native grasslands and open to very open low shrublands (with or without an exotic plant component)	Areas that been previously cropped
	Areas lacking spider burrows
Soil of heavy sandy loam (red-brown earth)	Areas containing dense ground or mid cover vegetation
Foot slopes of hills	Steep terrain and exposed ridgelines
Sheltered areas of foot slopes	Overly rocky areas

Additionally, in the absence of formal habitat likelihood definitions, Umwelt have based likelihood mapping around field data collected within the Project Area since 2023, significant PBTL field work conducted by Umwelt in the mid north of South Australia, published research and the Approved Conservation advice for PBTL (DCCEEW 2023f).

Umwelt has developed the following PBTL habitat categories for the Project:

- Likely habitat has been conservatively mapped by placing a 50 m buffer around a known PBTL record, based on the typical foraging range of 20 m for PBTL (DCCEEW 2023f). The surrounding vegetation association is also considered when evaluating likely habitat and whether or not it is isolated by large tracts of unsuitable habitat or another significant barrier.
- Possible habitat has been based on suitable vegetation types (*Austrostipa* spp. or *Lomandra* grassland) which is not isolated by large tracts of unsuitable habitat or another significant barrier.
- Unlikely habitat has been mapped over dense shrubland (such as shrubland dominated by *Maireana aphylla*), cropping areas, exotic grassland, existing infrastructure such as roads and tracks or other areas with significant soil disturbance which are unsuitable for PBTL and destroy spider burrows.

5.2.3 Raptor Nests and Habitat

Additionally, vegetated areas within the Project Area were opportunistically searched during BBUS for the presence of Wedge-tailed Eagle (*Aquila audax*) and Little Eagle (*Hieraaetus morphnoides*) nests and/or other signs of breeding activity.

5.2.4 Opportunistic Fauna

All native and exotic vertebrate fauna species opportunistically encountered during the field survey (directly observed, or tracks, scats, burrows, nests, and other signs of presence) were recorded across the Project Area. Potential fauna refuge sites, such as hollows, rock crevices and creek lines were noted as an indication of availability of suitable habitat. Particular attention was given to identifying potential habitat for threatened species. For each opportunistic fauna observation, the species, number of individuals, GPS location, detection methodology (sight, sound, or sign) and habitat were recorded.

5.3 Survey Limitations

A broad assessment of the Project Area was undertaken in the 2023 spring survey. As such, select areas were surveyed for PBTL based on preferred habitat, which did not cover the entire site at the time of survey. Although the surveys provided a good indication of the likelihood of occurrence of these species, it is recommended that targeted surveys for the PBTL are conducted during late summer and early autumn pre-construction.

Additionally, the dry conditions in the two months prior to both the 2023 and 2024 spring surveys resulted in a short flowering season for annuals. The dryer conditions may have contributed to a lower abundance of broad-leaved herbaceous species that form part of the indicators for the condition class of INTG.

5.3.1 Spatial Data

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

Datum: Geocentric Datum of Australia 2020 (GDA2020).

Projection: Map Grid of Australia 2020 (MGA2020), Zone 54.

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

6.0 Updated Desktop Assessment Results

6.1 Matters of National Environmental Significance

The PMST report identified 2 TEC, 25 threatened species and 8 migratory species protected under the EPBC Act, which may be relevant to the Project Area. Out of the 25 threatened species, this consisted of 11 plants, 11 birds, 2 reptiles and 1 fish. **Table 6.1** summarises the results of the PMST report and the relevant MNES are discussed further below.

The full likelihood of assessment for these species are provided in **Appendix A**.

Some Matters that are not impacted by, or relevant to the Project, as they may be located outside of the Project Area (such as fish species) and/or there is no suitable habitat present within the Project Area, are therefore not discussed further in this report.

Table 6.1 MNES Identified by the PMST and BDBSA Database Search

Matters of National Environment Significance under EPBC Act	Identified within the Search Area
World Heritage Properties	None
National Heritage Properties	None
Wetlands of International Significance	1
Great Barrier Reef Marine Park	None
Commonwealth Marine Areas	None
Listed Threatened Ecological Communities	2
Listed Threatened Species	25 (11 flora, 14 fauna)
Listed Migratory Species	8

6.1.1 Wetlands of International Significance

One Wetland of International Significance has been identified by the PMST as occurring within the Search Area: The Coorong and Lakes Alexandrina and Albert Wetland. The Project Area is located approximately 200 km north of these wetland systems and does not fall within their catchment area. The wetlands are therefore unlikely to be impacted by the Project and are not discussed further in this report.

6.1.2 Threatened Ecological Communities

Two EPBC Act listed TEC were identified by the PMST as potentially occurring within the Search Area (**Table 6.2**): Iron-grass Natural Temperate Grassland of South Australia which is known to the Project Area and Peppermint Box (*Eucalyptus odorata*) Grassy Woodland of South Australia which was not recorded within the Project Area.

Table 6.2 TECs Identified by the PMST (DCCEEW 2024b) as Potentially Occurring Within 10 km of the Project Area

Threatened Ecological Community	EPBC Act Conservation Status	PMST type of occurrence within Search Area	Occurrence within Project Area
Iron-grass Natural Temperate Grassland of South Australia.	CE	Community likely to occur	Present
Peppermint Box (<i>Eucalyptus odorata</i>) Grassy Woodland of South Australia.	CE	Community likely to occur	Absent

EPBC Act Conservation Status: CE: Critically Endangered

6.1.3 Threatened Flora and Fauna

Of the 25 nationally threatened species identified in the PMST, three species (one flora and two fauna) have been assessed as Known to Occur within the Search Area, this includes:

- *Codonocarpus pyramidalis* (Slender Bell-fruit)
- Southern Whiteface (*Aphelocephala leucopsis leucopsis*)
- *Tiliqua adelaidensis* (Pygmy Bluetongue Lizard).

An additional four species were assessed by the PMST as Likely to occur.

Table 6.3 Likelihood of Occurrence of Nationally Threatened Flora and Fauna Species

Scientific name	Common name	Conservation status		Data source	PMST Likelihood / Year of Last Record	Umwelt Likelihood of occurrence within Project Area
		Aus	SA			
FLORA						
<i>Codonocarpus pyramidalis</i>	Slender Bell-fruit	VU	E	1, 2	Known / 1986	Possible
<i>Pterostylis despectans</i>	Mt Bryan Greenhood	EN	E	1, 2	Likely to occur/ 2007	Possible
FAUNA						
<i>Aphelocephala leucopsis leucopsis</i>	Southern Whiteface	VU	-	1, 2, 3	Known / 2022	Known
<i>Neophema chrysostoma</i>	Blue-winged Parrot	VU	V	1	Likely	Possible
<i>Stagonopleura guttata</i>	Diamond Firetail	VU	V	1, 2	Likely / 1998	Possible
<i>Aprasia pseudopulchella</i>	Flinders Worm-lizard	VU	-	1	Likely	Possible
<i>Tiliqua adelaidensis</i>	Pygmy Blue-tongue Lizard	EN	E	1, 2	Known / 2023	Likely

Conservation status:

Aus: Australia (*Environment Protection and Biodiversity Conservation Act 1999*). SA: South Australia (*National Parks and Wildlife Act 1972*).

Conservation Codes: EN/E: Endangered. VU/V: Vulnerable. R: Rare.

Source of Information:

1. EPBC Act Protected Matters Report (DCCEEW 2025a) – 10 km buffer applied to Project Area.

2. Biological Database of South Australia data extract (DEW 2024a) (Recordset number DEWNRBDBSA241211-1) - 10 km buffer applied to Project Area.

3. Observed during the field assessment.

6.2 Matters of State Environmental Significance

6.2.1 Threatened Flora

The BDBSA identified 33 threatened flora species that may occur in the Search Area. Of these, 13 threatened flora species have been assessed as potentially occurring within the Project Area, as described in **Table 6.4**. Three species were determined as likely occur within the Project Area: *Maireana excavata* (Bottle Fissure-plant), *Maireana rohrlachii* (Rohrlach's Bluebush) and *Rumex dumosus* (Wiry Dock). These species are further discussed in **Section 8.3.1**.

BDBSA threatened flora records within the Search Area are provided in **Figure 6.1** and **Figure 6.2**.

The full likelihood of assessment is provided in **Appendix A**.

Table 6.4 Likelihood of Occurrence of Threatened Flora Species within 10 km of the Project Area.

Scientific name	Common name	Conservation status		Data source	PMST Likelihood / Year of Last Record	Umwelt Likelihood of occurrence within Project Area
		Aus	SA			
<i>Austrostipa gibbosa</i>	Swollen Spear-grass	-	R	2	2022	Possible
<i>Cryptandra campanulata</i>	Long-flower Cryptandra	-	R	2, 3	2023	Known
<i>Cullen parvum</i>	Small Scurf-pea	-	V	2	1988	Possible
<i>Eryngium ovium</i>	Blue Devil	-	V	2	2006	Possible
<i>Maireana excavata</i>	Bottle Fissure-plant	-	V	2	2013	Likely
<i>Maireana rohrlachii</i>	Rohrlach's Bluebush	-	R	2	2013	Likely
<i>Ptilotus angustifolius</i>	Narrow-leaf Yellow-tails	-	E	2	1994	Possible
<i>Ptilotus erubescens</i>	Hairy-tails	-	R	2	2020	Possible
<i>Pycnosorus globosus</i>	Drumsticks	-	V	2	1994	Possible
<i>Rumex dumosus</i>	Wiry Dock	-	R	2	2022	Likely
<i>Sclerolaena muricata</i> var. <i>villosa</i>	Five-spine Bindyi	-	R	2	1974	Possible

Conservation status:

Aus: Australia (*Environment Protection and Biodiversity Conservation Act 1999*). SA: South Australia (*National Parks and Wildlife Act 1972*). Conservation Codes: EN/E: Endangered. VU/V: Vulnerable. R: Rare.

Source of Information:

1. EPBC Act Protected Matters Report (DCCEEW 2025a) – 10 km buffer applied to Project Area.
2. Biological Database of South Australia data extract (DEW 2024a) (Recordset number DEWNRBDBSA241211-1) - 10 km buffer applied to Project Area.
3. Observed during the field assessment.

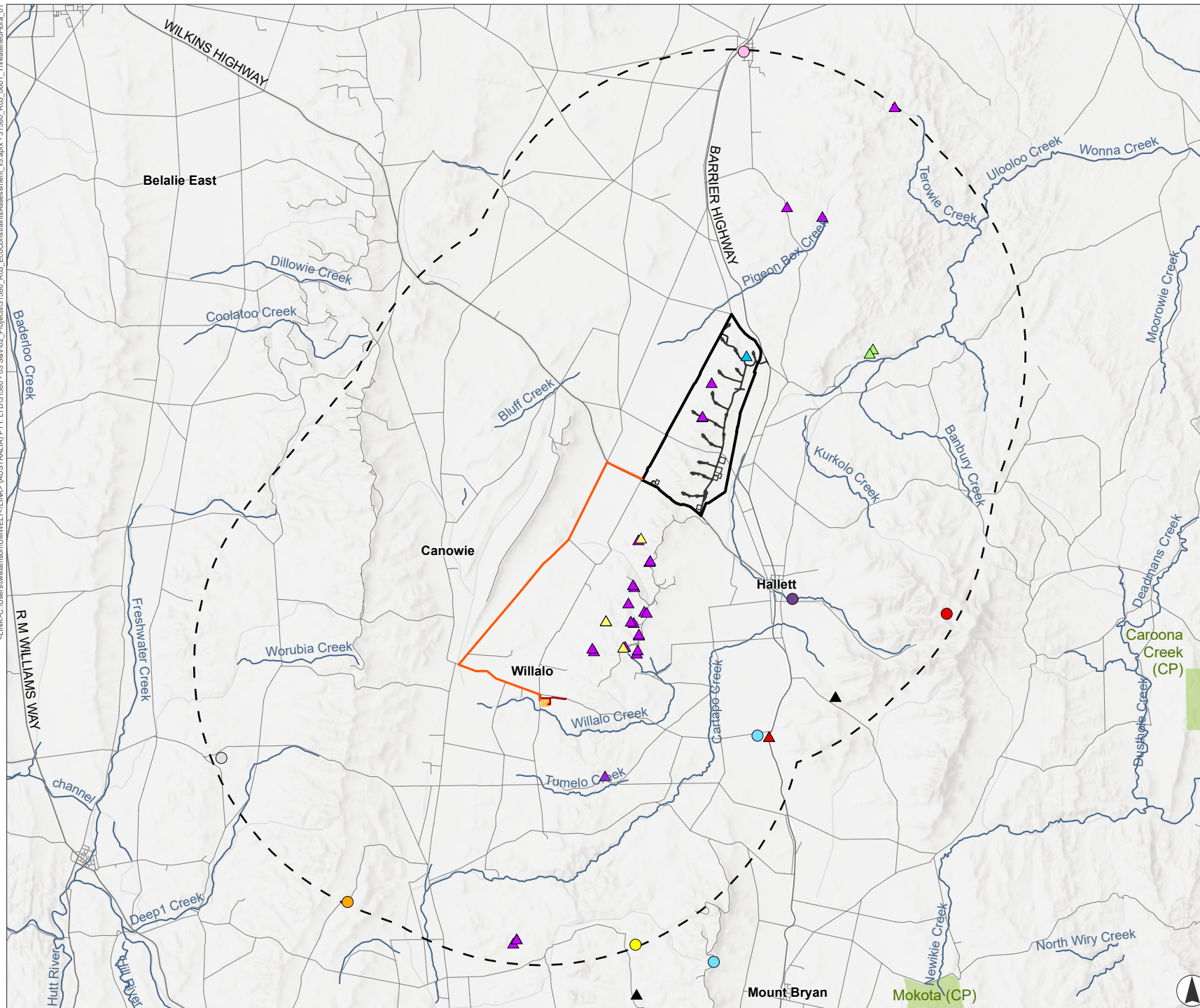


FIGURE 6.1
Nationally and State
Threatened Flora identified
within 10 km of the Project
Area (1 of 2) (DEW 2024)

Legend

- Wind Farm Project Area
- Search Area (10km)
- Civil Layout
- OTL Corridor
- BESS Footprint
- BESS Transmission Line
- Main road
- Local road
- Watercourse
- NPWSA Reserve

BDBSA Threatened Flora

- ▲ *Acacia iteaphylla* (Flinders Ranges Wattle) NPW: R
- ▲ *Acacia trineura* (Three-nerve Wattle) NPW: E
- ▲ *Austrostipa gibbosa* (Swollen Spear-grass) NPW: R
- ▲ *Codonocarpus pyramidalis* (Slender Bell-fruit) NPW: E, EPBC: VU
- ▲ *Cryptandra campanulata* (Long-flower Cryptandra) NPW: R
- ▲ *Cullen parvum* (Small Scurf-pea) NPW: V
- *Diuris behrii* (Behr's Cowslip Orchid) NPW: V
- *Eragrostis infecunda* (Barren Cane-grass) NPW: R
- *Eryngium ovinum* (Blue Devil) NPW: V
- *Eryngium vesiculosum* (Prostrate Blue Devil) NPW: R
- *Eucalyptus albens* (White Box) NPW: R
- *Eucalyptus bicostata* (Southern Blue Gum) NPW: V
- *Lachnagrostis limitanea* (Spalding Blown-grass) NPW: E, EPBC: EN

0 2.5 5
Kilometres

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GDA2020 MGA Zone 54



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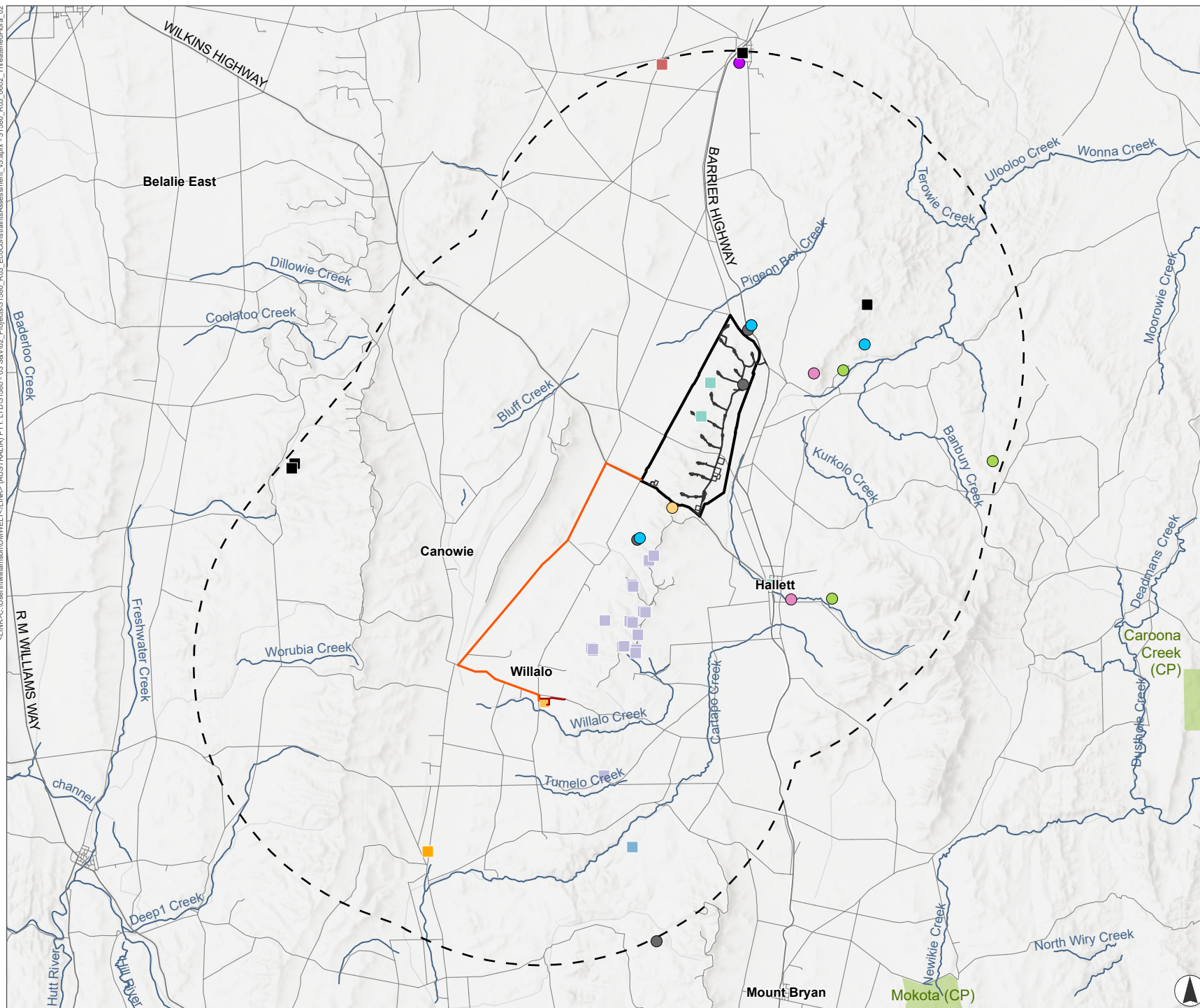


FIGURE 6.2
Nationally and State
Threatened Flora identified
within 10 km of the Project
Area (2 of 2) (DEW 2024)

- Legend**
- Wind Farm Project Area
 - Search Area (10km)
 - Civil Layout
 - OTL Corridor
 - BESS Footprint
 - BESS Transmission Line
 - Main road
 - Local road
 - Watercourse
 - NPWSA Reserve
- BDBSA Threatened Flora**
- Maireana excavata* (Bottle Fissure-plant) NPW: V
 - Maireana rohrlachii* (Rohrlach's Bluebush) NPW: R
 - Olearia pannosa* ssp. *pannosa* (Silver Daisy-bush) NPW: V, EPBC: VU
 - Philotheca angustifolia* ssp. *angustifolia* (Narrow-leaf Wax-flower) NPW: R
 - Pterostylis despectans* (Mt Bryan Greenhood) NPW: E, EPBC: EN
 - Ptilotus angustifolius* (Narrow-leaf Yellow-tails) NPW: E
 - Ptilotus erubescens* (Hairy-tails) NPW: R
 - Pycnosorus globosus* (Drumsticks) NPW: V
 - Rumex dumosus* (Wiry Dock) NPW: R
 - Sclerolaena muricata* var. *villosa* (Five-spine Bindy) NPW: R
 - Swainsona behriana* (Behr's Swainson-pea) NPW: V
 - Wurmbea latifolia* ssp. *latifolia* (Broad-leaf Nancy) NPW: V

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Kilometres

Scale 1:200,000 at A4
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6.2.2 Threatened and Migratory Fauna

The BDBSA identified 26 threatened and migratory fauna species that may occur in the Search Area. Of these 26 species, 11 have been assessed as potentially occurring within the Project Area, as described in **Table 6.5**. There are three species that are known to the Project Area: Peregrine Falcon, Black Falcon and Little Eagle.

BDBSA fauna records within the Search Area are provided in **Figure 6.3**.

The full likelihood of assessment is provided in **Appendix A**.

Table 6.5 Likelihood of Occurrence of Threatened Fauna Species within 10 km of the Project Area.

Scientific name	Common name	Conservation status		Data source	PMST Likelihood / Year of Last Record	Umwelt Likelihood of occurrence within Project Area
		Aus	SA			
BIRDS						
<i>Ardeotis australis</i>	Australian Bustard	-	V	2	1993	Possible
<i>Corcorax melanorhamphos</i>	White-winged Chough	-	R	2	2020	Possible
<i>Falco peregrinus macropus</i>	Peregrine Falcon	-	R	2	2019	Known
<i>Falco subniger</i>	Black Falcon	-	R	3	-	Known
<i>Hieraaetus morphnoides</i>	Little Eagle	-	V	3	-	Known
<i>Turnix pyrrhothorax</i>	Red-chested Buttonquail	-	R	2	2000	Possible

Conservation status:

Aus: Australia (*Environment Protection and Biodiversity Conservation Act 1999*). SA: South Australia (*National Parks and Wildlife Act 1972*). Conservation Codes: EN/E: Endangered. VU/V: Vulnerable. R: Rare.

Source of Information:

1. EPBC Act Protected Matters Report (DCCEEW 2025a) – 10 km buffer applied to Project Area;
2. Biological Database of South Australia data extract (DEW 2024a) (Recordset number DEWNRBDBSA241211-1) - 10 km buffer applied to Project Area.
3. Observed during the field assessment.

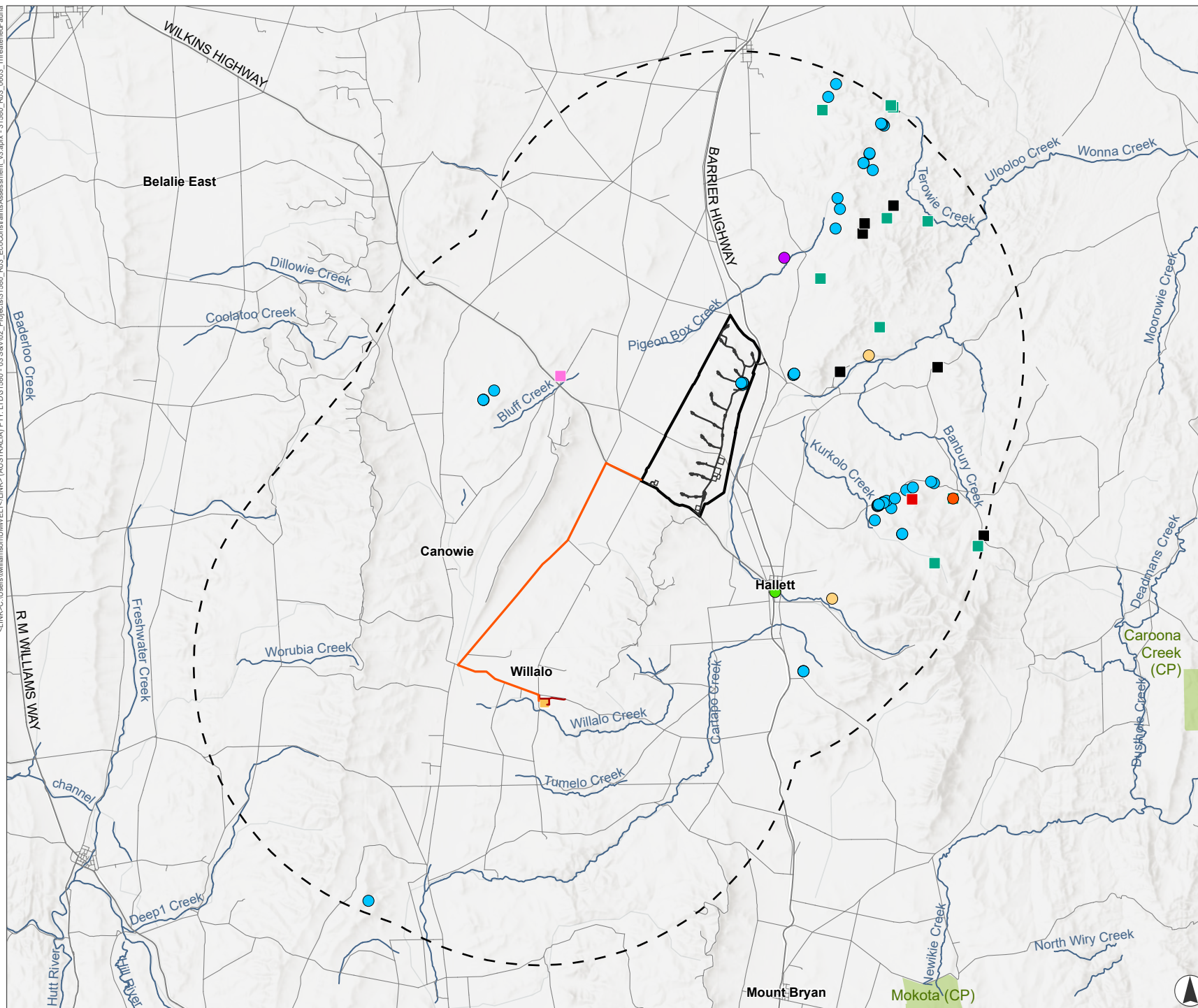


FIGURE 6.3
Nationally and State
Threatened Fauna
identified within 10 km of
the Project Area (DEW
2024)

Legend

- Wind Farm Project Area
- Search Area (10km)
- Civil Layout
- OTL Corridor
- BESS Footprint
- BESS Transmission Line
- Main road
- Local road
- Watercourse
- NPWSA Reserve

BDBSA Threatened Fauna

- Australian Bustard (*Ardeotis australis*) NPW: V
- Brolga (*Antigone rubicunda*) NPW: V
- Diamond Firetail (*Stagonopleura guttata*) NPW: V, EPBC: VU
- Peregrine Falcon (*Falco peregrinus macropus*) NPW: R
- Pygmy Bluetongue (*Tiliqua adelaidensis*) NPW: E, EPBC: EN
- Red-chested Buttonquail (*Turnix pyrrhonorax*) NPW: R
- Restless Flycatcher (*Myiagra inquieta*) NPW: R
- Southern Whiteface (*Aphelocephala leucopsis leucopsis*) EPBC: VU
- White-winged Chough (*Corcorax melanorhamphos*) NPW: R

0 2.5 5
Kilometres

Scale 1:200,000 at A4
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7.0 Field Survey Results

7.1 Survey Timing and Environmental Conditions

One of the assessments of the Project Area was undertaken from 11 September to 15 September 2023. Conditions during the 2023 spring survey period were generally good for bird observations, with warm to mild temperatures and clear visibility (**Photo 7.1**). Wind speed ranged from a slight breeze (below 20 km/h) to gusty (BOM 2024) and as such, bird surveys were undertaken in lower wind conditions, where possible.

Assessment of the potential OTL corridor route options was undertaken from 16 September to 20 September 2024. In addition to the OTL survey, resurveying of Lomandra Grassland to define condition class and the 2024 spring BBUS survey, in were also undertaken. Conditions during the 2024 spring survey period were generally good, with warm to mild temperatures and clear visibility (**Photo 7.2**). Wind speed was low for the majority of this survey period ranging from 7 km/h to 11 km/h.

Conditions in the lead up to both the 2023 and 2024 spring surveys were dry with lower-than-average rainfall in the two months prior to both surveys (**Table 7.1**).

Winter rainfall can influence the abundance of annual flora species, with dryer conditions generally leading to lower annual plant abundance.



Photo 7.1 Ideal survey conditions at the proposed Willogoleche Stage 2 Wind Farm during the 2023 spring survey



Photo 7.2 Ideal survey conditions during the 2024 spring OTL surveys

Table 7.1 Rainfall (mm) in the 12 Months Prior to the 2023 and 2024 Surveys and Average Rainfall (mm) Taken from the Nearest Weather Station (Mount Bryan) to the Project Area from September 2022 to August 2024. Information from BOM (2024)

12-month prior rainfall (mm)	Sep 22	Oct 22	Nov 22	Dec 22	Jan 23	Feb 23	Mar 23	Apr 23	May 23	Jun 23	Jul 23	Aug 23
2023 Survey	99.0	127.8	157.2	22.0	31.5	5.2	19.8	37.0	42.2	66.0	20.8	22.4
12-month prior rainfall (mm)	Sep 23	Oct 23	Nov 23	Dec 23	Jan 24	Feb 24	Mar 24	Apr 24	May 24	Jun 24	Jul 24	Aug 24
2024 Survey	23.4	9.6	35.6	29.2	11	0	31.4	3.4	9.2	38.0	42.8	23.8
Average rainfall (mm)	50.8	41.1	30.6	26.4	20.3	21.8	17.4	26.8	44.0	51.3	53.7	57.3

7.2 Flora

7.2.1 Vegetation Associations

A total of 129 flora species were recorded within the Project Area across eight vegetations associations during the spring surveys, consisting of 66 native species and 63 exotic flora species (**Appendix B**).

Eight broad vegetation associations were identified across the Project Area (**Table 7.2**). *Maireana aphylla* shrubland and *Lomandra multiflora* grassland were the most dominant vegetation associations across Project Area. The locations of vegetation associations across the Project Area are summarised in **Figure 7.1**. Vegetation associations were mapped within the preferred OTL corridor and are provided in **Appendix C**. It should be noted that these maps show a misalignment with the road corridor and as such, it is a commitment by ENGIE that both sides of the road corridor will be surveyed pre-construction.

Each vegetation association is further described in **Table 7.3** to **Table 7.10**.

Table 7.2 Vegetation Associations Identified within the Project Area

Vegetation Association	Description	Area (ha)			
		Wind Farm Project Area	Civil Layout	*BESS	*OTL
A1	<i>Lomandra multiflora</i> with <i>Austrostipa</i> sp. grassland ± <i>Cryptandra campanulata</i> ± exotic grassland ± <i>Lomandra effusa</i>	246.31	0.94	-	-
A2	<i>Maireana aphylla</i> shrubland with <i>Lomandra multiflora</i> ± exotic grasses ± <i>Cryptandra campanulata</i> ± <i>Austrostipa</i> sp.	496.68	29.48	-	1.05
A3	<i>Austrostipa</i> sp. and <i>Rytidosperma</i> sp. grassland with emergent <i>Maireana aphylla</i> ± exotic grasses	188.08	8.79	-	12.51

Vegetation Association	Description	Area (ha)			
		Wind Farm Project Area	Civil Layout	*BESS	*OTL
A4	<i>Cryptandra campanulata</i> shrubland ± <i>Lomandra multiflora</i> ± <i>Bursaria spinosa</i> and <i>Chrysocephalum</i> sp.	5.00	-	-	0.02
A5	Exotic grassland / Pasture	133.17	17.58	1.40	8.54
A6	Cropping	466.63	52.26	-	-
A7	Planted vegetation / infrastructure	6.55	-	-	0.73
A8	<i>Enchylaena tomentosa</i> open shrubland	-	-	-	1.04
NA	Native Scattered Trees	-	-	-	0.03
TOTAL		1571.05	109.05	27.24	23.89

* Please refer to **Section 4.4.1** for the limitations of the OTL Corridor and BESS.

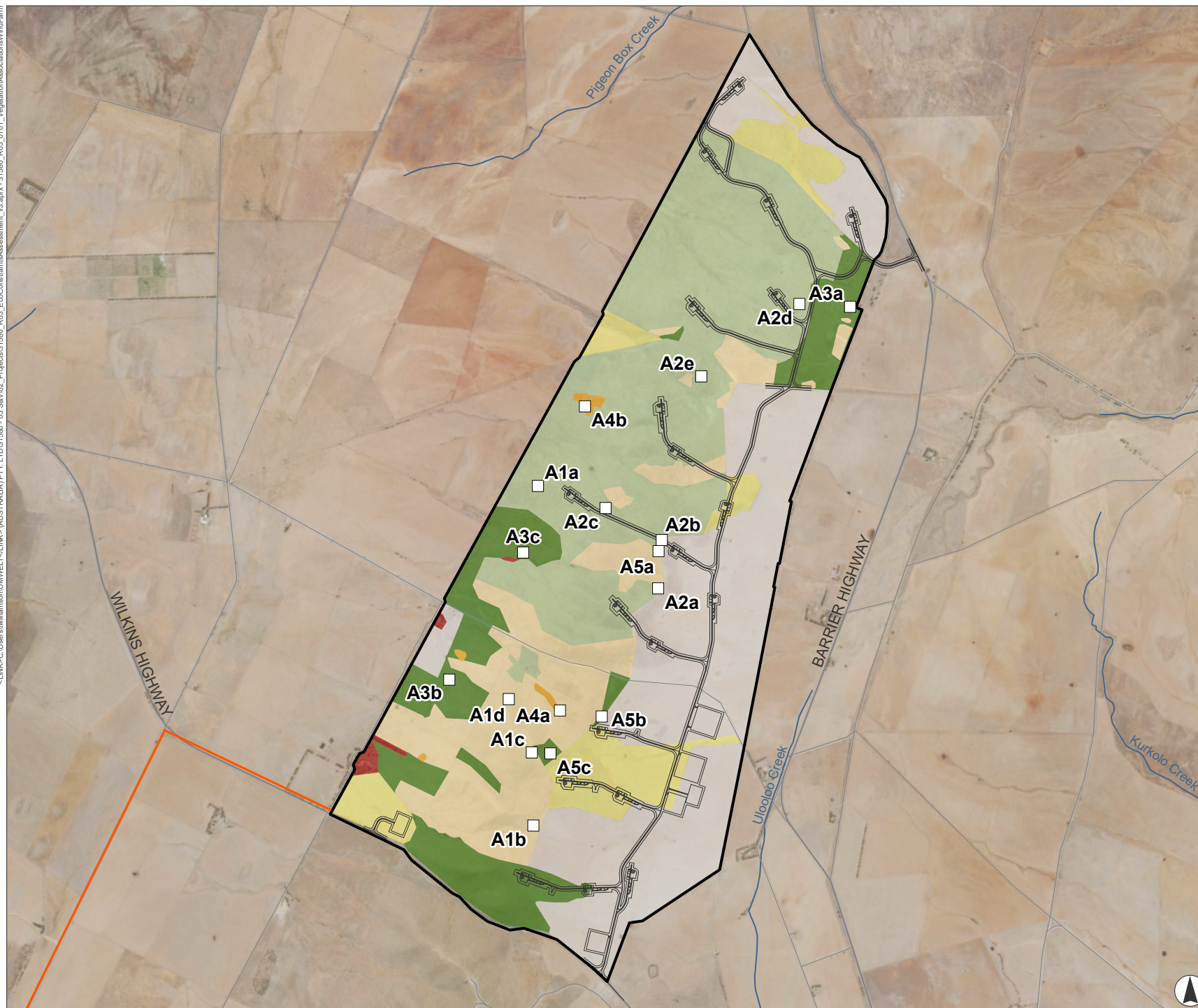


FIGURE 7.1
Vegetation Associations
within the Wind Farm
Project Area

Legend

- Wind Farm Project Area
- Civil Layout
- OTL Corridor
- BAM Site
- Main road
- Local road
- Watercourse

Vegetation Association

- A1: *Lomandra multiflora* with *Austrostipa* sp. grassland ± *Cryptandra campanulata* ± exotic grassland ± *Lomandra effusa*
- A2: *Maireana aphylla* shrubland with *Lomandra multiflora* ± exotic grasses ± *Cryptandra campanulata* ± *Austrostipa* sp.
- A3: *Austrostipa* sp. and *Rytidosperma* sp. grassland with emergent *Maireana aphylla* ± exotic grasses
- A4: *Cryptandra campanulata* shrubland ± *Lomandra multiflora* ± *Bursaria spinosa* and *Chrysocephalum* sp.
- A5: Exotic Grassland / Pasture
- A6: Cropping
- A7: Planted Vegetation / Infrastructure



Kilometres

Scale 1:42,500 at A4
GDA2020 MGA Zone 54



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Table 7.3 Vegetation Association A1

A1: <i>Lomandra multiflora</i> with <i>Austrostipa</i> sp. grassland ± <i>Cryptandra campanulata</i> ± exotic grassland ± <i>Lomandra effusa</i>	
Area (ha)	246.31
Dominant overstorey species	N/A
Dominant midstorey species	N/A
Understorey species	<i>Lomandra multiflora</i> (Many-flower Mat-rush) <i>Austrostipa scabra</i> (Rough Spear-grass) <i>Cryptandra campanulata</i> (Long-flower Cryptandra) <i>Lomandra effusa</i> (Scented Mat-rush) <i>Austrostipa nitida</i> (Balcarra Spear-grass) * <i>Avena barbata</i> (Wild Oats)
Threatened species/community	Iron-grass natural temperate grasslands of South Australia Habitat for Pygmy Blue-tongue Lizards (<i>Tiliqua adelaidensis</i>) Habitat for Flinders Ranges Worm Lizard (<i>Aprasia pseudopulchella</i>) <i>Cryptandra campanulata</i> (NPW Act: Rare)
Declared or significant weeds	* <i>Echium plantagineum</i> (Salvation Jane) (Declared weed) * <i>Romulea</i> sp. (Onion-grass) * <i>Hordeum</i> sp. (Barley Grass) * <i>Erodium</i> sp. (Stork's Bill)
Other comments	Most areas have experienced a high level of grazing. <i>Lomandra</i> sp. in good condition. Locations of this vegetation association range from flats to gentle slopes to on the sides of steep hills.



*introduced species

Table 7.4 Vegetation Association A2

A2: <i>Maireana aphylla</i> shrubland with <i>Lomandra multiflora</i> and exotic grasses ± <i>Cryptandra campanulata</i> ± <i>Austrostipa</i> sp.	
Area (ha)	497.73
Dominant overstorey species	N/A
Dominant midstorey species	N/A
Understorey species	<i>Maireana aphylla</i> (Cotton Bush) <i>Lomandra multiflora</i> (Many-flower Mat-rush) <i>Austrostipa scabra</i> (Rough Spear-grass) <i>Cryptandra campanulata</i> (Long-flower Cryptandra) <i>Lomandra effusa</i> (Scented Mat-rush) <i>*Avena barbata</i> (Wild Oats)
Threatened species/community	Habitat for Flinders Ranges Worm Lizard (<i>Aprasia pseudopulchella</i>) Habitat for Pygmy Blue-tongue Lizard (<i>Tiliqua adelaidensis</i>) Habitat for Southern Whiteface (<i>Aphelocephala leucopsis leucopsis</i>) <i>Cryptandra campanulata</i> (NPW Act: Rare)
Declared or significant weeds	<i>*Cynara cardunculus</i> ssp. <i>flavescens</i> (Artichoke Thistle) (Declared weed)
Other comments	Dominant vegetation type in the Project Area. Generally considered to be relatively dense with <i>Maireana aphylla</i> . Scattered <i>Cryptandra campanulata</i> throughout, clustered in some areas. Also heavily grazed with a high incursion of <i>Avena barbata</i> .



**introduced species*

Table 7.5 Vegetation Association A3

A3: <i>Austrostipa</i> sp. and <i>Rytidosperma</i> sp. grassland with emergent <i>Maireana aphylla</i> ± exotic grasses	
Area (ha)	200.59
Dominant overstorey species	N/A
Dominant midstorey species	N/A
Understorey species	<i>Austrostipa nitida</i> (Balcarra Spear-grass) <i>Austrostipa scabra</i> (Rough Spear-grass) <i>Cryptandra campanulata</i> (Long-flower Cryptandra) <i>Lomandra multiflora</i> (Hard Mat-rush) <i>Rytidosperma caespitosum</i> (Common Wallaby-grass) <i>Themeda triandra</i> (Kangaroo Grass) <i>*Avena barbata</i> (Wild Oats)
Threatened species/community	Habitat for Pygmy Blue-tongue Lizard (<i>Tiliqua adelaidensis</i>) Habitat for Flinders Ranges Worm Lizard (<i>Aprasia pseudopulchella</i>) <i>Cryptandra campanulata</i> (NPW Act: Rare)
Declared or significant weeds	<i>*Avena barbata</i> (Wild Oats)
Other comments	This vegetation is generally located on the flats and low lying areas. Mixture of conditions with most areas considered to be heavily grazed. Scattered <i>Cryptandra campanulata</i> and <i>Lomandra</i> sp. throughout the vegetation association.



**introduced species*

Table 7.6 Vegetation Association A4

A4: <i>Cryptandra campanulata</i> shrubland ± <i>Lomandra multiflora</i> ± <i>Bursaria spinosa</i> and <i>Chrysocephalum</i> sp.	
Area (ha)	5.02
Dominant overstorey species	N/A
Dominant midstorey species	N/A
Understorey species	<i>Cryptandra campanulata</i> (Long-flower Cryptandra) <i>Lomandra multiflora</i> (Many-flower Mat-rush) <i>Austrostipa scabra</i> (Rough Spear-grass) <i>Chrysocephalum semipapposum</i> (Clustered Everlasting) <i>Austrostipa eremophila</i> (Spear-grass) <i>Bursaria spinosa</i> (Sweet Bursaria) <i>*Avena barbata</i> (Wild Oats)
Threatened species/community	<i>Cryptandra campanulata</i> (NPW Act: Rare) Habitat for Blue-winged Parrot (<i>Neophema chrysostoma</i>)
Declared or significant weeds	<i>*Avena barbata</i> (Wild Oats)
Other comments	N/A



**introduced species*

Table 7.7 Vegetation Association A5

A5: Exotic Grassland / Pasture	
Area (ha)	143.11
Dominant overstorey species	N/A
Dominant midstorey species	N/A
Understorey species	<i>Oxalis perennans</i> (Native Sorrel) <i>Rytidosperma</i> sp. (Wallaby Grass) <i>*Hordeum vulgare</i> (Barley Grass) <i>Maireana aphylla</i> (Cotton Bush) <i>Lomandra multiflora</i> (Hard Mat Rush)
Threatened species/community	Habitat for Flinders Ranges Worm Lizard (<i>Aprasia pseudopulchella</i>)
Declared or significant weeds	<i>*Echium plantagineum</i> (Salvation Jane) (Declared weed) <i>*Romulea</i> sp. (Onion-grass) <i>*Hordeum</i> sp. (Barley Grass) <i>*Erodium</i> sp. (Stork's Bill) <i>*Arctotheca calendula</i> (Cape Weed)
Other comments	N/A



**introduced species*

Table 7.8 Vegetation Association A6

A6: Cropping	
Area (ha)	466.63
Dominant overstorey species	N/A
Dominant midstorey species	N/A
Understorey species	* <i>Hordeum</i> sp. (Barley Grass) * <i>Avena barbata</i> (Oats)
Threatened species/community	Iron-grass natural temperate grasslands of South Australia Habitat for Pygmy Blue-tongue Lizard (<i>Tiliqua adelaidensis</i>) Habitat for Flinders Ranges Worm Lizard (<i>Aprasia pseudopulchella</i>)
Declared or significant weeds	* <i>Echium plantagineum</i> (Salvation Jane) (Declared weed) * <i>Romulea</i> sp. (Onion-grass) * <i>Hordeum</i> sp. (Barley Grass) * <i>Erodium</i> sp. (Stork's Bill)
Other comments	N/A



*introduced species

Table 7.9 Vegetation Association A7

A7: Planted / Infrastructure	
Area (ha)	7.28
Dominant overstorey species	* <i>Eucalyptus cladocalyx</i> (Sugar Gum) * <i>Acacia</i> sp. * <i>Pinus halepensis</i> (Aleppo Pine)
Dominant midstorey species	N/A
Understorey species	Exotic grasses
Threatened species/community	Habitat for Little Eagle (<i>Hieraaetus morphnoides</i>) Habitat for Black Falcon (<i>Falco subniger</i>) Habitat for Southern Whiteface (<i>Aphelocephala leucopsis leucopsis</i>)
Declared or significant weeds	* <i>Hordeum vulgare</i> (Barley Grass) * <i>Avena barbata</i> (Wild Oats)
Other comments	Generally planted in rows around homesteads and sheds.



*introduced species

Table 7.10 Vegetation Association A8

A8: <i>Enchylaena tomentosa</i> open shrubland	
Area (ha)	1.04
Dominant overstorey species	N/A
Dominant midstorey species	N/A
Understorey species	<i>Enchylaena tomentosa</i> (Ruby Saltbush) <i>Austrostipa nitida</i> (Balcarra Spear-grass) <i>Rytidosperma caespitosum</i> (Common Wallaby-grass) * <i>Arctotheca calendula</i> (Cape Weed)
Threatened species/community	Habitat for Pygmy Blue-tongue Lizard (<i>Tiliqua adelaidensis</i>)
Declared or significant weeds	* <i>Arctotheca calendula</i> (Cape Weed) * <i>Echium plantagineum</i> (Salvation Jane) (Declared weed) * <i>Marrubium vulgare</i> (Horehound) (Declared weed)
Other comments	Open shrubland dominated by degraded <i>Enchylaena tomentosa</i> (Ruby Saltbush) due to the proximity of the adjacent road. A variety of introduced species have been recorded.



*introduced species

7.2.2 Iron-grass Natural Temperate Grassland of South Australia TEC

The condition of INTG TEC patches was assessed and mapped across the Project Area (**Figure 7.2**), with four patches qualifying as the EPBC Act TEC – Condition Class B (**Table 7.11**). Six patches were assessed Condition Class C as they did not meet the criteria for the TEC as described in TSSC 2007. No INTG TEC patches were mapped in the OTL.

Condition Class C areas do not qualify as the listed TEC and therefore do not trigger the ‘significance test’ of the EPBC Act. Condition Class C areas are still considered to be amenable to rehabilitation through measures such as weed control, natural regeneration and protection from grazing.

As already mentioned in this report, the environmental conditions leading up to when survey work was completed when assessing the condition classes of INTG (2023 and 2024) was poor.

Table 7.11 Condition Class Assessment of Grassland Communities Containing *Lomandra* sp. (Iron-grass)

Patch	Condition Class rating (A, B or C)	Size	INTG Sites	Diversity of native plant species	No. of broad-leaved herbaceous species [^]	No. of native perennial grass species	Tussock count (per m)
1	B	3.45	LOM 1	19	9	4	>1
2	C*	18.46	LOM 2	14	2	6	>1
			LOM 2-RE	11	1	3	>1
3	B	0.80	LOM 3	16	3	5	>1
4	B	187.35	LOM 4	16	3	4	>1
			LOM 5	24	8	6	>1
			LOM 6	18	5	6	>1
			LOM 12	18	5	4	>1
			LOM 13	18	3	4	>1
5	C*	2.55	LOM 7	14	3	4	>1
			LOM 7-RE	12	1	2	>1
6	B	13.82	LOM 8	18	7	4	>1
			LOM 9	19	6	5	>1
7	C*	0.84	LOM 10	12	1	4	>1
			LOM 10-RE	12	1	2	>1
8	C*	7.42	LOM 11	9	1	4	>1
			LOM 11-RE	13	1	3	>1
9	C*	1.19	LOM 14	14	1	4	>1
10	C*	10.38	LOM 15	9	0	2	>1

[^] in addition to identified disturbance resistant species.

*may increase if surveyed in a year with better conditions.

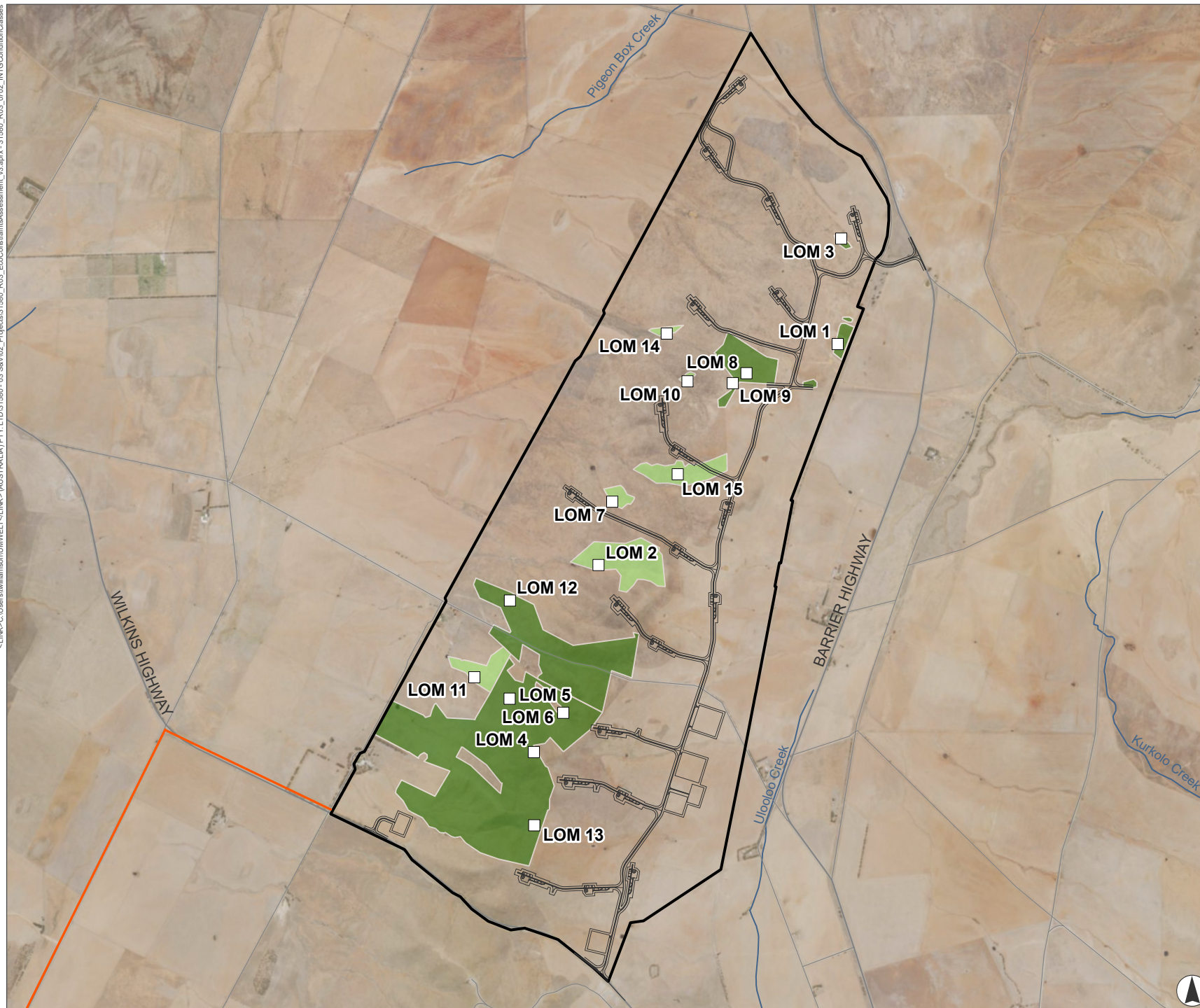


FIGURE 7.2
INTG Condition Classes
identified within the Project
Area

- Legend**
- Wind Farm Project Area
 - Civil Layout
 - OTL Corridor
 - Lomandra Site
 - Main road
 - Local road
 - Watercourse
- Lomandra Condition**
- Condition Class B: INTG TEC
 - Condition Class C: Lomandra Grassland



Kilometres
Scale 1:42,500 at A4
GDA2020 MGA Zone 54



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7.2.3 Threatened Flora

One state listed rare flora species was observed within the Project Area: *Cryptandra campanulata* (Long-flowered Cryptandra). This species was observed extensively throughout the shrublands in the Project Area and as scattered groups within grasslands. Three areas were highlighted as being dominated by this species (BAM sites A4a, A4b and A4c). An example of the *Cryptandra campanulata* shrubland is provided in **Photo 7.3**. One nationally Vulnerable and state endangered flora species has historical records within the Project Area, *Codonocarpus pyramidalis* (Slender Bell-fruit), but field surveys to date have not observed any individuals. Species-specific targeted surveys were not undertaken as part of the scope of works.



Photo 7.3 *Cryptandra campanulata* shrubland (refer to Table 7.6 (A4) for more information)

7.2.4 Weeds

A total of 63 exotic plant species have been observed within the Project Area. Eight that are Declared under the LSA Act were recorded in the Project Area, of which one is also a Weed of National Significance (WoNS). A further 20 are considered Environmental Weeds (**Table 7.12**). Photographs of Declared Weeds more commonly observed in the Project Area are provided in **Photo 7.4** to **Photo 7.9**.

Under the LSA Act, landholders are obligated to control Declared Weeds on their property, as they are known to cause significant economic, social and environmental impacts.

Table 7.12 Exotic Plant Species Observed in the Project Area that are either Declared under the LSA Act, WoNS or Environmental Weeds.

Scientific Name	Common Name	Declared	WoNS	Environmenta l Weed
<i>Aizoon pubescens</i>	Coastal Galenia			✓
<i>Arctotheca calendula</i>	Cape Weed			✓
<i>Asphodelus fistulosus</i>	Onion Weed			✓
<i>Avena barbata</i>	Bearded Oat			✓
<i>Carthamus lanatus</i>	Saffron Thistle			✓
<i>Chondrilla juncea</i>	Skeleton Weed	✓		
<i>Conyza bonariensis</i>	Flax-leaf Fleabane			✓
<i>Cynara cardunculus</i> ssp. <i>flavescens</i>	Artichoke Thistle	✓		
<i>Echium plantagineum</i>	Salvation Jane	✓		
<i>Hordeum vulgare</i>	Barley			✓
<i>Hypochaeris glabra</i>	Smooth Cat's Ear			✓
<i>Hypochaeris radicata</i>	Rough Cat's Ear			✓
<i>Lycium ferocissimum</i>	African Boxthorn	✓	✓	
<i>Marrubium vulgare</i>	Horehound	✓		
<i>Medicago sativa</i>	Lucerne			✓
<i>Pinus halepensis</i>	Aleppo Pine	✓		
<i>Pinus radiata</i>	Radiata Pine			✓
<i>Piptatherum miliaceum</i>	Rice Millet			✓
<i>Plantago lanceolata</i> var.	Ribwort			✓
<i>Rapistrum rugosum</i> ssp. <i>rugosum</i>	Turnip Weed			✓
<i>Romulea rosea</i> var. <i>australis</i>	Common Onion-grass			✓
<i>Salvia verbenaca</i> var. <i>verbenaca</i>	Wild Sage			✓
<i>Scabiosa atropurpurea</i>	Pincushion			✓
<i>Schinus molle</i>	Peppercorn Tree			✓
<i>Silybum marianum</i>	Variegated Thistle	✓		
<i>Sonchus oleraceus</i>	Common Sow-thistle			✓
<i>Vicia sativa</i> ssp.	Common Vetch			✓
<i>Xanthium spinosum</i>	Bathurst Burr	✓		

Declared: Declared under the *Landscape South Australia Act 2019 (LSA Act)*

WoNS: Weed of National Significance



Photo 7.4 *Cynara cardunculus* ssp. *flavescent* (Artichoke Thistle) observed in the Project Area



Photo 7.5 *Echium plantagineum* (Salvation Jane) observed in the Project Area



Photo 7.6 *Lycium ferocissimum* (African Boxthorn) observed in the Project Area



Photo 7.7 *Marrubium vulgare* (Horehound) observed in the Project Area



Photo 7.8 *Silybum marianum* (Variegated Thistle) observed in the Project Area



Photo 7.9 *Xanthium spinosum* (Bathurst Burr) observed in the Project Area

7.3 Fauna

A total of 63 fauna species have been observed in the Project Area, this includes 48 bird species, 9 mammal species and 6 reptile species.

One bird species is listed as nationally Vulnerable under the EPBC Act, the Southern Whiteface (*Aphelocephala leucopsis leucopsis*) were observed opportunistically at two of the eight BBUS periods, with the most observations of this species occurring in spring 2023, where a total of six birds were recorded. Southern Whiteface are known to occur in open woodland habitat with an understorey of grasses and shrubs, which seldom occurs in the Project Area.

Two bird species are listed as threatened under the NPW Act:

- Little Eagle (*Hieraaetus morphnoides*) – state Vulnerable.
- Black Falcon (*Falco subniger*) – state Rare.
- Peregrine Falcon (*Falco peregrinus*) – state Rare.

Fauna species observed in the Project Area to date are summarised in **Table 7.13**. The summary results of the BBUS program are presented in **Section 7.3.1**. Please refer to Umwelt 2025e for the abundance and occupancy of each species.

Table 7.13 Fauna Species Observed within the Project Area

Scientific Name	Common Name	Conservation Status		Comments
		EPBC Act	NPW Act	
BIRDS				
<i>Acanthiza chrysorrhoa</i>	Yellow-rumped Thornbill	-	-	
<i>Alauda arvensis</i>	Eurasian Skylark*	-	-	
<i>Anas gracilis gracilis</i>	Grey Teal	-	-	
<i>Anthochaera carunculata</i>	Red Wattlebird	-	-	
<i>Anthus australis australis</i>	Australian Pipit	-	-	
<i>Aphelocephala leucopsis leucopsis</i>	Southern Whiteface	VU	-	A single flock of six birds were observed opportunistically around infrastructure to the west of the Project Area during the 2023 spring survey. During the 2024 spring survey, two birds were observed opportunistically in the same area.
<i>Aquila audax</i>	Wedge-tailed Eagle	-	-	
<i>Barnardius zonarius</i>	Australian Ringneck	-	-	
<i>Chenonetta jubata</i>	Maned Duck	-	-	
<i>Cincloramphus cruralis</i>	Brown Songlark	-	-	
<i>Columba livia</i>	Feral Pigeon*	-	-	

Scientific Name	Common Name	Conservation Status		Comments
		EPBC Act	NPW Act	
<i>Coracina novaehollandiae</i>	Black-faced Cuckoo-shrike	-	-	
<i>Corvus coronoides</i>	Australian Raven	-	-	
<i>Corvus mellori</i>	Little Raven	-	-	
<i>Coturnix pectoralis</i>	Stubble Quail	-	-	
<i>Egretta novaehollandiae</i>	White-faced Heron	-	-	
<i>Elanus axillaris</i>	Black-shouldered Kite	-	-	
<i>Eolophus roseicapilla</i>	Galah	-	-	
<i>Epthianura albifrons</i>	White-fronted Chat	-	-	
<i>Epthianura aurifrons</i>	Orange Chat	-	-	
<i>Falco berigora</i>	Brown Falcon	-	-	
<i>Falco cenchroides</i>	Nankeen Kestrel	-	-	
<i>Falco peregrinus</i>	Peregrine Falcon	-	R	One individual was opportunistically observed in autumn 2025.
<i>Falco subniger</i>	Black Falcon	-	R	Three individuals were observed during the 2023 spring BBUS and one individual during the 2024 summer BBUS
<i>Grallina cyanoleuca</i>	Magpielark	-	-	
<i>Gymnorhina tibicen</i>	Australian Magpie	-	-	
<i>Hieraaetus morphnoides</i>	Little Eagle	-	V	One individual was observed during the 2023 spring survey, one in 2024 summer BBUS, one in 2024 winter BBUS and one during 2024 spring BBUS.
<i>Hirundo neoxena</i>	Welcome Swallow	-	-	
<i>Lalage tricolor</i>	White-winged Triller	-	-	
<i>Lichenostomus virescens</i>	Singing Honeyeater	-	-	
<i>Malurus leucopterus leuconotus</i>	White-winged Fairywren	-	-	
<i>Manorina flavigula</i>	Yellow-throated Miner	-	-	
<i>Mirafrja javanica</i>	Horsfield's Bushlark	-	-	
<i>Ocyphaps lophotes</i>	Crested Pigeon	-	-	
<i>Pardalotus striatus</i>	Striated Pardalote	-	-	
<i>Passer domesticus</i>	House Sparrow*	-	-	
<i>Petrochelidon nigricans</i>	Tree Martin	-	-	

Scientific Name	Common Name	Conservation Status		Comments
		EPBC Act	NPW Act	
<i>Petroica goodenovii</i>	Red-capped Robin	-	-	
<i>Psephotus haematonotus</i>	Red-rumped Parrot	-	-	
<i>Ptilotula penicillata</i>	White-plumed Honeyeater	-	-	
<i>Rhipidura leucophrys</i>	Willie Wagtail	-	-	
<i>Smicrornis brevirostris</i>	Weebill	-	-	
<i>Spilopelia chinensis</i>	Spotted Dove*	-	-	
<i>Sturnus vulgaris</i>	Common Starling*	-	-	
<i>Tachybaptus novaehollandiae</i>	Australasian Grebe	-	-	
<i>Tadorna tadornoides</i>	Australian Shelduck	-	-	
<i>Taeniopygia guttata castanotis</i>	Zebra Finch	-	-	
<i>Vanellus tricolor</i>	Banded Lapwing	-	-	
MAMMALS				
<i>Chalinolobus gouldii</i>	Gould's Wattled Bat	-	-	Detected using Anabat recorders
<i>Lepus europaeus</i>	European Hare*	-	-	
<i>Macropus fuliginosus</i>	Western Grey Kangaroo	-	-	
<i>Nyctophilus geoffroyi</i>	Lesser Long-eared Bat	-	-	Detected using Anabat recorders
<i>Oryctolagus cuniculus</i>	European Rabbit*	-	-	
<i>Osphranter rufus</i>	Red Kangaroo	-	-	
<i>Ozimops</i> sp.	Free-tailed Bat	-	-	Detected using Anabat recorders
<i>Vespadelus</i> sp.	Forest Bat	-	-	Detected using Anabat recorders
<i>Vulpes vulpes</i>	Red Fox*	-	-	
REPTILES				
<i>Agamidae</i> sp.	Dragon species	-	-	
<i>Ctenotus</i> sp.	Skink species	-	-	
<i>Delma malleri</i>	Gulfs Delma	-	-	
<i>Pogona Barbata</i>	Eastern Bearded Dragon	-	-	
<i>Pseudonaja textilis</i>	Eastern Brown Snake	-	-	
<i>Tiliqua rugosa</i>	Sleepy Lizard	-	-	

Conservation status

Aus: Australia (*Environment Protection and Biodiversity Conservation Act 1999*). SA: South Australia (*National Parks and Wildlife Act 1972*).
 Conservation Codes: VU/V: Vulnerable. R: Rare. * = introduced.

7.3.1 Bird and Bat Utilisation Survey

Bird and Bat Utilisation Surveys for the proposed Project were initiated in the spring of 2023. To date, eight seasonal BBUS have been undertaken for the Project, over two years (2023–2025), which is the minimum requirement as specified in the Onshore Wind Farm Guidance approach (DCCEEW – *in draft* – May 2024).

7.3.1.1 Bird Survey Results Summary

In total, 3,133 individuals from 41 bird species were observed at BBUS sites, from 2023 to 2025. The most abundant native species recorded at BBUS sites were the Galah (*Eolophus roseicapilla*) (513), Australian Magpie (*Gymnorhina tibicen*) (365) and Australian Raven (*Corvus coronoides*) (252). This accounted for 16.3%, 11.7% and 8.0% of all sightings, respectively. No migratory species were observed during any of the BBUS.

A summary of the avian species richness and abundance across all BBUS sites for the eight survey periods is provided in **Table 7.14**. For more detailed information, please refer to the the BBUS Summary Report (Umwelt 2025e).

Table 7.14 Avian Species Richness, Abundance, Threatened Species and Raptors Recorded during each BBUS Period

Survey Period	Avian Species Richness	Avian Species Abundance	Threatened Bird Species Recorded	Raptor Species Recorded
Spring 2023	34	412	3	6
Summer 2024	32	823	1	5
Autumn 2024	24	309	0	1
Winter 2024	25	971	1	2
Spring 2024	26	386	2	4
Summer 2025	30	618	0	3
Autumn 2025	28	1133	1	4
Winter 2025	25	325	0	2

7.3.1.2 Opportunistic Sightings

A total of 1,844 individuals from 40 species (36 native and four introduced) were opportunistically recorded. Of the 36 native bird species, the most abundant native species included the Grey Teal (*Anas gracilis*) (563), the Australian Magpie (109) and the Galah (105), which accounted for 30.6%, 5.9% and 5.7% of opportunistic sightings respectively. Four introduced species were observed opportunistically: Common Starling (345), House Sparrow (110), Rock Dove (10) and Eurasian Skylark (1).

Nine bird species were sighted opportunistically across the Project Area that were not observed at BBUS sites. This included two threatened bird species: the Southern Whiteface and the Peregrine Falcon.

7.3.1.3 Raptor Species

Seven raptor species were recorded in one or more survey periods in the Project Area during the eight survey periods:

- Black-shouldered Kite (*Elanus axillaris*).
- Black Falcon (*Falco subniger*) – NPW Act Rare.
- Brown Falcon (*Falco berigora*).
- Little Eagle (*Hieraaetus morphnoides*) – NPW Act Vulnerable.
- Nankeen Kestrel (*Falco cenchroides cenchroides*).
- Peregrine Falcon (*Falco peregrinus*) – NPW Act Rare.
- Wedge-tailed Eagle (*Aquila audax audax*).

The Nankeen Kestrel and Wedge-tailed Eagle were the most common raptor species present in the Project Area. The Wedge-tailed Eagle was observed during seven of the eight survey periods, whilst the Nankeen Kestrel was observed during six of the eight survey periods, please refer to final BBUS report (Umwelt 2025e) for more details.

7.3.1.4 At-risk Flight Heights

Twenty-four bird species recorded flight heights during BBUS (2023-2025) that were considered at a height that constitutes being within the rotor-swept area of proposed WTGs. Out of the 24 bird species whose flight were recorded either at 30 metres (m) or above, five were raptors: Brown Falcon, Black Falcon, Nankeen Kestrel, Little Eagle and Wedge-tailed Eagle. Raptors are known to be more susceptible to bird-strike from WTG rotors because of their behaviour and foraging techniques, reduced agility and restricted forward field of view (**Table 7.15**).

Table 7.15 Minimum and Maximum Flight Height Details of Bird Species Observed Within the Project Area across all Eight Survey Periods

Scientific Name	Common Name	EPBC Act	NPW Act	Minimum Flight Height	Maximum Flight Height	BUS Site Occupancy
<i>Acanthiza chrysorrhoa</i>	Yellow-rumped Thornbill	-	-	0	8	3
<i>Alauda arvensis arvensis</i>	Eurasian Skylark	-	-	0	100	7
<i>Anas gracilis gracilis</i>	Grey Teal	-	-	0	50	0 (Only opportune)
<i>Anthochaera carunculata</i>	Red Wattlebird	-	-	5	15	2
<i>Anthus australis australis</i>	Australian Pipit	-	-	0	30	7
<i>Aphelocephala leucopsis leucopsis</i>	Southern Whiteface	VU	-	Not Available	Not Available	0 (Only opportune)
<i>Aquila audax audax</i>	Wedge-tailed Eagle	-	-	5	400	7

Scientific Name	Common Name	EPBC Act	NPW Act	Minimum Flight Height	Maximum Flight Height	BUS Site Occupancy
<i>Barnardius zonarius</i>	Australian Ringneck	-	-	1	5	1
<i>Chenonetta jubata</i>	Australian Wood Duck	-	-	20	40	0 (Only opportune)
<i>Cincloramphus cruralis</i>	Brown Songlark	-	-	1	50	8
<i>Columba livia</i>	Rock Dove	-	-	4	10	1
<i>Coracina novaehollandiae</i>	Black-faced Cuckooshrike	-	-	5	40	2
<i>Corvus coronoides</i>	Australian Raven	-	-	0	100	8
<i>Corvus mellori</i>	Little Raven	-	-	0	70	8
<i>Corvus sp.</i>	Ravens, Crows	-	-	0	100	8
<i>Coturnix pectoralis</i>	Stubble Quail	-	-	0	2	5
<i>Egretta novaehollandiae</i>	White-faced Heron	-	-	4	6	1
<i>Elanus axillaris</i>	Black-shouldered Kite	-	-	3	15	0 (Only opportune)
<i>Eolophus roseicapilla</i>	Galah	-	-	0	80	4
<i>Epthianura albifrons</i>	White-fronted Chat	-	-	0	30	6
<i>Epthianura aurifrons</i>	Orange Chat	-	-	0	8	2
<i>Falco berigora</i>	Brown Falcon	-	-	0	50	5
<i>Falco cenchroides cenchroides</i>	Nankeen Kestrel	-	-	0	100	8
<i>Falco peregrinus</i>	Peregrine Falcon	-	-	5	20	0 (Only opportune)
<i>Falco subniger</i>	Black Falcon	-	R	2	50	1
<i>Gavicalis virescens</i>	Singing Honeyeater	-	-	Not Available	Not Available	2
<i>Grallina cyanoleuca cyanoleuca</i>	Magpielark	-	-	0	15	3
<i>Gymnorhina tibicen</i>	Australian Magpie	-	-	0	100	8
<i>Hieraaetus morphnoides</i>	Little Eagle	-	V	1	60	3
<i>Hirundo neoxena neoxena</i>	Welcome Swallow	-	-	0	25	3
<i>Lalage tricolor</i>	White-winged Triller	-	-	Not Available	Not Available	0 (Only opportune)
<i>Malurus leucopterus leuconotus</i>	White-winged Fairywren	-	-	0	5	5

Scientific Name	Common Name	EPBC Act	NPW Act	Minimum Flight Height	Maximum Flight Height	BUS Site Occupancy
<i>Manorina flavigula flavigula</i>	Yellow-throated Miner	-	-	0	30	3
<i>Manorina melanocephala</i>	Noisy Miner	-	-	4	30	1
<i>Mirafrja javanica</i>	Horsfield's Bushlark	-	-	0	30	2
<i>Ocyphaps lophotes lophotes</i>	Crested Pigeon	-	-	0	40	3
<i>Pardalotus striatus</i>	Striated Pardalote	-	-	3	5	2
<i>Passer domesticus domesticus</i>	House Sparrow	-	-	1	15	3
<i>Petrochelidon nigricans</i>	Tree Martin	-	-	0	25	1
<i>Petroica goodenovii</i>	Red-capped Robin	-	-	0	1	0 (Only opportune)
<i>Psephotus haematonotus</i>	Red-rumped Parrot	-	-	Not Available	Not Available	1
<i>Ptilotula penicillata</i>	White-plumed Honeyeater	-	-	4	30	2
<i>Rhipidura leucophrys leucophrys</i>	Willie Wagtail	-	-	0	15	5
<i>Smicrornis brevirostris</i>	Weebill	-	-	2	5	0 (Only opportune)
<i>Spilopelia chinensis</i>	Spotted Dove	-	-	Not Available	Not Available	1
<i>Sturnus vulgaris vulgaris</i>	Common Starling	-	-	0	50	5
<i>Tachybaptus novaehollandiae</i>	Australasian Grebe			Not Available	Not Available	0 (Only opportune)
<i>Tadorna tadornoides</i>	Australian Shelduck	-	-	0	80	2
<i>Taeniopygia guttata castanotis</i>	Zebra Finch	-	-	0	10	5
<i>Vanellus tricolor</i>	Banded Lapwing	-	-	0	15	3

Conservation Status

EPBC (*Environment Protection and Biodiversity Conservation Act 1999*). NPW: South Australia (*National Parks and Wildlife Act 1972*). Conservation Codes: CE: Critically Endangered. EN/E: Endangered. VU/V: Vulnerable. R: Rare. Highlighted cells indicate the species flew within the RSA and is at collision risk with the WTG.

7.3.1.5 Bat Survey Sites

No threatened bat species under either the EPBC or NPW Act were identified. Echolocation sonograms identified four common bat species within the Project Area. The highest species richness of bats was recorded on the first survey in spring 2023, with all four species that have been identified throughout the BBUS program recorded.

At the two bat survey sites, the following common bat species were detected:

- *Chalinolobus gouldii* (Gould's Wattled Bat).
- *Nyctophilus geoffroyi* (Lesser Long-eared Bat).
- *Ozimops* sp. (Free-tailed Bat).
- *Vespadelus* sp. (Forest Bat).

7.3.2 Pygmy Blue-tongue Lizard

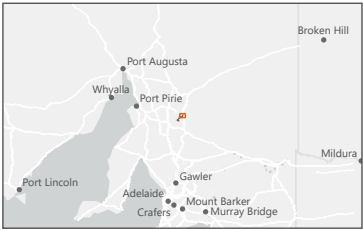
Targeted surveys for PBTL were undertaken during the 2023 spring survey. Due to the relatively dry conditions and grazing pressure during this survey, most grassland areas had low vegetation cover and there was little difficulty locating spider burrows. A total of 1,070 spider burrows across the Project Area were inspected for the presence of PBTLs. No PBTLs were recorded.

<LINK>C:\Users\williamson\Umwelt\4\LINK> (AUSTRALIA) PTY. LTD\31580 - 03 SAV\02_P\Projects\31580_R03_EcoConstraints\Assessment_V3.aprx - 31580_R03_0801_PygmyBlueTongueLizardHabitat



FIGURE 7.3
Pygmy Blue-tongue Lizard
Habitat within the Project
Area

- Legend**
- Wind Farm Project Area
 - Civil Layout
 - OTL Corridor
 - Main road
 - Local road
 - Watercourse
- PBTL Survey Effort**
- Spider Burrow
- BDBSA Threatened Fauna**
- Pygmy Bluetongue (*Tiliqua adelaidensis*) NPW: E, EPBC: EN
- PBTL Habitat**
- Likely
 - Possible
 - Unlikely



Kilometres

Scale 1:42,500 at A4
GDA2020 MGA Zone 54



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7.3.3 Raptor Nests and Habitat

No raptor nests were observed within the Project Area during the 2023–2025 BBUS program. Some scattered trees within the Project Area around infrastructure and on the roadside may provide suitable nesting habitat for raptors.

7.3.4 Exotic Fauna

Eight exotic fauna species have been observed within the Project Area (**Table 7.13**). To date, three mammals have been recorded: Red Fox (*Vulpes vulpes*), Rabbit (*Oryctolagus cuniculus*) and Hare (*Lepus europaeus*) and five birds have been recorded: Eurasian Skylark (*Alauda arvensis*), Feral Pigeon (*Columba livia domestica*), House Sparrow (*Passer domesticus*), Spotted Dove (*Spilopelia chinensis*) and Common Starling (*Sturnus vulgaris*).

8.0 Constraints Analysis Discussion

8.1 Native Vegetation

The Project Area contains native vegetation that will need some level of clearance to construct the Willogoleche Stage 2 Wind Farm. Clearance of native vegetation will require approval under the NV Act/NV Regulations. Approval of any vegetation clearance will only be granted subject to the offset obligations (or Significant Environmental Benefit) being met by the proponent. The proponent must also demonstrate that the mitigation hierarchy, as defined below, has been applied to the Project in the development and design phase.

8.1.1 Mitigation Hierarchy

The principles of the mitigation hierarchy are as listed below:

- a. **Avoidance** – measures should be taken to avoid clearance of native vegetation wherever possible.
- b. **Minimisation** – if clearance cannot be avoided, measures should be taken to minimise the extent, duration and intensity of impacts of the clearance on biological diversity to the fullest possible extent (whether the impact is direct, indirect or cumulative).
- c. **Rehabilitation or restoration** – measures should be taken to rehabilitate ecosystems that will be degraded, and to restore ecosystems that will be destroyed, due to impacts of clearance that cannot be avoided or minimised.
- d. **Offset** – any adverse impact on native vegetation or ecosystems that cannot be avoided or minimised should be offset by implementing a Significant Environmental Benefit that outweighs that impact.

8.2 Identification of EPBC Act Threatened Habitat and Species

8.2.1 Iron-grass Natural Temperate Grassland of South Australia (Critically Endangered)

Critically Endangered INTG TEC is known to occur within the Project Area. Four areas of INTG are considered Condition Class B and six areas have been assessed as Condition Class C Lomandra, and as such, are not considered the INTG TEC. However, the dry conditions in the lead up to both the 2023 and 2024 field surveys resulted in a short flowering season for annuals and the dryer conditions may have contributed to a lower abundance of broad-leaved herbaceous species that form part of the indicators for the condition class of INTG. Additionally, the area is currently under a sheep grazing regime that may impact on the condition of the area. The National Recovery Plan for the INTG (Turner 2012) states that targeted assessments should occur in (1) *good seasonal conditions* or (2) *within two months of effective rain* and (3) *at least two months after disturbance* (such as grazing). Areas currently assessed as Condition Class C Lomandra grassland are still considered to be amenable to rehabilitation through measures such as weed control, natural regeneration and protection from grazing (DEWR 2007).

Furthermore, *Lomandra effusa* grasslands that do not qualify as the TEC are considered endangered under the Provisional list of threatened ecosystems of South Australia (DEH *in progress*), however, these are not formally protected but do incur a loading as part of the Significant Environmental Benefit Offsetting.

INTG of South Australia has suffered a severe decline in distribution and ongoing loss of integrity. The key threats to the community include clearing, grazing and weed invasion. Other threats include road maintenance activities and the effects of fragmentation (DEWHA 2008a, Turner 2012). All threats are relevant to the Project.

At the time of writing, ENGIE has avoided impacting all of Class B Lomandra. ENGIE are impacting 0.94 ha of Class C Lomandra (LOM15) (**Figure 7.2**), as part of its final design plans.

8.2.2 Nationally Listed Threatened Flora Species

No nationally listed threatened flora species were assessed as highly likely/known to occur within the Project Area and none were observed during the field surveys, but species-specific targeted surveys were not undertaken as part of the scope of works.

8.2.3 Nationally Listed Threatened Fauna Species

One nationally listed threatened fauna species has been assessed as known to occur within the Project Area (**Table 6.5**):

- Southern Whiteface (*Aphelocephala leucopsis leucopsis*) – nationally Vulnerable.

An additional species were assessed as likely (based on desktop assessment and suitable habitat) to occur within the Project Area:

- Pygmy Blue-tongue Lizard (*Tiliqua adelaidensis*) – nationally and state Endangered.

8.2.3.1 Southern Whiteface (Nationally Vulnerable)

The conservation advice for the Southern Whiteface (DCCEEW 2023a) defines critical habitat for the species as:

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

The Southern Whiteface was observed in the Project Area during the 2023 spring survey and the 2024 spring survey in one location in planted vegetation around existing infrastructure. Areas such as open grassland are not the preferred habitat of this species, except where this vegetation association has larger shrubs, scattered trees or features that create that structure such as areas with *Lycium ferocissimum* (African Boxthorn). Given this, the Project Area may provide some habitat but is unlikely to be considered preferred habitat for this species.

8.2.3.2 Pygmy Blue-tongue lizard (Nationally and State Endangered)

The conservation advice for PBTL (DCCEE 2023f) defines critical habitat for the species as:

- Spider burrows of suitable diameter and depth.
- Open grassland with tussock grasses and inter tussock spaces allowing for basking and feeding.
- Intact soil profiles with free draining grey-brown or red calcareous soils.

Targeted ramble surveys were conducted in spring 2023 across the Project Area, with a focus on and around locations where historical PBTL records were reported (although the record locations may not be accurate and have potentially been denatured). Survey conditions were favourable, with relatively dry conditions and grazing pressure resulting in low vegetation cover, making spider burrows easily detectable. The Project Area contained suitable spider holes for PBTL, but some areas were considered too steep or rocky for PBTL to occur. A total of 1,070 spider burrows were inspected for the presence of PBTLs, but no individuals were recorded despite targeted survey efforts.

Figure 7.3 provides the likelihood of occurrence for PBTL in the Project Area as categorised in **Section 5.2.2**.

8.2.4 Threatened Migratory Fauna

No permanent waterbodies, excluding man-made dams were observed within the Project Area. As such the Project Area was not deemed to contain suitable habitat for migratory fauna, in particular shorebirds. The nearest waterbody, Hiles Lagoon is located approximately 16.5 km NNE of the northern extent of the Project Area. It is not expected the proposed Project will impact on migratory shorebirds that could potentially be using this lagoon.

8.3 Identification of NPW Act threatened Species and Habitat

8.3.1 State Listed Flora Species

Four State listed threatened flora species have been identified as known (observed during the survey) or likely to occur (based on desktop assessment and habitat) to occur in the Project Area (**Table 6.4**):

- *Cryptandra campanulata* (Long-flower Cryptandra) – state Rare and observed in the Project Area.
- *Maireana excavata* (Bottle Fissure-plant) – state Vulnerable.
- *Maireana rohrlachii* (Rohrlach's Bluebush) – state Rare.
- *Rumex dumosus* (Wiry Dock) – state Rare.

Species' descriptions, habitat and threats of these four species is summarised below.

8.3.1.1 *Cryptandra campanulata* (Long-flower Cryptandra) (State Rare)

Cryptandra campanulata is a low shrub, less than 1 m high, with rigid intricate branches. The flowers are usually solitary and 5–6 mm long, with floral tube several times longer than the sepals. The species is distributed in the southern Flinders Ranges and northern Mount Lofty Ranges of South Australia. No key threats to *C. campanulata* have been identified, but threats would include habitat loss and/or degradation and competition by weeds. This species occurs throughout the Project Area, including being the dominant shrub in vegetation association A4.

8.3.1.2 *Maireana excavata* (Bottle Fissure-plant) (State Vulnerable)

Maireana excavata is a perennial plant with a stout tap root and stems that grow along the ground and curve up at their extremity. The branches are loosely woolly-when young and the alternate leaves are narrowly oblong-elliptic to elliptic and 7–12 mm long. Flowers are solitary and the fruit is fleshy when fresh, depressed-barrel-shaped and constricted in the middle. The species occurs throughout the southern Flinders Ranges and northern Mount Lofty Ranges of South Australia. No key threats to *M. excavata* have been identified but would include habitat loss and/or degradation and weed competition. This species was not observed in the Project Area, but suitable habitat exists. Targeted species-specific surveys were not conducted as part of the scope of works.

8.3.1.3 *Maireana rohrlachii* (Rohrlach's Bluebush)

Maireana rohrlachii is a spindly, divaricately branched shrub to approximately 1 m high, which is generally found in heavy soils on exposed ridges and stony outcrops and also occurs as an understorey species within Low Grassy Woodlands. The species is mainly distributed in the southern Flinders Ranges and northern and southern Mount Lofty Ranges of South Australia. No key threats to *M. rohrlachii* have been identified but would include habitat loss and/or degradation and competition by weeds. This species was not observed in the Project Area, but suitable habitat exists. Targeted species-specific surveys were not conducted as part of the scope of works.

8.3.1.4 *Rumex dumosus* (Wiry Dock)

Rumex dumosus is an erect perennial to approximately 90 cm high, with numerous, intricate branches; 4–2 leaves 1–2 cm long, the lower lanceolate; distant 1–4-flowered clusters, all with linear-lanceolate floral leaves longer than the flowers. The species occurs in the southern Flinders Ranges and Mount Lofty Ranges of South Australia. No key threats to *R. dumosus* have been identified but would include habitat loss and/or degradation and competition by weeds. This species was not observed in the Project Area, but suitable habitat exists. Targeted species-specific surveys were not conducted as part of the scope of works.

8.3.2 State Listed Fauna Species

Two State listed threatened fauna species have been identified as known (observed during the survey) to occur in the Project Area (**Table 6.5**):

- Black Falcon (*Falco subniger*) – state Rare.
- Little Eagle (*Hieraaetus morphnoides*) – state Vulnerable.

Species' descriptions, habitat and threats of these two species are summarised below.

8.3.2.1 Black Falcon (*Falco subniger*) (state Rare)

The Black Falcon inhabits woodlands, grasslands and shrublands in the arid and semi-arid regions, especially wooded watercourses. They nest in stick nests in the tallest living trees available, particularly in riparian woodlands and the foot slopes of valleys. They are also generally considered to be highly mobile. This species has been observed on two occasions in the Project Area (see **Table 7.13**). Although there is limited roosting and nesting habitat for this species within the Project Area, it may traverse the area for foraging.

8.3.2.2 Little Eagle (*Hieraaetus morphnoides*) (state Vulnerable)

The Little Eagle inhabits eucalypt forest, woodland, or open woodland. Sheoak or acacia woodlands and riparian woodlands and riparian woodlands and nests in tall living trees. This species is widespread throughout most of Australia. Adult breeding Little Eagles are usually resident in permanent home ranges for consecutive years (Debus 2017). This species has been observed on four occasions in the Project Area (see **Table 7.13**). Similar to the Black Falcon, there is limited roosting and nesting habitat for this species within the Project Area, however, it may traverse the area for foraging.

8.4 Wedge-tailed Eagles

Areas with trees within the Project Area were searched opportunistically for the presence of Wedge-tailed Eagle nests and no nests were observed.

8.5 Additional Constraints

8.5.1 Declared Weeds

During construction and operation of the Project, the proponent and any contractors undertaking works will need to consider the legislative responsibilities that apply to exotic plants that are listed as Declared under the LSA Act. Eight Declared weeds have been observed in the Project Area (refer to **Section 7.2.4**).

Specific Declared Weed information on the recommended manual and chemical control options, legal obligations for landholders, restrictions on their movement and sale, reporting requirements, as well as links to state policies is available on the Department of Primary Industries and Regions (PIRSA) website: <https://pir.sa.gov.au/biosecurity/weeds/controlling-weeds>

8.5.2 Wind Farm Impacts on Avifauna and Bats

Potential impacts of wind farms on avifauna include but are not limited to:

- Rotor strikes.
- Barotrauma.
- Clearance and degradation of habitat.
- Acoustic masking.
- Behavioural avoidance.

These impacts are discussed in detail below.

8.5.2.1 Rotor Strikes

Bird species that regularly fly at heights swept by turbine rotors are prone to rotor strike. This includes raptors, which are one of the most at-risk groups of birds from wind farms due to their flight height and low fecundity and long lifespans (Beston *et al.* 2016), which means that the replacement of struck individuals within the population takes considerable time and population declines may occur (Dahl *et al.* 2012).

Impacts of wind farms on WTEs may be particularly severe, with 18 individuals struck over one year of operation of the Ararat Wind Farm, Victoria (BL&A 2018). If WTE and NPW Act listed Little Eagle and Black Falcon observed in the surveys represent resident individuals, then they may be at risk of rotor strike.

8.5.2.2 Barotrauma

Bats succumb to barotrauma at wind farm turbines whereby the rapid air-pressure reduction near moving turbines causes tissue damage to air-containing structures (Baerwald *et al.* 2008). The number of bat mortalities at wind farms is expected to be substantial, with 44 bat carcasses identified within one year of monthly monitoring over 25 turbines at Ararat Wind Farm, Victoria (BL&A 2018). The true number of bat mortalities across these 25 turbines would be significantly higher than 44 deaths as scavenging rates and surveyor error (failed detection during searches) were not accounted for. Bat monitoring at McArthur Wind Farm in south-western Victoria found annual bat mortality per turbine to be 1.41 ± 0.65 and 3.08 ± 1.68 in 2013 and 2014, respectively (AERS 2015).

8.5.2.3 Clearance and Degradation of Habitat

The Project is likely to result in the direct clearance of habitat for hardstands and tracks. Clearance and fragmentation of habitat is likely to be unfavourable to small passerine species with specific habitat preferences and favourable to large generalist species (Szabo *et al.* 2011). Hollows, which provide nesting and roosting locations for birds and bats may be cleared and where native vegetation borders the infrastructure footprint, habitat is expected to become degraded from weed invasion, erosion, and other edge effects. As such, mitigation measures should be considered through the development of documents such as the CEMP and OEMP.

8.5.2.4 Acoustic Masking

The noise associated with a wind farm may have adverse impacts on songbirds (Zwart *et al.* 2016). Acoustic masking caused by wind farm noise may affect the ability of individuals with established territories to deter a rival (Zwart *et al.* 2016). As such, increased time and energy would need to be spent for maintaining their territory, which could reduce breeding success (Zwart *et al.* 2016). In South Australia, acoustic masking is thought to be one of the key drivers of reduced songbird abundance in areas within 500 m of mining activity (Read *et al.* 2015).

8.5.2.5 Behavioural Avoidance

Raptors are known to substantially reduce their presence within an area following the construction of a wind farm; while this reduces the number of individuals that succumb to rotor strike it may displace pairs from their established territories, which can reduce breeding success. The impact of rotor strike and displacement of individuals is considered to have reduced the breeding success of White-tailed Eagles (*Haliaeetus albicilla*) within occupied territories from 48% before wind farm construction to 22% post construction (Dahl *et al.* 2012). Displacement of raptors at a wind farm also occurred in Wisconsin, United States of America, where a 47% reduction in raptor abundance was recorded following wind farm construction (Garvin *et al.* 2011).

9.0 Recommendations

To address the ecological constraints discussed in **Section 8.0**, implementation of the recommendations listed in **Table 9.1** should be considered for the proposed Project.

Table 9.1 Recommendations to Address the Ecological Constraints of the Project

Constraint Summary	Constraint Details	Recommendations
Native vegetation	Five native vegetation associations occur within the Project Area.	- Consider the mitigation hierarchy at all stages of the Project design phase. - Utilise existing disturbed areas (such as pasture or cropping land) for Project infrastructure where possible. - Where possible, avoid vegetation association A4: <i>Cryptandra campanulata</i> shrubland as this is a State listed threatened species, and it occurs in high numbers in these areas. - Seek native vegetation clearance approval under the NV Act. This includes the preparation of a Clearance Data Report and calculation of offset requirements. - Prior to the commencement of construction, develop a Construction Environmental Management Plan (CEMP) that implements measures to minimise, rehabilitate and offset unavoidable impacts to native vegetation.
EPBC Act listed species and habitat	- INTG TEC - Southern Whiteface - PBTL - FRWL	- Minimise impact to native vegetation by applying the mitigation hierarchy during the project design phase and implementing a CEMP. - Avoid impacting areas assessed as likely PBTL habitat and minimise clearance in areas assessed as possible PBTL habitat, where possible. If impacting on these areas, consider undertaking targeted pre-construction PBTL surveys in March. - Minimise unnecessary clearance where possible, such as by including medium voltage cables in access tracks to limit impacts on high value fauna vegetation, in particular vegetation that may provide habitat for PBTL (grassland) (shrubland) and consider Project design that avoids this constraint consider undertaking targeted PBTL surveys in likely and possible habitat. - Undertake an assessment of potential impacts against the EPBC Act Significant Impact Guidelines and refer the Project to <i>Department of Climate Change, Energy, the Environment and Water</i> (DCCEEW) for assessment once Project designs are finalised. - Undertake targeted surveys during winter 2026 for FRWL in suitable habitat in the Project Area to determine presence or absence.

Constraint Summary	Constraint Details	Recommendations
NPW Act listed fauna	- Black Falcon - Little Eagle - Peregrine Falcon	- Consider the mitigation hierarchy at all stages of the project design phase. - Prior to the commencement of construction, develop a CEMP that implements measures to minimise unavoidable impacts to native vegetation that provides habitat to NPW Act threatened species.
NPW Act listed flora	<i>Cryptandra campanulata</i> <i>Maireana rohrlachii</i> <i>Maireana excavata</i> <i>Rumex dumosus</i>	- Avoid/minimise works in vegetation association A4 to avoid areas of high density <i>Cryptandra campanulata</i>. - Survey proposed project impact footprint for NPW Act listed threatened flora prior to construction. - Microsite infrastructure to avoid threatened flora and maintain protection buffers as far as practicable.
Declared weeds	<i>Chondrilla juncea</i> <i>Cynara cardunculus</i> ssp. <i>flavescens</i> <i>Echium plantagineum</i> <i>Lycium ferocissimum</i> <i>Marrubium vulgare</i> <i>Pinus halepensis</i> <i>Silybum marianum</i> <i>Xanthium spinosum</i>	- Any CEMP or Operational Environmental Management Plan (OEMP) should include biosecurity measures. - Comply with any legislative requirements during the Project's construction and operation.

9.1 Approval Requirements

For the Project to gain approvals under the NV Act and EPBC Act, the following will be required, at a minimum:

- Two years of Bird and Bat Utilisation Surveys (BBUS) seasonally, to inform the referral process. Survey timing and effort to be confirmed by DCCEE. This has now been completed.
- Preparation of a Native Vegetation Data Report that considers all impact to native vegetation resulting from the Project. This is required to support an application to clear native vegetation under the NV Act.

For the Project to gain approval under the EPBC Act, the following is likely to be required:

- Referral of the Project to DCCEE for approval under the EPBC Act.

10.0 References

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Appendix A

Likelihood Assessment of Threatened Species identified by the Desktop Assessment

Scientific Name	Common Name	Conservation Status		Data Source	PMST Presence / Year of Last Record	Habitat Description and Distribution	Likelihood of Occurrence within Project Area
		Aus.	SA				
PLANTS							
<i>Acacia glandulicarpa</i>	Hairy-pod Wattle	VU	E	1	May	The Hairy-pod Wattle occurs in a range of woodland, shrubland and open mallee vegetation communities, on sandy clay to clay-loam soils, with some stands on ironstone gravel, rarely on heavy clays. Many subpopulations coincide with gentle slopes at the transition zone between heavy clay/gravel soils on the flats and sandy soils on the rises (DAWE 2021).	Unlikely – no suitable habitat for this species within the Project Area.
<i>Acacia iteaphylla</i>	Flinders Ranges Wattle	-	R	2	2022	Endemic to South Australia and found on northern Eyre Peninsula eastward to the Flinders Ranges and northern Mount Lofty Ranges growing on hillsides amongst rocky outcrops or in valleys along rocky creek banks. Widely planted & naturalised elsewhere and widespread in the Mt Lofty Ranges region (SSCC 2018).	Unlikely – outside of known distribution of this species but may occur as regenerating from planted trees.
<i>Acacia menzelii</i>	Menzel's Wattle	VU	V	1	May	Endemic to SA, the species is confined to localised areas around Monarto and Murray Bridge, Mount Lofty Ranges and Flinders Ranges (around Brachina). It occurs as scattered shrubs; either on roadsides, or in low open shrubby woodland on more rocky sites and found in open Eucalyptus scrub where associated species include <i>Eucalyptus socialis</i> (Beaked-red Mallee), <i>E. incrassata</i> (Ridge-fruited Mallee), <i>Callitris gracilis</i> (Southern Cypress Pine) and <i>E. odorata</i> (Peppermint Box) on calcareous loamy earths (DEWHA 2008b).	Unlikely – no Eucalyptus habitat in the Project Area.

Scientific Name	Common Name	Conservation Status		Data Source	PMST Presence / Year of Last Record	Habitat Description and Distribution	Likelihood of Occurrence within Project Area
		Aus.	SA				
<i>Acacia trineura</i>	Three-nerve Wattle	-	E	2	1989	Sometimes near inland water, growing in red earths and clay, often in mallee communities (Flora AU, 2023).	Unlikely – vegetation in the Project Area is unsuitable for this species.
<i>Austrostipa gibbosa</i>	Swollen Spear-grass	-	R	2	2022	Occurs in the southern Flinders Ranges, Mount Lofty Ranges and the South-east in SA growing on rich loamy soil along creeks and seasonally wet areas in woodland and grassland (SSCC 2018).	Possible – suitable habitat within the Project Area.
<i>Caladenia tensa</i>	Greencomb Spider-orchid	EN	-	1	Likely	Growing among shrubs and tussocks in woodland dominated by yellow gum and <i>Callitris preissii</i> in freely draining, red-brown, sandy loam; also, among spinifex in mallee communities on poor, sandy soil; less commonly in Black Box woodland and Buloke woodland in heavy soil (Flora AU, 2023).	Unlikely – not within the known distribution of this species and no recent records.
<i>Codonocarpus pyramidalis</i>	Slender Bell-fruit	VU	E	1, 2	Known / 1986	Slender Bell-fruit grows on the crests and slopes of low ridges, hills and along creeks in loamy sand or sandy clay loam of pH 8.5–9. It occurs within the Murray Darling Basin, Northern and Yorke, Adelaide and Mount Lofty Ranges, and Eyre Peninsula in SA (DEWHA 2008c).	Possible – suitable habitat and previous records within the Project Area but records are almost 40 years old and not observed in the Project Area.

Scientific Name	Common Name	Conservation Status		Data Source	PMST Presence / Year of Last Record	Habitat Description and Distribution	Likelihood of Occurrence within Project Area
		Aus.	SA				
<i>Cryptandra campanulata</i>	Long-flower Cryptandra	-	R	2	2023	Grows in shallow soils over rocks such as quartzite, granite, sandstone, limestone or shale, in the southern Flinders Ranges and northern Mt Lofty Ranges. <i>Cryptandra campanulata</i> is the most frequently encountered woody species in iron-grass grasslands (Turner 2012); it also occurs in heath and shrubland vegetation (Kellermann, 2020).	Known – observed within the Project Area.
<i>Cullen parvum</i>	Small Scurf-pea	-	V	2	1988	Plants are found in grassland, River Red Gum (<i>Eucalyptus camaldulensis</i>) Woodland or Box-Gum Woodland, sometimes on grazed land and usually on table drains or adjacent to drainage lines or watercourses (OEH, 2019).	Possible – some suitable habitat may occur in the Project Area.
<i>Diuris behrii</i>	Behr's Cowslip Orchid	-	V	2	2005	Growing in native grassland, open woodland and grassy forest; grows on more fertile soils, especially amongst Kangaroo Grass and Triodia on gentle slopes and flats (SSCC 2018).	Unlikely – no suitable habitat within the Project Area.
<i>Dodonea procumbens</i>	Trailing Hop-bush	VU	V	1	Likely	The Trailing Hop-bush grows in low-lying, often winter-wet areas in woodland, low open forests, heathland and grasslands, on sands and clays. SA populations have been recorded in open Eucalyptus species woodlands in low-lying areas, and in native grasslands (Carter 2010).	Unlikely – no suitable habitat within the Project Area.
<i>Dodonea subglandulifera</i>	Peep Hill Hop-bush	EN	E	1	May	The Peep Hill Hop-bush occurs primarily on low hills on loamy soils associated with rocky outcrops. These low hills occur to the east of the range country, just before the vegetation changes to mallee flats. The species has also been recorded from plains country in sandy soils over limestone (Moritz and Bickerton 2010).	Unlikely – no suitable habitat within the Project Area.

Scientific Name	Common Name	Conservation Status		Data Source	PMST Presence / Year of Last Record	Habitat Description and Distribution	Likelihood of Occurrence within Project Area
		Aus.	SA				
<i>Eragrostis infecunda</i>	Barren Cane-grass	-	R	2	1989	Grows on cracking clays, alluvial sandy loams, roadsides, and in seasonally flooded habitats (Flora AU, 2023).	Unlikely – no suitable habitat within the Project Area.
<i>Eryngium ovinum</i>	Blue Devil	-	V	2	2006	Found in the wetter parts of the Mount Lofty Ranges and a few sites in the lower South-East in South Australia, growing in open woodland on damp clay and sandy soils (SSCC 2018).	Possible – Recent records, although habitat within the Project Area is not preferred.
<i>Eryngium vesiculosum</i>	Prostrate Blue Devil	-	R	2	1996	Found scattered in South Australia, from the Lake Eyre region to the lower South-east, growing in sandy flats in low-lying damp areas (SSCC 2018).	Unlikely – no suitable habitat within the Project Area.
<i>Eucalyptus albens</i>	White Box	-	R	2	1948	Grows on gentle slopes, plains and valleys in a wide range of soils in woodland (Flora AU, 2023).	Unlikely – no suitable habitat within the Project Area.
<i>Eucalyptus bicostata</i>	Southern Blue Gum	-	V	2	2008	Found only on Mount Bryon in South Australia, growing in open grassy woodland on steep upper, south-facing slopes (SSCC 2018).	Unlikely – no suitable habitat within the Project Area.
<i>Lachnagrostis limitanea</i>	Spalding Blown-grass	EN	E	2	1992	Is endemic to the Northern Lofty Ranges Region of South Australia, where it occurs in three naturally occurring and isolated populations near Riverton, Spalding and Tarlee. Occurs in low-lying, flood-prone clay loam near watercourses, and swampy habitat that is not regularly grazed (Roberston and Clarke 2012).	Unlikely – no suitable habitat within the Project Area.

Scientific Name	Common Name	Conservation Status		Data Source	PMST Presence / Year of Last Record	Habitat Description and Distribution	Likelihood of Occurrence within Project Area
		Aus.	SA				
<i>Maireana excavata</i>	Bottle Fissure-plant	-	V	2	2013	Red-brown clay loam soils in open grasslands and shrublands (Cunningham <i>et al</i> , 1981).	Likely – suitable habitat within the Project Area and recent nearby records.
<i>Maireana rohrlachii</i>	Rohrlach's Bluebush	-	R	2	2013	Species occurs from few locations on EP, but mainly YP, Mid North, Fleurieu Peninsula, Murraylands and western Victoria. Preferred habitat includes heavy clay and calcareous loam soil often fringing lakes in seasonally wet areas (Royal Botanic Gardens Victoria 2020).	Likely – suitable habitat within the Project Area and recent nearby records.
<i>Olearia pannosa</i> ssp. <i>pannosa</i>	Silver Daisy-bush	VU	V	1, 2	Known / 1912	The silver daisy-bush occurs in sandy, flat areas and in hilly, rocky areas in woodland or mallee. Hilly area soil types include hard pedal mottled-yellow duplex and hard pedal red duplex (DotE 2013b).	Unlikely – limited suitable habitat within the Project Area. Nearby records are over 100 years old. Species was not observed during the field surveys.
<i>Philotheca angustifolia</i> ssp. <i>angustifolia</i>	Narrow-leaf Wax-flower	-	R	2	1981	Grows in woodland or heath in heavy soil or among rocks (Flora AU, 2023).	Unlikely – no suitable habitat within the Project Area.

Scientific Name	Common Name	Conservation Status		Data Source	PMST Presence / Year of Last Record	Habitat Description and Distribution	Likelihood of Occurrence within Project Area
		Aus.	SA				
<i>Pterostylis despectans</i>	Mt Bryan Greenhood	EN	E	1, 2	Likely / 2007	Occurs on gently sloping land north of Mount Bryan in grassy <i>E. odorata</i> (peppermint box), <i>E. pruinosa</i> (silver-leaved box), and <i>E. microcarpa</i> (grey box) woodland. The understorey is sparse and typically includes <i>Austrostipa</i> spp. (spear-grasses), <i>Rytidosperma</i> spp. (wallaby-grasses), <i>Lomandra effusa</i> (scented mat-rush) and <i>Plantago gaudichaudii</i> (narrow-leaved plantain). The species usually grows in hard, clay loam over rock outcrops, covered with microphytic crust (TSSC 2016).	Possible – recent record and some suitable habitat within the Project Area.
<i>Pterostylis xerophila</i>	Desert Greenhood	VU	V	1	May	The Desert Greenhood is a small, deciduous, terrestrial orchid endemic to inland South Australia and Victoria. It occurs in generally remote locations in semi-desert environments, growing mostly on rock outcrops under low shrubs (Duncan 2010).	Unlikely – no recent records and no suitable habitat within the Project Area.
<i>Ptilotus angustifolius</i>	Narrow-leaf Yellow-tails	-	E	2	1994	Endemic to South Australia and found near Quorn, north-east of Port Augusta, south to Victor Harbor, growing on rocky slopes or hills, occurring in <i>Eucalyptus microcarpa</i> association (SSCC 2018).	Possible – older records, some vegetation in the Project Area may be suitable.
<i>Ptilotus erubescens</i>	Hairy-tails	-	R	2	2020	Found mainly in the southern Flinders Ranges and Mount Lofty Ranges in South Australia with an isolated destruction near Bordertown, growing fertile soil in grassy woodland (SSCC 2018).	Possible – recent record and some suitable habitat within the Project Area.

Scientific Name	Common Name	Conservation Status		Data Source	PMST Presence / Year of Last Record	Habitat Description and Distribution	Likelihood of Occurrence within Project Area
		Aus.	SA				
<i>Pycnosorus globosus</i>	Drumsticks	-	V	2	1994	Found in the Flinders Ranges and the mid-north in South Australia, growing in open moist heavy soils prone to inundation (SSCC 2018).	Possible – older records, some vegetation in the Project Area may be suitable.
<i>Rumex dumosus</i>	Wiry Dock	-	R	2	2022	Grows in grasslands and disturbed grassy areas; mostly on clayey soils (NSW flora, 2023).	Likely – suitable habitat within the Project Area and recent records.
<i>Sclerolaena muricata</i> var. <i>villosa</i>	Five-spine Bindyi	-	R	2	1974	Woodland, shrubland, grassy areas, disturbed sites, and areas subject to inundation. Western Slopes (SSCC 2018).	Possible – older records, some vegetation in the Project Area may be suitable.
<i>Senecio macrocarpus</i>	Large-fruit Fireweed	VU	V	1	May	The Large-fruit Fireweed occurs most commonly in depressions in low lying closed sedgeland but may occur in sedgeland, herb land, low shrubland to low open woodland where competition from understorey plants is low. The soils range from clay to loamy sand. (DCCEEW 2024c).	Unlikely – no recent records and no suitable habitat within the Project Area.
<i>Swainsona behriana</i>	Behr's Swainson-pea	-	V	2	1989	Once found in the Mount Lofty Ranges and the lower South-east, growing on light or occasionally heavy soils in moist grassland and woodland. Now only found in the northern and eastern side of the Mount Lofty Ranges. (SSCC 2018).	Unlikely – no suitable habitat within the Project Area.

Scientific Name	Common Name	Conservation Status		Data Source	PMST Presence / Year of Last Record	Habitat Description and Distribution	Likelihood of Occurrence within Project Area
		Aus.	SA				
<i>Swainsona pyrophila</i>	Yellow Swainson-pea	VU	R	1	May	The Yellow Swainson-pea is found in mallee vegetation communities on a variety of soil types including well-drained sands, sandy loams and heavier clay loams. It is usually found after fire growing in association with Eucalyptus species mid mallee woodland over Broombush tall shrubland (Tonkin and Robertson 2010).	Unlikely – no recent records and no suitable habitat within the Project Area.
<i>Wurmbea latifolia</i> ssp. <i>latifolia</i>	Broad-leaf Nancy	-	V	2	1992	Endemic to South Australia and found in the northern Mount Lofty Ranges, growing on heavy, often waterlogged soils of open forest and woodland (SSCC 2018).	Unlikely – no suitable habitat within the Project Area.
BIRDS							
<i>Actitis hypoleucos</i>	Common Sandpiper	Mi (W)	R	1	May	Found along all coastlines of Australia and in many areas inland, the Common Sandpiper is widespread in small numbers. The population when in Australia is concentrated in northern and western Australia (Blakers <i>et al.</i> 1984; Higgins & Davies 1996). Inhabit in Salt-water and fresh-water ecosystems.	Unlikely - no suitable habitat in the Project Area.
<i>Antigone rubicunda</i>	Brolga	-	V	2	1935	Often feed in dry grassland or ploughed paddocks or even desert claypans, they are dependent on wetlands too, especially shallow swamps, where they will forage with their head entirely submerged. (NSW, 2023).	Unlikely - no suitable habitat in the Project Area.
<i>Aphelocephala leucopsis leucopsis</i>	Southern Whiteface	VU	-	1, 2, 3	Known / 2022	Occurs in semi-arid woodlands, mallee, mulga, dry-country scrublands." Southern Whiteface favour habitat with low tree densities and a herbaceous understory litter cover. They live in a wide range of open woodlands and shrublands which are	Known – suitable habitat and observed during the field survey.

Scientific Name	Common Name	Conservation Status		Data Source	PMST Presence / Year of Last Record	Habitat Description and Distribution	Likelihood of Occurrence within Project Area
		Aus.	SA				
						dominated by acacia, mallee, mulga and eucalyptus species (DCCEEW 2023a)	
<i>Apus pacificus</i>	Fork-tailed Swift	Mi (Ma)	-	1	Likely	The Fork-tailed Swift is a non-breeding visitor to all states and territories of Australia (Higgins 1999). The Fork-tailed Swift is almost exclusively aerial, flying from less than 1 m to at least 300 m above ground and probably much higher.	Unlikely – no recent records and almost exclusively aerial.
<i>Ardeotis australis</i>	Australian Bustard	-	V	2	1993	Found on dry plains, grasslands and in open woodland (AM, 2023).	Possible – some suitable habitat within the Project Area and records nearby.
<i>Calidris acuminata</i>	Sharp-tailed Sandpiper	VU, Mi (W)	-	1	May	Movements occur during the non-breeding period where birds appear to be dispersive, moving to temporary or flooded wetlands and leaving them when they dry. On migration, they forage and roost on rocky and sandy beaches, freshwater habitats and inland saltwater habitats (DCCEEW 2024c).	Unlikely - no suitable habitat in the Project Area.
<i>Calidris ferruginea</i>	Curlew Sandpiper	CE, Mi (W)	E	1	May	Occur on intertidal mudflats in sheltered coastal areas, such as estuaries, bays, inlets and lagoons, and also around non-tidal swamps, lakes and lagoons near the coast, and ponds in saltworks and sewage farms. They are also recorded inland, though less often, including around ephemeral and permanent lakes, dams, waterholes and bore drains, usually with bare edges of mud or sand. They occur in both fresh and brackish waters. Occasionally they are recorded around floodwaters (Higgins & Davies 1996). (DCCEEW 2023b).	Unlikely - no suitable habitat in the Project Area.

Scientific Name	Common Name	Conservation Status		Data Source	PMST Presence / Year of Last Record	Habitat Description and Distribution	Likelihood of Occurrence within Project Area
		Aus.	SA				
<i>Calidris melanotos</i>	Pectoral Sandpiper	Mi (W)	R	1	May	This species prefers shallow fresh to saline wetlands. The species is found at coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands (Higgins and Davies 1996).	Unlikely - no suitable habitat in the Project Area.
<i>Corcorax melanorhamphos</i>	White-winged Chough	-	R	2	2020	Prefers drier forests, woodlands of <i>Eucalyptus</i> sp., crops and pastures (Pizzey and Knight 2024).	Possible – some habitat within Project Area, majority of site unsuitable habitat.
<i>Falco hypoleucos</i>	Grey Falcon	VU	R	1	Likely	This species is mainly found where annual rainfall is less than 500 mm and is essentially always confined to the arid and semi-arid zones. The species frequents timbered lowland plains, particularly acacia shrublands that are crossed by tree-lined water courses (Schoenjahrn 2018).	Unlikely – no recent records, vegetation within Project Area is unsuitable.
<i>Falco peregrinus macropus</i>	Peregrine Falcon	-	R	2	2019	Found everywhere from woodlands to open grasslands and coastal cliffs - though less frequently in desert regions. This species prefers open habitats such as grasslands, tundra and meadows and nests on cliff faces and in crevices (Pizzey and Knight 2024).	Possible – nearby recent records, although habitat within the Project Area is not preferred, may occur as a flyover.
<i>Falco subniger</i>	Black Falcon	-	R	3	-	Occurs on plains, grasslands, foothills, timbered watercourses and crops (Pizzey and Knight 2024).	Known – observed within the Project Area.

Scientific Name	Common Name	Conservation Status		Data Source	PMST Presence / Year of Last Record	Habitat Description and Distribution	Likelihood of Occurrence within Project Area
		Aus.	SA				
<i>Gallinago hardwickii</i>	Latham's Snipe	VU, Mi (W)	R	1	May	Latham's Snipe occurs in soft wet ground or shallow water with tussocks and other growth; wet parts of paddocks; irrigated areas; scrub or open woodland; samphire saltmarshes and mangrove fringes (DCCEEW 2024d).	Unlikely - no suitable habitat in the Project Area.
<i>Grantiella picta</i>	Painted Honeyeater	VU	R	1	May	Sparsely distributed from southern Victoria and south-eastern SA to far northern QLD and eastern Northern Territory Forest, woodland, dry scrub, often with abundant mistletoe. Occur in forest, woodland, dry scrub, often with abundant mistletoe. Dependent on mistletoe berries (Morcombe 2021).	Unlikely – no recent records, now vagrant to SA, no suitable habitat within the Project Area.
<i>Hieraaetus morphnoides</i>	Little Eagle	-	V	3	-	Widespread over diverse habitats; forest, woodland, open scrub, tree-lined watercourses of interior Australia such as the Murray River. Prefers areas where open country intermixes with wooded or forested hills, as in farmland, irrigated land (Morcombe 2021).	Known – observed during field survey.
<i>Melanodryas cucullata cucullata</i>	Hooded Robin	EN	R	1	Likely	The South-eastern Hooded Robin prefers dry eucalypt and acacia woodlands and shrublands with an open understorey, some grassy areas and a complex ground layer. They avoid woodlands with tall trees or dense tree cover but sometimes occur in tall, dense heaths with scattered open areas. While they can occur in patches as small as 2.9 ha, in agricultural landscapes they prefer larger patches greater than 10 ha with moderately deep to deep soils (DCCEEW 2023c).	Unlikely – no recent records, no suitable habitat in the Project Area.

Scientific Name	Common Name	Conservation Status		Data Source	PMST Presence / Year of Last Record	Habitat Description and Distribution	Likelihood of Occurrence within Project Area
		Aus.	SA				
<i>Motacilla cinerea</i>	Grey Wagtail	Mi (T)	-	1	May	European and Asian species. Migrates south in winter, usually to Indonesia and NG. Rarely reaches Australia, but when it does, favours habitat near freshwater streams, also mown grass, ploughed land or near sewage ponds. (Morcombe 2021).	Unlikely – Vagrant to SA, no suitable habitat within the Project Area.
<i>Motacilla flava</i>	Yellow Wagtail	Mi (T)	-	1	May	Open country near swamps, salt marshes, sewage ponds, grassed surrounds to airfields, bare ground. Occasionally on drier inland plans (Morcombe 2021).	Unlikely – Vagrant to SA, no suitable habitat within the Project Area.
<i>Myiagra inquieta</i>	Restless Flycatcher	-	R	2	2005	Found throughout northern and eastern mainland Australia, as well as in south-western Australia. The Restless Flycatcher is found in open forests and woodlands. Occupies open forests, woodlands and mallee, inland coastal scrubs (Pizzey and Knight 2024).	Unlikely – no suitable woodland habitat in the Project Area.
<i>Neophema chrysostoma</i>	Blue-winged Parrot	VU	V	1	Likely	The Blue-winged Parrot inhabits a range of habitats from coastal, sub-coastal and inland areas, through to semi-arid zones. They tend to favour grasslands and grassy woodlands and are often found near wetlands both near the coast and in semi-arid zones. The species can also be seen in altered environments such as airfields, golf-courses and paddocks (DCCEE 2023d).	Possible – suitable habitat within the Project Area and within species known distribution. No recent records.
<i>Pedionomus torquatus</i>	Plains-wanderer	CE	E	1	May	Known inhabitant of forest, woodland, mangroves and coastal heath scrub. Prefers dense, wet gullies of heavy Eucalypt forest in breeding season (Morcombe 2021). Eastern Ospreys occur in littoral and coastal habitats and terrestrial wetlands of tropical and temperate Australia and offshore islands (DotE 2015b).	Unlikely – no recent records, area heavily grazed and cropped.

Scientific Name	Common Name	Conservation Status		Data Source	PMST Presence / Year of Last Record	Habitat Description and Distribution	Likelihood of Occurrence within Project Area
		Aus.	SA				
<i>Rostratula australis</i>	Australian Painted Snipe	EN	E	1	May	Occurs in shallow freshwater (occasionally brackish) wetlands, both ephemeral and permanent, such as lakes, swamps, claypans, inundated or waterlogged grassland/saltmarsh, dams, rice crops, sewage farms and bore drains, rushes and reeds, low scrub, Muehlenbeckia spp. (lignum), open timber or samphire (DSSEWPC 2013).	Unlikely - no suitable habitat in the Project Area.
<i>Stagonopleura guttata</i>	Diamond Firetail	VU	V	1, 2	Likely / 1998	Endemic to Australia, occurring mainly on the inland slopes of the Great Dividing Range and in the AMLR/Eyre Peninsula region of SA. Reside in a wide range of Eucalypt dominated vegetation communities that have a grassy understorey, including woodland, forest and mallee. Most occur on the inland slopes of the Great Dividing Ranges, with only small pockets near the coast (DCCEEW 2023e).	Possible – Records present in the Search Area, although habitat in the Project Area is not preferred.
<i>Turnix pyrrhothorax</i>	Red-chested Buttonquail	-	R	2	2000	Prefers grasslands and open woodland. Occasionally observed in cropping and other areas where they like to take cover. Often mistaken for other <i>Turnix</i> spp. (Pizzey and Knight 2024).	Possible – suitable habitat within the Project Area, although sparse, scattered records.
REPTILES							
<i>Aprasia pseudopulchella</i>	Flinders Worm-lizard	VU	-	1	Likely	Known from the FR of SA, extending south to the western slopes and northern and central MLR. The species inhabits open woodland, native tussock grassland, riparian habitats, and rocky isolates, preferring stony or clay soils with a stony / rocky	Possible – within species known/likely distribution and suitable habitat

Scientific Name	Common Name	Conservation Status		Data Source	PMST Presence / Year of Last Record	Habitat Description and Distribution	Likelihood of Occurrence within Project Area
		Aus.	SA				
						surface, but has also been found sheltering in soil beneath stones and rotting stumps (Commonwealth Government, 2008). It occurs in open woodland, native tussock grassland, riparian habitats and rocky isolates (DEWHA 2008d).	present in the Project Area. However, no recent records nearby and no FRWL identified in the targeted surveys of the Project Area.
<i>Tiliqua adelaidensis</i>	Pygmy Bluetongue	EN	E	1, 2	Known / 2023	Fragmented populations known from across the mid-north of SA, with unknown population size. Occurs in a variety of habitats, ranging from highly degraded grasslands to grasslands of high biodiversity, sparse to moderate coverage, preferably on lower slopes. The species uses empty spider burrows (trapdoor, wolf spider) as refuges and basking sites and requires these to occur in moderate abundance in the landscape. Historically (pre-1992), the species was found in chenopod and mallee scrublands with compacting or crusty sand soils associated with hollow mallee lignotubers and near surface limestone sheets (DCCEE 2023f).	Likely – Suitable habitat within the Project Area and recent records nearby.

Conservation status:

Aus: Australia (*Environment Protection and Biodiversity Conservation Act 1999*). SA: South Australia (*National Parks and Wildlife Act 1972*). Conservation Codes: EN/E: Endangered. VU/V: Vulnerable. R: Rare.

Source of Information:

1. EPBC Act Protected Matters Report (DCCEE 2024b) – 10 km buffer applied to Project Area;
2. Biological Database of South Australia data extract (DEW 2024a) (Recordset number DEWNRBDBSA241211-1) - 10 km buffer applied to Project Area.
3. Observed during the field assessment.

Appendix B

Flora Species identified within the Project Area



Scientific Name	Common Name	EPBC	NPW	Exotic	Declared
<i>Acacia pycnantha</i>	Golden Wattle	-	-	-	-
<i>Agave</i> sp.	Agave	-	-	✓	-
<i>Aira</i> sp.	Hair-grass	-	-	✓	-
<i>Aizoon pubescens</i>	Coastal Galenia	-	-	✓	-
<i>Allocasuarina verticillata</i>	Drooping Sheoak	-	-	-	-
<i>Arctotheca calendula</i>	Cape Weed	-	-	✓	-
<i>Aristida behriana</i>	Brush Wire-grass	-	-	-	-
<i>Aristida</i> sp.	Three-awn/Wire-grass	-	-	-	-
<i>Arthropodium</i> sp.	Vanilla-lily	-	-	-	-
<i>Arthropodium strictum</i>	Common Vanilla-lily	-	-	-	-
<i>Asperula</i> sp.	Woodruff	-	-	-	-
<i>Asphodelus fistulosus</i>	Onion Weed	-	-	✓	-
<i>Atriplex semibaccata</i>	Berry Saltbush	-	-	-	-
<i>Atriplex stipitata</i>	Bitter Saltbush	-	-	-	-
<i>Austrostipa drummondii</i>	Cottony Spear-grass	-	-	-	-
<i>Austrostipa nitida</i>	Balcarra Spear-grass	-	-	-	-
<i>Austrostipa nodosa</i>	Tall Spear-grass	-	-	-	-
<i>Austrostipa platychaeta</i>	Flat-awn Spear-grass	-	-	-	-
<i>Austrostipa scabra</i> group	Falcate-awn Spear-grass	-	-	-	-
<i>Austrostipa scabra</i> ssp.	Rough Spear-grass	-	-	-	-
<i>Austrostipa scabra</i> ssp. <i>scabra</i>	Rough Spear-grass	-	-	-	-
<i>Austrostipa</i> sp.	Spear-grass	-	-	-	-
<i>Avena barbata</i>	Bearded Oat	-	-	✓	-
<i>Brachyscome ciliaris</i> var.	Variable Daisy	-	-	-	-
<i>Brassica</i> sp.		-	-	✓	-
<i>Bromus diandrus</i>	Great Brome	-	-	✓	-
<i>Bromus</i> sp.	Brome	-	-	✓	-
<i>Bulbine bulbosa</i>	Bulbine-lily	-	-	-	-
<i>Bursaria spinosa</i> ssp. <i>spinosa</i>	Sweet Bursaria	-	-	-	-
<i>Carthamus lanatus</i>	Saffron Thistle	-	-	✓	-
<i>Cheilanthes</i> sp.	Rock-fern	-	-	-	-
<i>Chenopodium album</i>	Fat Hen	-	-	✓	-
<i>Chloris truncata</i>	Windmill Grass	-	-	-	-
<i>Chondrilla juncea</i>	Skeleton Weed	-	-	✓	✓
<i>Chrysocephalum apiculatum</i>	Common Everlasting	-	-	-	-

Scientific Name	Common Name	EPBC	NPW	Exotic	Declared
<i>Chrysocephalum semipapposum</i>	Clustered Everlasting	-	-	-	-
<i>Chrysocephalum</i> sp.	Everlasting	-	-	-	-
<i>Convolvulus remotus</i>	Grassy Bindweed	-	-	-	-
<i>Convolvulus</i> sp.	Bindweed	-	-	-	-
<i>Conyza bonariensis</i>	Flax-leaf Fleabane	-	-	✓	-
<i>Crassula colorata</i> var. <i>colorata</i>	Dense Crassula	-	-	✓	-
<i>Crassula</i> sp.	Crassula/Stonecrop	-	-	-	-
<i>Cryptandra campanulata</i>	Long-flower Cryptandra	-	R	-	-
<i>Cynara cardunculus</i> ssp. <i>flavescens</i>	Artichoke Thistle	-	-	✓	✓
<i>Daucus glochidiatus</i>	Native Carrot	-	-	-	-
<i>Dianella revoluta</i> var. <i>revoluta</i>	Black-anther Flax-lily	-	-	-	-
<i>Echium plantagineum</i>	Salvation Jane	-	-	✓	✓
<i>Einadia nutans</i> ssp. <i>nutans</i>	Climbing Saltbush	-	-	-	-
<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	Ruby Saltbush	-	-	-	-
<i>Enneapogon nigricans</i>	Black-head Grass	-	-	-	-
<i>Eragrostis</i> sp.	Love-grass	-	-	✓	-
<i>Erodium botrys</i>	Long Heron's-bill	-	-	✓	-
<i>Erodium cicutarium</i>	Cut-leaf Heron's-bill	-	-	✓	-
<i>Erodium cygnorum</i>	Blue Heron's-bill	-	-	-	-
<i>Eucalyptus cladocalyx</i>	Sugar Gum	-	-	✓	-
<i>Eutaxia microphylla</i>	Common Eutaxia	-	-	-	-
<i>Foeniculum vulgare</i>	Fennel	-	-	✓	-
<i>Fumaria bastardii</i>	Bastard Fumitory	-	-	✓	-
<i>Galium murale</i>	Small Bedstraw	-	-	-	-
<i>Glycine rubiginosa</i>	Twining Glycine	-	-	-	-
<i>Goodenia pusilliflora</i>	Small-flower Goodenia	-	-	-	-
<i>Hordeum leporinum</i>	Wall Barley-grass	-	-	✓	-
<i>Hordeum</i> sp.	Barley	-	-	✓	-
<i>Hordeum vulgare</i>	Barley	-	-	✓	-
<i>Hyalosperma semisterile</i>	Orange Sunray	-	-	-	-
<i>Hypochaeris glabra</i>	Smooth Cat's Ear	-	-	✓	-
<i>Hypochaeris radicata</i>	Rough Cat's Ear	-	-	✓	-
<i>Hypochaeris</i> sp.	Cat's Ear	-	-	✓	-
<i>Hypoxis</i> sp.	Yellow Star-lily	-	-	-	-

Scientific Name	Common Name	EPBC	NPW	Exotic	Declared
<i>Juncus</i> sp.	Rush	-	-	-	-
<i>Lepidium africanum</i>	Common Peppergrass	-	-	✓	-
<i>Lomandra effusa</i>	Scented Mat-rush	-	-	-	-
<i>Lomandra multiflora</i> ssp. <i>dura</i>	Hard Mat-rush	-	-	-	-
<i>Lycium ferocissimum</i>	African Boxthorn	-	-	✓	✓
<i>Maireana aphylla</i>	Cotton-bush	-	-	-	-
<i>Maireana brevifolia</i>	Short-leaf Bluebush	-	-	-	-
<i>Maireana enchylaenoides</i>	Wingless Fissure-plant	-	-	-	-
<i>Maireana</i> sp.	Bluebush/Fissure-plant	-	-	-	-
<i>Malva arborea</i>	Tree Mallow	-	-	✓	-
<i>Malva</i> sp.	Mallow	-	-	✓	-
<i>Marrubium vulgare</i>	Horehound	-	-	✓	✓
<i>Medicago polymorpha</i>	Burr-medic	-	-	✓	-
<i>Medicago sativa</i>	Lucerne	-	-	✓	-
<i>Medicago</i> sp.	Medic	-	-	✓	-
<i>Moraea setifolia</i>	Thread Iris	-	-	✓	-
<i>Oxalis perennans</i>	Native Sorrel	-	-	✓	-
<i>Pelargonium</i> sp.	Storks-bill	-	-	✓	-
<i>Pinus halepensis</i>	Aleppo Pine	-	-	✓	✓
<i>Pinus radiata</i>	Radiata Pine	-	-	✓	-
<i>Piptatherum miliaceum</i>	Rice Millet	-	-	✓	-
<i>Plantago lanceolata</i> var.	Ribwort	-	-	✓	-
<i>Polygonum aviculare</i>	Wireweed	-	-	✓	-
<i>Ptilotus spathulatus</i>	Pussy-tails	-	-	-	-
<i>Rapistrum rugosum</i> ssp. <i>rugosum</i>	Turnip Weed	-	-	✓	-
<i>Reichardia tingitana</i>	False Sowthistle	-	-	✓	-
<i>Reseda alba</i>	White Mignonette	-	-	✓	-
<i>Rhagodia crassifolia</i>	Fleshy Saltbush	-	-	-	-
<i>Rhodanthe pygmaea</i>	Pigmy Daisy	-	-	-	-
<i>Rhodanthe</i> sp.	Everlasting	-	-	-	-
<i>Romulea minutiflora</i>	Small-flower Onion-grass	-	-	✓	-
<i>Romulea rosea</i> var. <i>australis</i>	Common Onion-grass	-	-	✓	-
<i>Rumex crispus</i>	Curled Dock	-	-	✓	-
<i>Rumex</i> sp.	Dock	-	-	✓	-

Scientific Name	Common Name	EPBC	NPW	Exotic	Declared
<i>Rytidosperma caespitosum</i>	Common Wallaby-grass	-	-	-	-
<i>Rytidosperma</i> sp.	Wallaby-grass	-	-	-	-
<i>Salsola australis</i>	Buckbush	-	-	-	-
<i>Salvia</i> sp.	Sage	-	-	✓	-
<i>Salvia verbenaca</i> var. <i>verbenaca</i>	Wild Sage	-	-	✓	-
<i>Scabiosa atropurpurea</i>	Pincushion	-	-	✓	-
<i>Schinus molle</i>	Peppercorn Tree	-	-	✓	-
<i>Scleranthus pungens</i>	Prickly Knawel	-	-	-	-
<i>Sida corrugata</i> var. <i>corrugata</i>	Corrugated Sida	-	-	-	-
<i>Silybum marianum</i>	Variegated Thistle	-	-	✓	✓
<i>Sisymbrium</i> sp.	Wild Mustard	-	-	✓	-
<i>Sonchus oleraceus</i>	Common Sow-thistle	-	-	✓	-
<i>Spyridium</i> sp.	Spyridium	-	-	-	-
<i>Swainsona</i> sp.	Swainson-pea	-	-	-	-
<i>Themeda triandra</i>	Kangaroo Grass	-	-	-	-
<i>Thysanotus</i> sp.	Fringe-lily	-	-	-	-
<i>Trifolium arvense</i> var. <i>arvense</i>	Hare's-foot Clover	-	-	✓	-
<i>Trifolium</i> sp.	Clover	-	-	✓	-
<i>Triptilodiscus pygmaeus</i>	Small Yellow-heads	-	-	-	-
<i>Vicia sativa</i> ssp.	Common Vetch	-	-	✓	-
<i>Vittadinia cuneata</i> var. <i>cuneata</i>	Fuzzy New Holland Daisy	-	-	-	-
<i>Vittadinia gracilis</i>	Woolly New Holland Daisy	-	-	-	-
<i>Vittadinia</i> sp.	New Holland Daisy	-	-	-	-
<i>Vulpia</i> sp.	Fescue	-	-	✓	-
<i>Wahlenbergia</i> sp.	Native Bluebell	-	-	-	-
<i>Xanthium spinosum</i>	Bathurst Burr	-	-	✓	✓

Appendix C

Vegetation Associations across the selected OTL Corridor





Appendix C.1

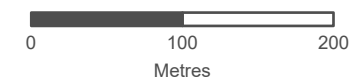
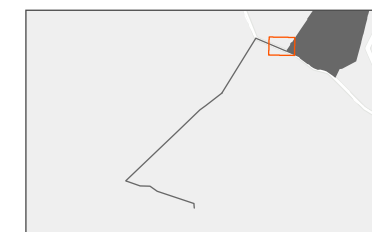
Vegetation Associations Across the Selected OTL Corridor

Legend

- Wind Farm Project Area
- Civil Layout
- OTL Corridor
- BAM Site
- Main road
- Local road

Vegetation Association

- A3: *Austrostipa* sp. and *Rytidosperma* sp. grassland with emergent *Maireana aphylla* ± exotic grasses
- A7: Planted Vegetation / Infrastructure
- Road



Scale 1:5,000 at A4
GDA2020 MGA Zone 54



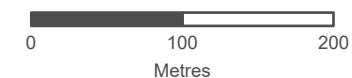
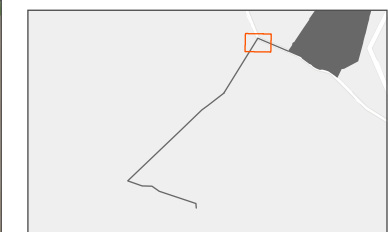
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Legend

- Vegetation Association

- A2: *Maireana aphylla* shrubland with *Lomandra multiflora* ± exotic grasses ± *Cryptandra campanulata* ± *Austrostipa* sp.
- A3: *Austrostipa* sp. and *Rytidosperma* sp. grassland with emergent *Maireana aphylla* ± exotic grasses
- A5: Exotic Grassland / Pasture
- A7: Planted Vegetation / Infrastructure
- Road



Scale 1:5,000 at A4
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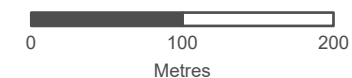
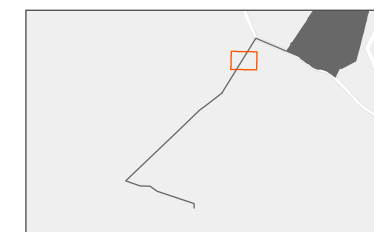
Legend

— Local road

Vegetation Association

A2: *Maireana aphylla* shrubland with *Lomandra multiflora* ± exotic grasses ± *Cryptandra campanulata* ± *Austrostipa* sp.

A5: Exotic Grassland / Pasture



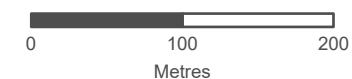
Scale 1:5,000 at A4
GDA2020 MGA Zone 54



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A5: Exotic Grassland / Pasture
Road





Appendix C.5

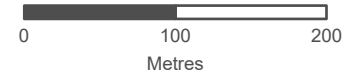
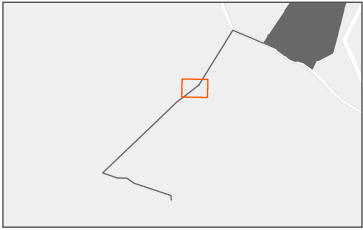
Vegetation Associations Across the Selected OTL Corridor

Legend

- OTL Corridor
- BAM Site
- Local road

Vegetation Association

- A3: *Austrostipa* sp. and *Rytidosperma* sp. grassland with emergent *Maireana aphylla* ± exotic grasses
- A5: Exotic Grassland / Pasture
- Road



Scale 1:5,000 at A4
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Appendix C.6

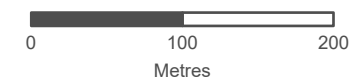
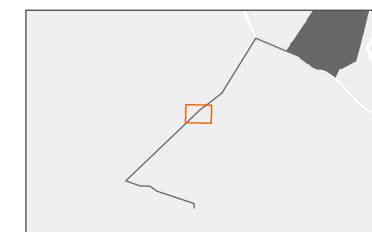
Vegetation Associations Across the Selected OTL Corridor

Legend

- OTL Corridor
- BAM Site
- Local road

Vegetation Association

- A3: *Austrostipa* sp. and *Rytidosperma* sp. grassland with emergent *Maireana aphylla* ± exotic grasses
- A5: Exotic Grassland / Pasture
- Road



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Appendix C.7

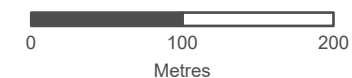
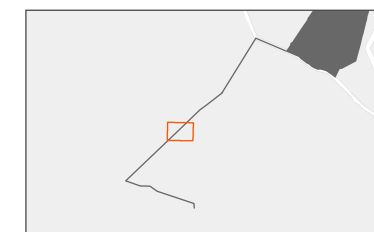
Vegetation Associations Across the Selected OTL Corridor

Legend

- OTL Corridor
- BAM Site
- Local road

Vegetation Association

- A3: *Austrostipa* sp. and *Rytidosperma* sp. grassland with emergent *Maireana aphylla* ± exotic grasses
- A5: Exotic Grassland / Pasture
- Road
- Native scattered trees



Scale 1:5,000 at A4
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Appendix C.8

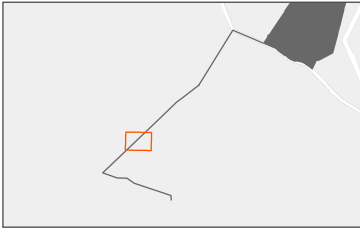
Vegetation Associations Across the Selected OTL Corridor

Legend

- OTL Corridor
- Local road

Vegetation Association

- A5: Exotic Grassland / Pasture
- A7: Planted Vegetation / Infrastructure
- Road



0 100 200
Metres

Scale 1:5,000 at A4
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A3: *Austrostipa* sp. and *Rytidosperma* sp. grassland with emergent *Maireana aphylla* ± exotic grasses
 A5: Exotic Grassland / Pasture
 A7: Planted Vegetation / Infrastructure
 Road

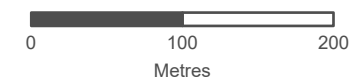


Image Source: ESRI Basemap (2025) | **Data Source:** DEW (2022), DIT (2022), ERM (2024)



Appendix C.10

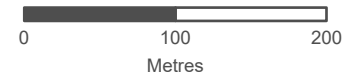
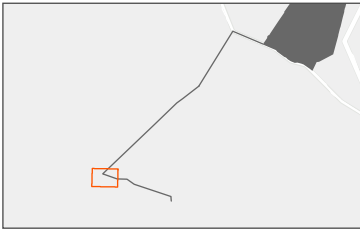
Vegetation Associations Across the Selected OTL Corridor

Legend

- OTL Corridor
- BAM Site
- Local road

Vegetation Association

- A3: *Austrostipa* sp. and *Rytidosperma* sp. grassland with emergent *Maireana aphylla* ± exotic grasses
- A5: Exotic Grassland / Pasture
- A7: Planted Vegetation / Infrastructure
- Road



Scale 1:5,000 at A4
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Appendix C.11

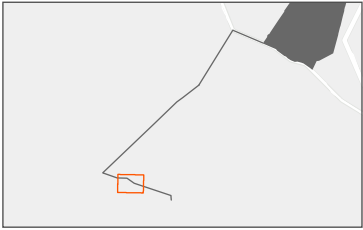
Vegetation Associations Across the Selected OTL Corridor

Legend

- OTL Corridor
- BAM Site
- Local road

Vegetation Association

- A3: *Austrostipa* sp. and *Rytidosperma* sp. grassland with emergent *Maireana aphylla* ± exotic grasses
- A5: Exotic Grassland / Pasture
- A7: Planted Vegetation / Infrastructure
- Road



0 100 200
Metres

Scale 1:5,000 at A4
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Appendix C.12

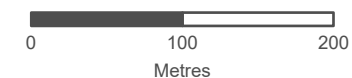
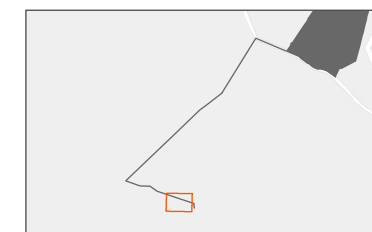
Vegetation Associations Across the Selected OTL Corridor

Legend

- OTL Corridor
- BAM Site
- Local road
- Watercourse

Vegetation Association

- A3: *Austrostipa* sp. and *Rytidosperma* sp. grassland with emergent *Maireana aphylla* ± exotic grasses
- A5: Exotic Grassland / Pasture
- A7: Planted Vegetation / Infrastructure
- Road



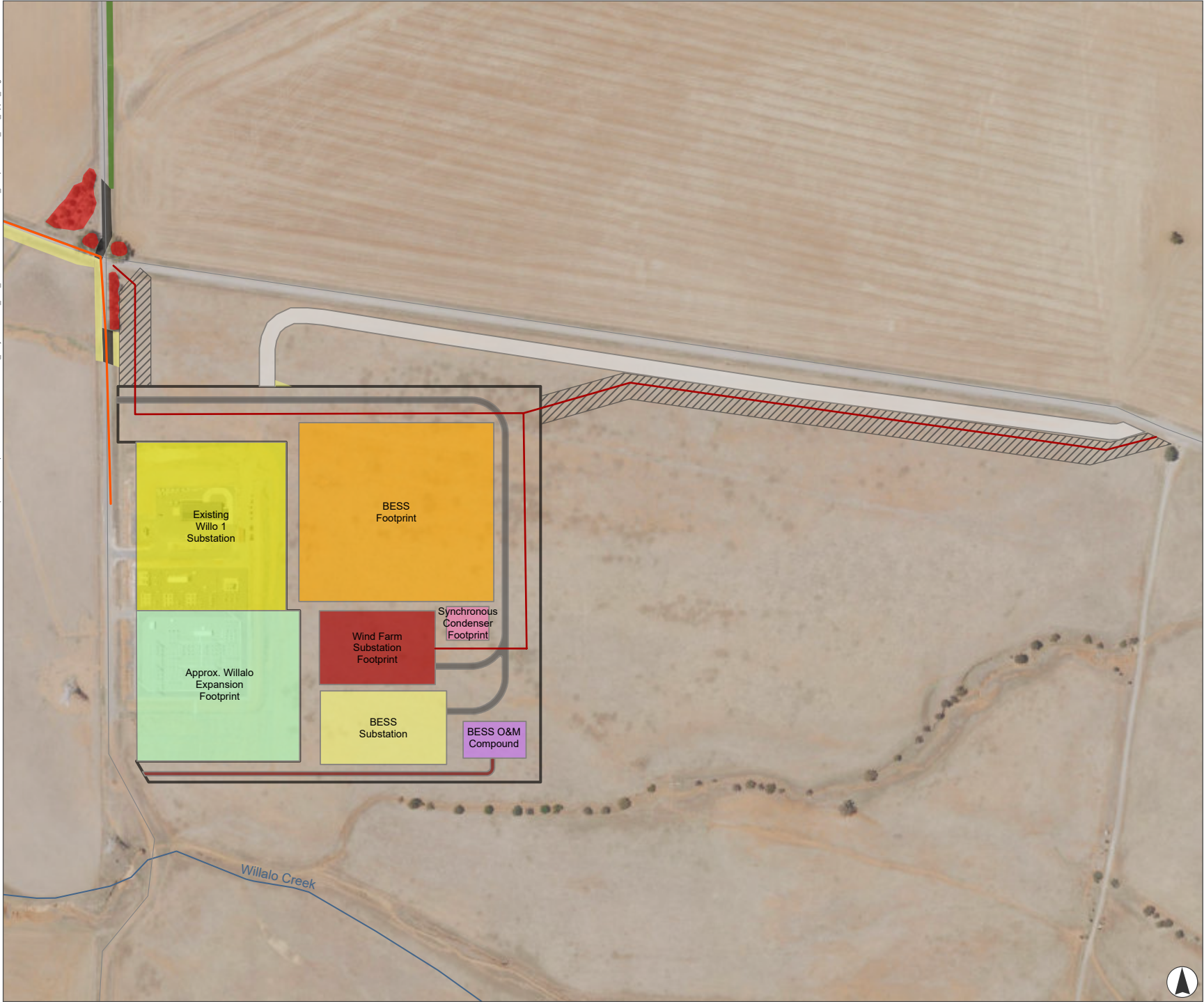
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Appendix C.13

Vegetation Associations Across the Selected OTL Corridor

Legend

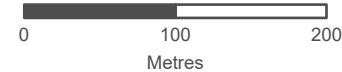
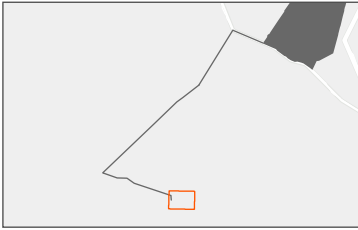
- OTL Corridor
- BESS Transmission Line
- Local road
- Watercourse
- Road

Vegetation Association

- A3: *Austrostipa* sp. and *Rytidosperma* sp. grassland with emergent *Maireana aphylla* ± exotic grasses
- A5: Exotic Grassland / Pasture
- A7: Planted Vegetation / Infrastructure

BESS Layout

- Proposed Lease Area
- Wind Farm Transmission Investigation Area
- Alternative Access
- Approx. Willalo Expansion Footprint
- BESS Footprint
- BESS O&M Compound
- BESS Substation
- Existing Willo 1 Cable Route
- Existing Willo 1 Substation
- Main Access
- Synchronous Condenser Footprint
- Wind Farm Substation Footprint



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