Native Vegetation Clearance Data Report

by Umwelt

Native Vegetation Clearance

Twin Creek Wind Farm and Energy Storage Project Data Report

Clearance under the Native Vegetation Regulations 2017

14/01/2025

Prepared by E. West – Umwelt (Australia) Pty Ltd

Twin Creek Wind Farm and Energy Storage Native Vegetation Clearance Data Report

Prepared by Umwelt (Australia) Pty Ltd for MasterPlan Pty Ltd

Project Number: 31699

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R05	E. West	09/01/2025	A. Derry	09/01/2025
R06	E. West	14/01/2025	A. Derry	14/01/2025

Cover photograph: *Juncus* spp. and *Cyperus* spp. Sedgeland within the Development Area.

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Glossary and Abbreviations

BAM	Bushland Assessment Method
BDBSA	Biological Database of South Australia (maintained by DEW)
BUS	Bird Utilisation Survey
CEMP	Construction Environmental Management Plan
DA	Development Application
DCCEEW	Department of Climate Change, Energy, the Environment and Water (Commonwealth)
DEW	Department for Environment and Water (South Australia)
Development Area	The area outlined in Figure 2.1
DIT	Department for Infrastructure and Transport (South Australia)
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Cth)
ha	Hectare(s)
IBRA	Interim Biogeographical Regionalisation of Australia
INTG	Iron-grass Natural Temperate Grassland
km	Kilometre(s)
kV	Kilovolt
LSA Act	*Landscapes South Australia Act 2019*
m	Meter(s)
MBC	Mallee Bird Community
MDD	Murray Darling Depression
MNES	Matters of National Environmental Significance
MW	MegaWatt
NatureMaps	Initiative of DEW that provides a common access point to maps and geographic information about South Australia's natural resources in an interactive online mapping format
NPW Act	*National Parks and Wildlife Act 1972*
NV Act	*Native Vegetation Act 1991*
NVC	Native Vegetation Council
PBTL	Pygmy Blue-tongue Lizard
PBGW	Peppermint Box (*Eucalyptus odorata*) Grassy Woodland of South Australia
PMST	Protected Matters Search Tool (under the EPBC Act; maintained by DCCEEW)
Project	Twin Creek Wind Farm Energy and Storage Project
RES	RES Australia Pty Ltd (the proponent)
SA	South Australia(n)
Search Area	5 km buffer of the Development Area
SEB	Significant Environmental Benefit

Site Boundary	The land detailed in Appendix 1
sp.	Species
spp.	Species (plural)
ssp.	Sub-species
STAM	Scattered Tree Assessment Method
TBS	Total Biodiversity Score
TCWF	Twin Creek Wind Farm
TEC	Threatened Ecological Community
TL	Transmission Line
WTG	Wind Turbine Generator
var.	Variety (a taxonomic rank below that of species and subspecies, but above that of form)

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Attachment 4 – On-ground SEB Management Plan

1. APPLICATION INFORMATION

Details of the native vegetation clearance applicant are summarised in Table 1.1 with a summary of the proposed clearance provided in Table 1.2.

Table 1.1 Application Details

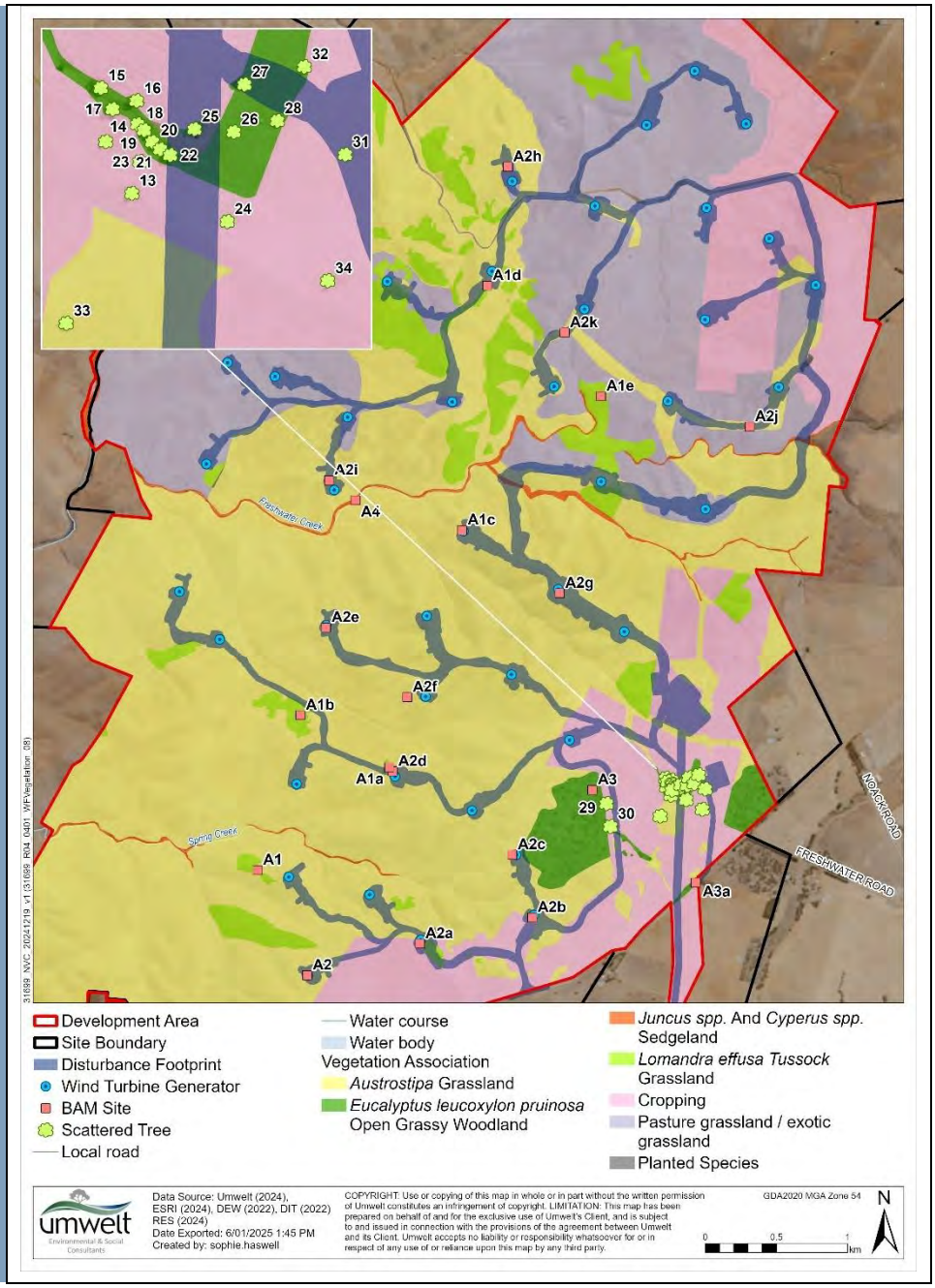
Applicant:	**RES Australia Pty Ltd**		
Key contact:	Roberta Magoba (Development Project Manager) Mobile: +61 (0) 478 079 331 Email: roberta.magoba@res-group.com		
Landowner:	The Applicant has contractual arrangements in place with the land holders to undertake the Project on the land.		
Site Address:	Various land holders see Appendix 1		
Local Government Area:	Goyder Light Mid Murray	**Hundred:**	Julia Creek Kapunda Belvidere Dutton Jellicoe
Title ID:	Title IDs are provided in Appendix 1	**Parcel ID**	Parcel IDs are provided in Appendix 1

Table 1.2 Summary of the Proposed Clearance

Purpose of clearance:	Clearance required for the construction of up to 42 wind turbine generators (WTGs) and associated infrastructure such as hard stands, access tracks, two substations and transmission line.
Native Vegetation Regulation:	Regulation 12, Schedule 1 clauses 33 (New building) and 34 (Infrastructure).
Description of the vegetation under application:	**Vegetation associations**

Vegetation association	Description	Location
A1	*Lomandra* spp. Tussock Grassland	Wind Farm
A2	*Austrostipa* spp. Grassland	Wind Farm
A3	*Eucalyptus leucoxylon pruinosa* Open Woodland	Wind Farm
A4	*Juncus spp.* and *Cyperus* spp. Sedgeland	Wind Farm
B1	*Eucalyptus odorata* and *E. porosa Open* Woodland	Transmission Line (TL) Route
B2	*E. camaldulensis* Woodland	TL Route
B3	*E. leucoxylon pruinosa* Open Woodland	TL Route
C1	*E. leucoxylon pruinosa* Open Woodland	TL Route
D1	*Austrostipa* spp. Grassland	TL Route
E1	*E. leucoxylon pruinosa* Open Woodland	TL Route
E2	*E. odorata* and *E. porosa* Open Woodland	TL Route

	<table><tr><td>E3</td><td>*Lomandra effusa* and *Austrostipa* sp. Grassland</td><td>TL Route</td></tr></table> **Scattered trees** A total of 35 scattered trees, which includes: • Five *Eucalyptus porosa* (Mallee Box) • 28 *Eucalyptus leucoxylon pruinosa* (Inland Blue-gum) • Two *Eucalyptus odorata* (Peppermint Box).
Total proposed clearance – area (ha) and/or number of trees:	A total of 176.78 ha and 35 scattered trees are proposed to be cleared.
Level of clearance:	Level 4
Overlay (Planning and Design Code):	Native Vegetation Overlay
Map of proposed clearance area:	Maps of proposed clearance area (show as a minimum; property boundary and proposed clearance area).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FRESHWATER ROAD
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Local road
Water course
Water body
Vegetation Association
Austrostipa Grassland
Eucalyptus leucoxylon pruinosa Open Grassy Woodland
Juncus spp. And Cyperus spp. Sedgeland
Lomandra effusa Tussock Grassland
Cropping
Pasture grassland / exotic grassland
Planted Species
Data Source: Umwelt (2024), ESRI (2024), DEW (2022), DIT (2022) RES (2024)
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COPYRIGHT: Use or copying of this map in whole or in part without the written permission of Umwelt constitutes an infringement of copyright. LIMITATION: This map has been prepared on behalf of and for the exclusive use of Umwelt's Client, and is subject to and issued in connection with the provisions of the agreement between Umwelt and its Client. Umwelt accepts no liability or responsibility whatsoever for or in respect of any use of or reliance upon this map by any third party.
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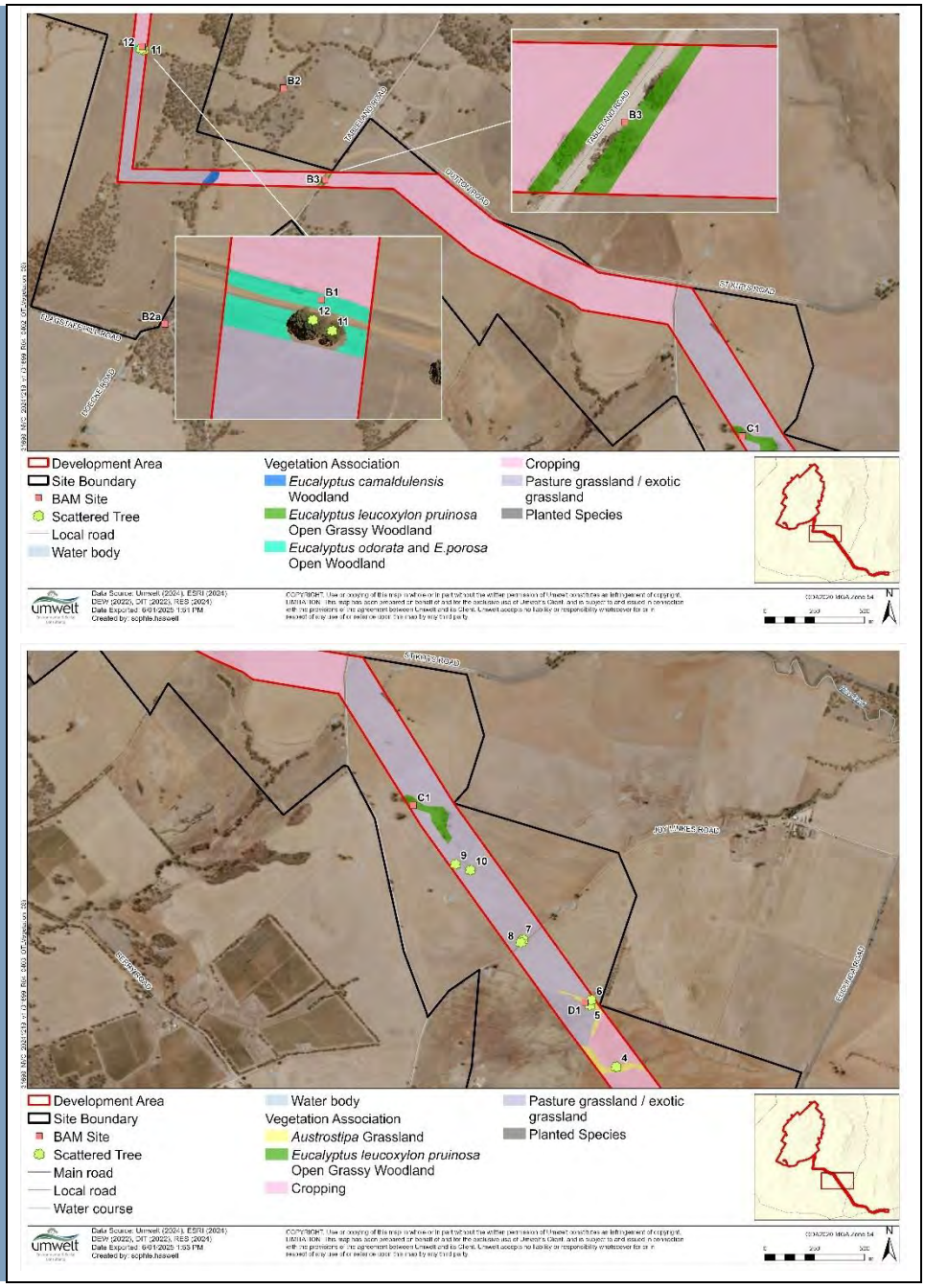
12
11
B2
B3
B1
B2a
C1
Development Area
Site Boundary
BAM Site
Scattered Tree
Local road
Water body
Vegetation Association
Eucalyptus camaldulensis Woodland
Eucalyptus leucoxylon pruinosa Open Grassy Woodland
Eucalyptus odorata and E.porosa Open Woodland
Cropping
Pasture grassland / exotic grassland
Planted Species
C1
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10
8
7
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D1
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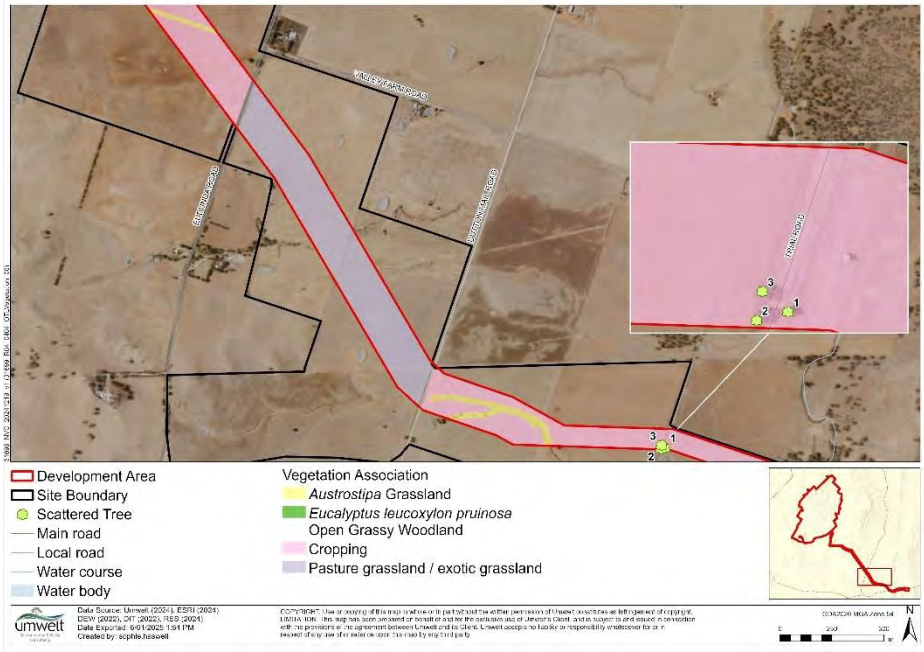
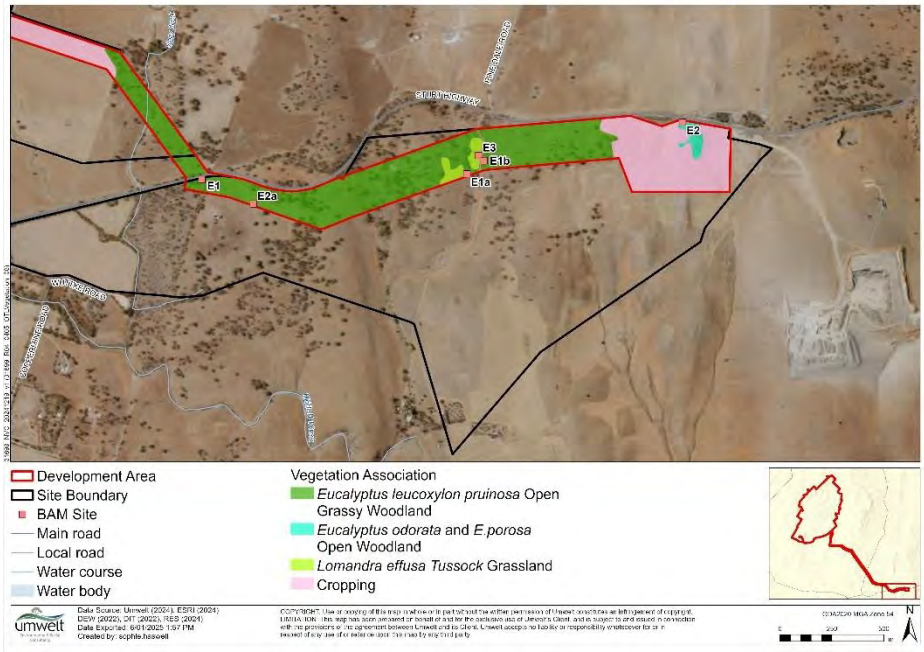
Scattered Tree
Main road
Local road
Water course
Water body
Vegetation Association
Austrostipa Grassland
Eucalyptus leucoxylon pruinosa Open Grassy Woodland
Cropping
Pasture grassland / exotic grassland
Planted Species





Mitigation Hierarchy:

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

All stages of the project design have been undertaken considering vegetation mapping, threatened ecological community mapping and the known locations of threatened species populations. Whilst every effort has been made to avoid sensitive areas where possible, such as locating turbines outside of *Lomandra* spp. grasslands and Peppermint Box grassy woodlands, engineering and landscape constraints mean that clearing of native vegetation cannot be completely avoided. The clearance areas showcase the worst-case scenario. That is, calculation of areas required for clearance of vegetation for the Wind Turbine Generators (WTG) and ancillary infrastructure associated with the construction of the TL route has been overstated and overcalculated. For example, the SEB calculated for the TL Route has assumed clearance of vegetation with the entire corridor, however, this is not the intended construction methodology. The poles and infrastructure required for the TL will be micro-sited to avoid vegetation included scattered trees resulting in partial clearance. This micro-siting also applies to WTG hard stands areas, access tracks and associated infrastructure (i.e. construction compound). To enable opportunities for avoidance as

the project progresses through detailed design, a micrositing corridor (shown on the RES plans and is shown in Appendix 6).

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

During the final design of the development, the infrastructure will be micro-sited to minimise native vegetation clearance. Clearance has been reduced to the smallest extent possible, given the design and specification constraints for the wind farm. The following measures have been taken to minimise native vegetation clearance and associated direct and indirect impacts:

- Existing farm tracks and council roads will be utilised where possible.
- Wherever possible, the location of infrastructure in grasslands that are in poor condition, currently being impacted by weeds and grazing.
- Micro siting of infrastructure wherever possible, particularly to avoid scattered trees.
- A Construction Environmental Management Plan (CEMP) aims to highlight the minimization measures for this Project. Some of these include, but are not limited to:
    - Limit vegetation clearing to that required for construction and safety and where possible, retain established trees and native shrub under storeys.
    - All vegetation clearing or disturbance is approved and undertaken in compliance with permits and/ or site management plans.
    - Tree pruning instead of removal where possible
    - Provide an induction for all project team members for identification and management of protected flora and fauna prior to the commencement of works, particularly Pygmy-blue Tongue Lizards, Iron-grass (*Lomandra* spp.) and Peppermint Box (*Eucalyptus odorata*).
    - Accurately and clearly mark out the edge of clearing and trees/vegetation to be retained including hollow trees, significant species, riparian zones.
    - Identify, retain and protect old or mature trees (alive or dead) which are in close proximity to the corridor by marking out/fencing.
    - Clearly identify buffer areas around protected species, including existing wedge tailed eagle nests
    - Fence or mark buffer areas around protected species prior to the commencement of works.
    - Controls in place to minimise disturbance to flora and fauna are maintained and effective.
    - Disturbed/ exposed areas are stabilised and revegetated progressively.
    - Cease work immediately if any previously unknown threatened flora species are encountered
    - Vegetation clearing methods shall be conducted in a manner that encourages natural regeneration of rootstock, minimises land disturbance and maintains soil stability and line clearance.
    - Avoid the removal of trees with hollows (alive or dead.) Where removal cannot be avoided, maintain the tree intact (as far as possible) and place it on the ground in adjoining vegetation.
    - Vegetation clearing methods shall be conducted in a manner that encourages natural regeneration of rootstock, minimises land disturbance and maintains soil stability and line clearance.

c) Rehabilitation or restoration – outline measures taken to rehabilitate ecosystems that have been degraded, and to restore ecosystems that

	have been degraded, or destroyed by the impact of clearance that cannot be avoided or further minimized, such as allowing for the re-establishment of the vegetation. Clearance for the Wind Farm footprint and TL Route poles will be permanent, and no rehabilitation will occur within those areas. However, areas between the TL Route poles will not be cleared. The following rehabilitation methods will be implemented: - Disturbed/ exposed areas are stabilised and revegetated progressively. Revegetation of areas beside access tracks and hardstands both during and following construction. Species selection will most likely be with a native seed mix/pasture seed mix. Often oversown with a sterile rye grass to ensure soil stabilisation. - Wherever practical, trenches will be backfilled immediately upon cable installation in accordance with the Construction Environmental Management Plan, with measures adopted to slow stormwater flows and to prevent the scouring of open trench or disturbed ground prior to revegetation. - Storing cleared vegetation and/ or topsoil containing seed bank for re-establishment after construction has been completed - Vegetation clearing methods shall be conducted in a manner that encourages natural regeneration of rootstock, minimises land disturbance and maintains soil stability and line clearance - Where removal of trees cannot be avoided, maintain the tree intact (as far as possible) and place it on the ground in adjoining vegetation. ***d) Offset – any adverse impact on native vegetation that cannot be avoided or further minimized should be offset by the achievement of a significant environmental benefit that outweighs that impact.*** The proponent aims to offset part of the clearance with an on-ground SEB Area (Offset Area). The Offset Area protects three vegetation associations, 21.174 hectares of Peppermint Box Grassy Woodland (in varying conditions) and 4.197 ha of River Red Gum Riparian Open Woodland. The vegetation associations and Unit Biodiversity Score (UBS) are listed below: - A1 (Peppermint Box open Grassy Woodland) UBS 39.05 – 14.019 ha - A2 (Peppermint Box Grassy Woodland) UBS 90.66 – 7.155 ha - A3 (River Red Gum Riparian Open Woodland) UBS 27.35 – 4.197 ha. Peppermint Box Grassy Woodland is listed as a nationally threatened ecological community (TEC) under the *Environment Protection and Biodiversity Conservation Act* 1999 (EPBC Act). BAM site A2 meets the condition class B TEC requirements in its current condition, the implementation of the Offset Area management plan will assist in significantly improving its condition. The management plan also aims to improve the condition of A1 (currently condition Class C, patches amendable to rehabilitation). The Offset Area would also contribute to the total area under conservation management in the area. Approximately 6% of the of Mopami EA contains native vegetation and only 2% is within the Reserve System. Therefore, the Offset Area significantly contributes to the management of native vegetation in the region. The balance amount will be paid into the fund.
SEB Offset proposal	Payment of **$4,108,821.03** (includes administration fee and GST) and **5652.07** SEB points

2. PURPOSE OF THE CLEARANCE

The Native Vegetation Data Report for the proposed optimised layout utilises a worst-case scenario in relation to clearance and the required SEB offset. That is, calculation of areas required for clearance of vegetation for the wind turbine generators and ancillary infrastructure, along with the infrastructure associated with construction of the Transmission Line (TL) Route has been overstated and overcalculated. By way of example, the SEB calculated for the TL Route has assumed clearance of vegetation within the entire corridor, however this is not the intended construction methodology. The poles and infrastructure required for the TL Route will be micro-sited to avoid vegetation, including scattered trees, and would not require complete clearance. This micro-siting also applies to the Wind Turbine Generator (WTG) hard stand areas, the access tracks and infrastructure areas (i.e. construction compounds). During the final design of the development, the infrastructure will be micro-sited to minimise native vegetation clearance. The finalised clearance and SEB will then be reviewed by the Native Vegetation Council for approval.

2.1. Description

Umwelt (Australia) Pty Ltd (Umwelt) (formerly EBS Ecology) has been engaged by MasterPlan Pty Ltd on behalf of RES Australia Pty Ltd (RES) to prepare a Native Vegetation Council (NVC) Data Report for the proposed Twin Creek Wind Farm (TCWF) Energy and Storage Project (the Project). RES proposes to develop the Twin Creek Wind Farm and Energy Storage Project within the Mid - North area of South Australia (SA). The site of the proposed development includes the area comprising the project infrastructure, as well as the proposed 275 kilovolt (kV) transmission line. The TL Route extends approximately 15 kilometres (km) south-east of the site and connects to the Robertstown - Tungkillo 275 kV transmission line adjacent the Sturt Highway near Truro.

2.2. Background

The proposed TCWF is located approximately 90 km northeast of Adelaide and is situated within the northern hills of the Mount Lofty Ranges. The Development Area is dominated by ridgelines in the north and plains or undulating hills in the south.

Land use within the area is predominantly agricultural (e.g. grazing for sheep and cattle). Native vegetation has previously been extensively cleared, with most of the Project footprint containing derived grasslands in varying condition. Woodland vegetation is generally restricted to creek lines and within small patches, or as scattered remnant trees. The general region is open, low hills with occasional rocky outcrops that fall away to low foot slopes and deep, eroded drainage channels at regular intervals. Vegetation cover is dominated by grasses and perennial herbaceous forbs, remnant woodland primarily comprised of *Eucalyptus leucoxylon* subsp. *pruinosa* (South Australian Blue-gum) and *Eucalyptus porosa* (Mallee Box). Patches of *Eucalyptus odorata* (Peppermint Box) also occur in the TL Route and the species was also found scattered across the site.

2.3. General Location Map

The site of the proposed development is approximately 90 km north-east of Adelaide and between the townships of Kapunda, Eudunda and Truro (Figure 2.1) It is located within two Landscape Management Regions, Northern and Yorke and Murraylands and Riverland, three Local Government Areas, Goyder, Light and Mid Murray and two Interim Biogeographic Regionalisation for Australia (IBRA) Associations, Rufus and Mopami (Figure 2.2).

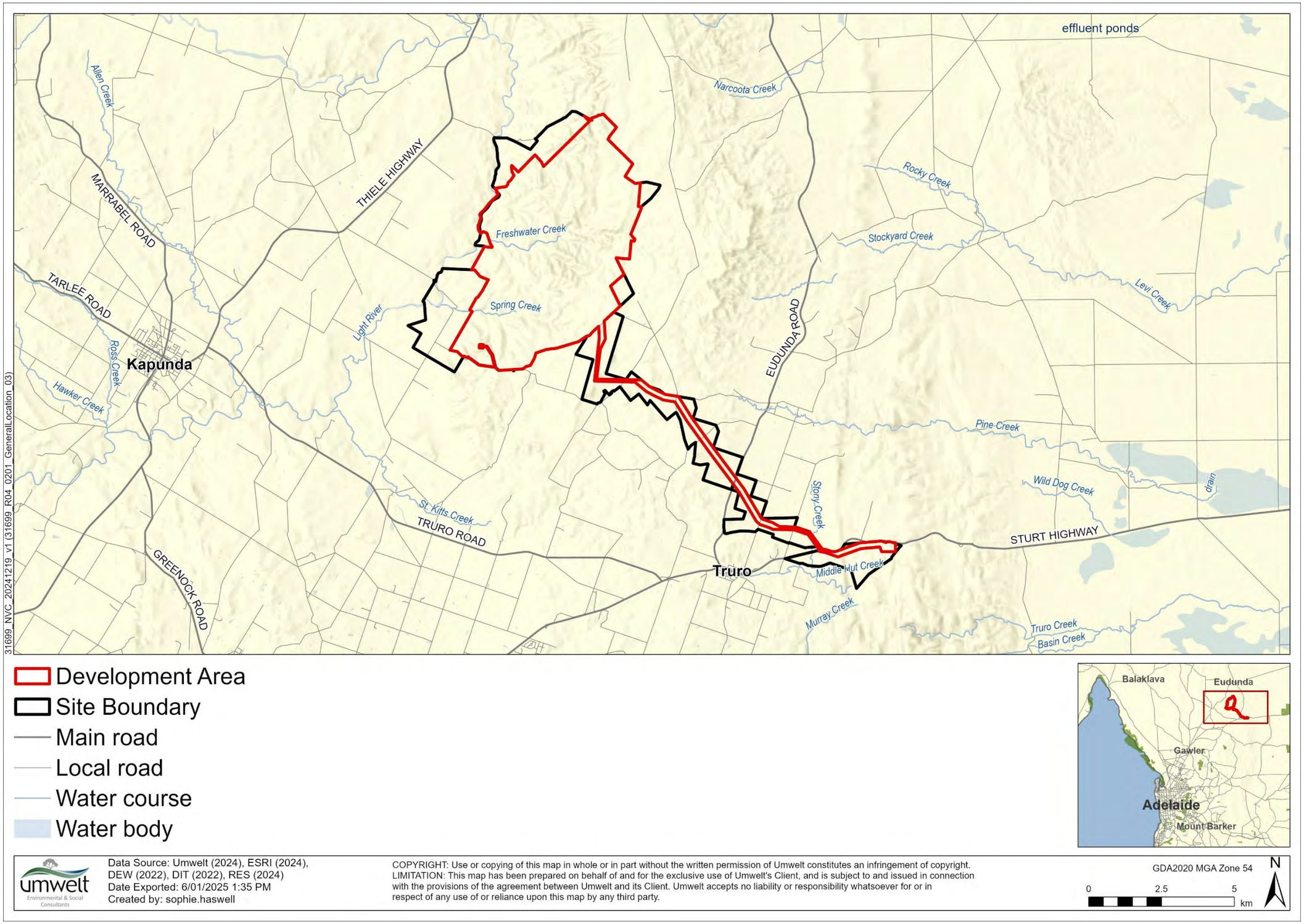


Figure 2.1 **General location of the Twin Creek Wind Farm**

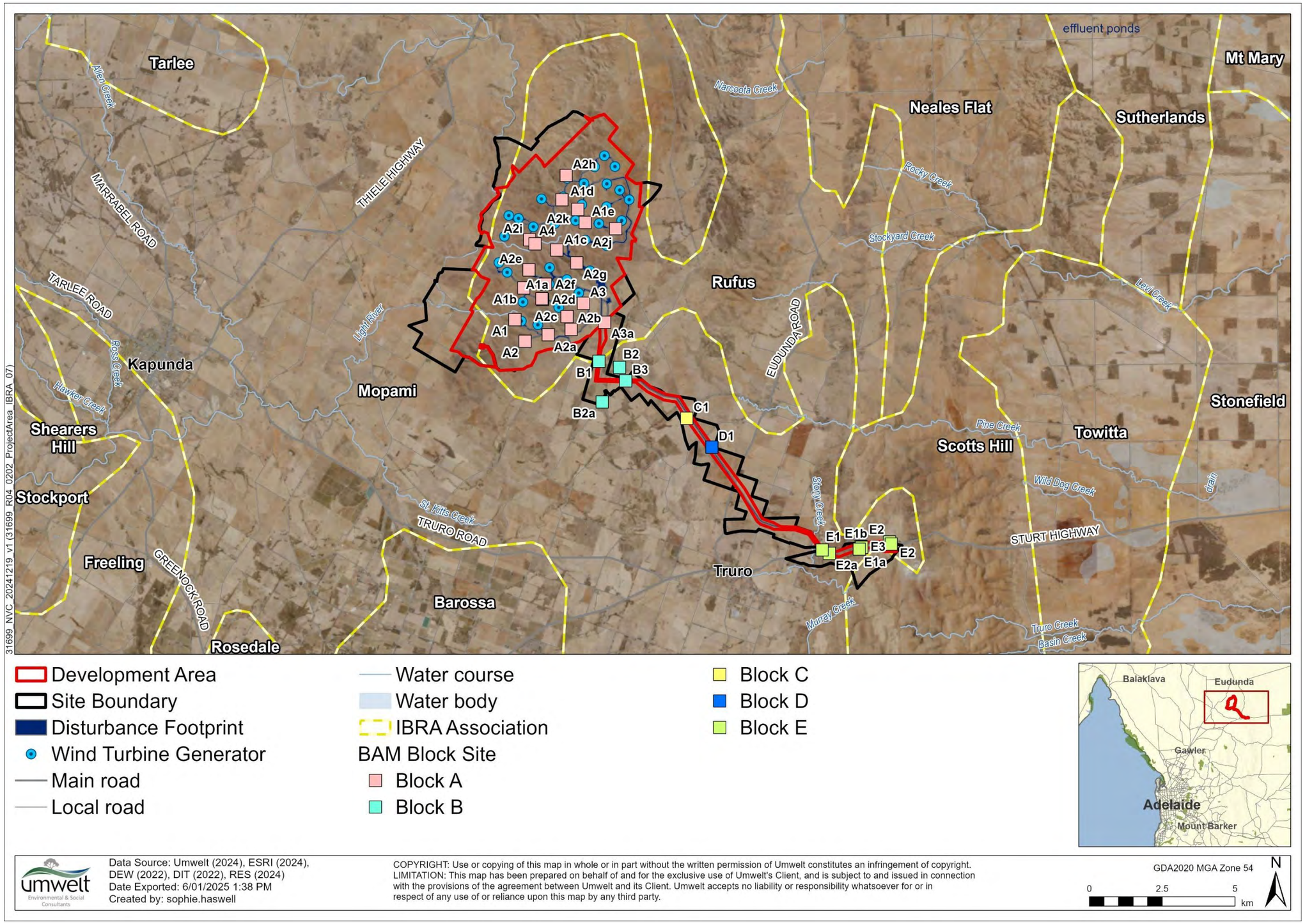


Figure 2.2 **Interim Biogeographic Regionalisation for Australia (IBRA) Associations and different Blocks across the Development Area**

2.4. Details of the Proposal

The site of the development has two components the Wind Farm (includes WTG and associated infrastructure) and the Transmission Line (TL). The optimised proposed design for the TCWF will consist of the following components:

- an overall WTG blade tip height up to 220 meters (m), a hub height of up to 134 m and a rotor diameter of up to 172 m
- up to 42 WTG
- each WTG has a capacity of up to 7.2 MegaWatt (MW), with a total installed generating capacity of up to 270 MW
- associated hard standing areas and access roads
- operations and maintenance building and compound with associated car parking
- two electrical substations (one project substation within the windfarm boundary and one cut-in terminal substation)
- a battery energy storage facility with an indicative capacity of 215 MW
- overhead and underground electrical cable reticulation
- overhead TL for approximately 15 km from the on-site substation to the existing overhead Robertstown – Tungkillo transmission line east of Truro
- temporary construction facilities including a borrow pit and concrete batching plant facilities.

This is highlighted in more detail in Table 2.1 and basic infrastructure shown in Figure 2.3.

Table 2.1 Project specifications

Component	Description
Project Layout	Up to 42 WTG and associated infrastructure. Each WTG with a name plate capacity of up to 7.2 MW, and a total installed name plate capacity of up to 270 MW.
Wind Turbines	Maximum height (to blade tip) – up to 220 m Rotor radius – up to 86 m Hub Height – up to 134 m Foundations – approximately 6m pedestal, 25 m sub-surface and 4m deep (exact footing dimensions are subject to engineering).
WTG laydown and Hardstand area	An average area of approximately 85 m x 45 m for foundation, laydown and crane hardstand areas - plus three 19 m x 7.5 m crane assist pads (exact dimensions are subject to engineering). Hardstand areas will be required adjacent to the base of each turbine to enable the assembly and erection of the WTG components. The shape and area will vary depending on the construction approach and the site conditions at each WTG location.
External Electrical Transformers	A pad mounted enclosed transformer (kiosk) located at the base of each turbine. Approximate dimensions (2 m long x 2 m wide x 1.5 m high).
Site Access	On-site access tracks a minimum width of 5.5m to accommodate construction activities and cranes. The main access tracks will provide access to the WTG sites and will be designed to take the weight of WTG transport and construction vehicles, and the crane used to erect the turbines. These will be located to align with existing property access tracks where possible.

Component	Description
	Some sections of the access tracks may be wider to accommodate overtaking areas and turning circles.
Underground electrical cabling	Approximate total length 99 km. Trenches – typically approximately 0.5m width and approximately 1m deep (minimum). Approximately 15 m impact area for a single cable alignment +approximately 5 m per cable in parallel. The exact dimensions will depend on the installation method used by the contractor.
Overhead 275 kV Transmission Line	Approximate length 15km. The TL would be constructed with steel or spun concrete poles up to 35 m high and spaced approximately 275–375 m apart (or wider should terrain enable). At the terminal substation the 275 kV transmission towers will comprise lattice towers approximately 60 m high to tee into the existing transmission line. Exact dimensions are subject to detailed design.
Substation, Battery Energy Storage Facility, and Operations and Maintenance Facilities	Two substations (1 project substation with the windfarm boundary and 1 cut-in terminal substation). Proposed operation and maintenance area 125 m x 65 m (~0.8 ha) Proposed substation 150 m x 150 m (~2.2 ha) Proposed battery storage area 87 m x 130 m (~1.1 ha)
Temporary Construction Compounds and Concrete Batching Plants	A temporary construction compound 100 m x 150 m (~1.5 ha) A temporary laydown area 100 m x 50 m (~0.5 ha) A temporary concrete batching plant 80 m x 131 m (~1.1 ha) A temporary construction compound adjacent to the terminal station (~1.47 ha).
Public Road Improvements	Access routes for all over-dimensional vehicles will be limited to those specified in the Traffic Impact Assessment. Roads and intersections will be upgraded to meet load and safety standards as agreed in the Traffic Management Plan. All public roads will be left in good repair following construction as agreed in the Traffic Management Plan. All access routes will be subject to DIT and Council agreement.

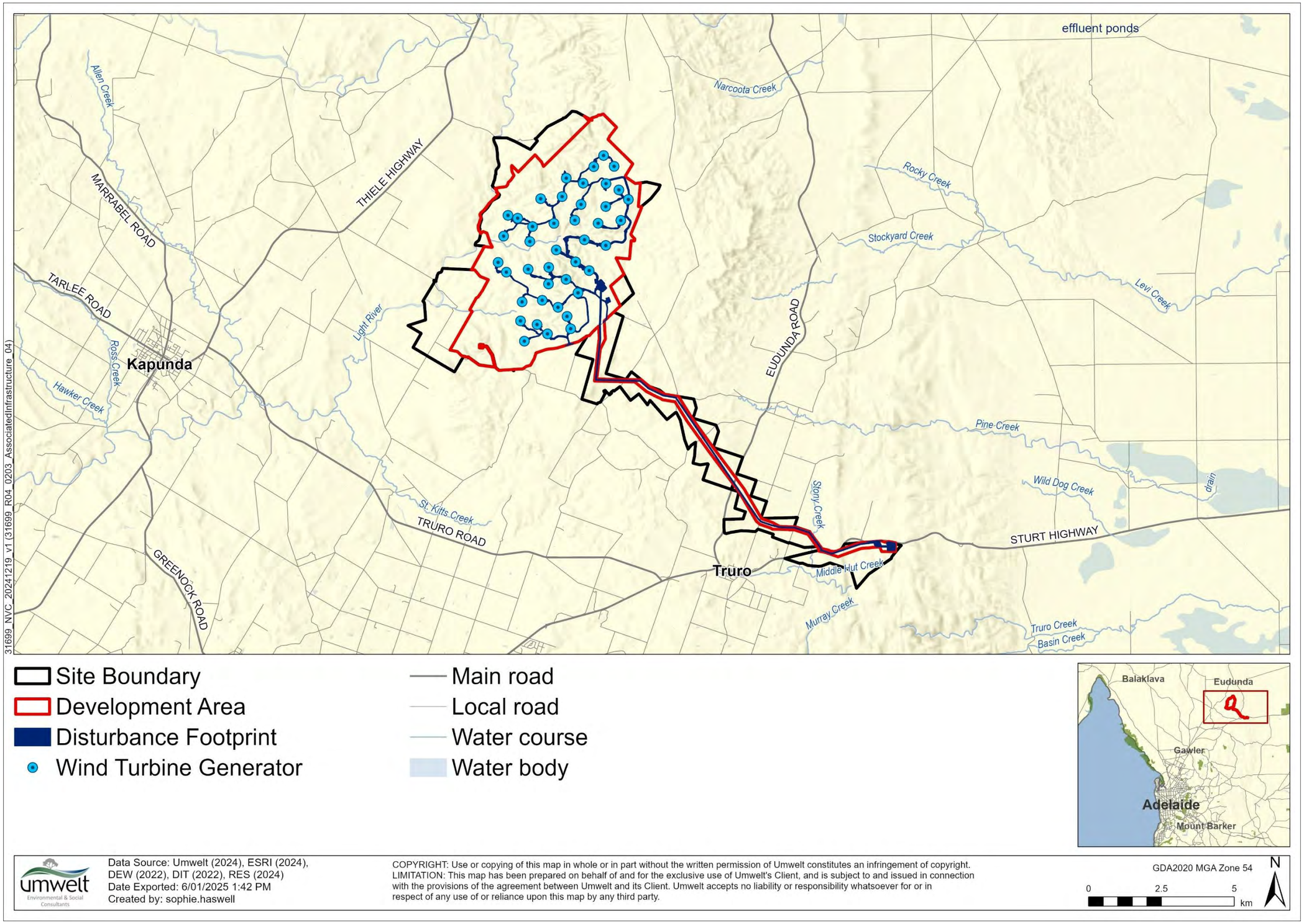


Figure 2.3 **The Twin Creek Wind Farm Development Area and Associated Infrastructure**

2.5. Approvals Required *or* Obtained

2.5.1. Native Vegetation Act 1991

This data report is supplied in support of the application and fulfils the requirements of the *Native Vegetation Act 1991* (NV Act) to clear native vegetation.

2.5.2. Planning, Development and Infrastructure Act 2016

Approval is required under the *Planning, Development and Infrastructure Act 2016* (PDI Act), and this report has been prepared to accompany the Development Application (DA). Provisions relating to Regulated or Significant Trees do not apply for this Project.

2.5.3. Environment Protection and Biodiversity Conservation Act 1999

Matters of National Significance are likely to be impacted by this Project, including up to three nationally listed threatened fauna species and a Threatened Ecological Community (TEC). A significant impact self-assessment should be undertaken for all Matters of National Environmental Significance (MNES) which may be impacted by the Project. If impacts are considered significant to any MNES, an EPBC Referral to the Commonwealth Government under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) will be required, which may impose conditions on Project approval. RES has committed to undertaking an EBPC Referral for this Project.

2.5.4. National Parks and Wildlife Act 1972 (NPW Act) (e.g., flora collection permit)

All flora surveys conducted as part of the native vegetation clearance application were undertaken by Umwelt under Permit / License to Undertake Scientific Research K25613-23.

2.5.5. Landscape South Australia Act 2019

A permit to transport Declared weeds on a public road may be required for this Project.

A total of 11 weed species listed as Declared species under the *Landscape South Australia Act 2019* (LSA Act) were identified within the Development Area, this includes:

- *Allium triquetrum* (Three-cornered Garlic)
- *Asparagus asparagoides* f. (Bridal Creeper)
- *Chondrilla juncea* (Skeleton Weed)
- *Cynara cardunculus* ssp. *flavescens* (Artichoke Thistle)
- *Echium plantagineum* (Salvation Jane)
- *Marrubium vulgare* (Horehound)
- *Olea europaea* ssp. (Olive)
- *Reseda lutea* (Cut-leaf Mignonette)
- *Rosa canina* (Dog Rose)
- *Rosa* sp. (Wild Rose/Briar)
- *Solanum elaeagnifolium* (Silver-leaf Nightshade).

A permit to transport Declared weeds on a public road is likely to be required for this Project if topsoil is to be removed from the site. Land holders have a responsibility to control Declared weeds on their property.

2.5.6. Aboriginal Heritage Act 1988

Approval will be required if any sites, objects or remains are uncovered during the works. If any sites, objects or remains are uncovered during the works, measures detailed in the project Cultural Heritage Management Plan (CHMP) will be followed and implemented.

2.6. Native Vegetation Regulation

The proposed clearance is suggested to be assessed under Regulation 12 and Schedule 1 *clauses 33 (New dwelling or building) and 34 (Infrastructure)*.

33 — New dwelling or building.

Clearance of vegetation required in order to erect a building or structure or other facility that is ancillary to a building, provided that any development authorisation required by or under the **Development Act 1993* has been obtained.

*Superseded by the PDI Act.

34 — Infrastructure

1. Clearance of vegetation—
   (a) incidental to the construction or expansion of a building or infrastructure where the Minister has, by instrument in writing, declared that the Minister is satisfied that the clearance is in the public interest; or
   (b) required in connection with the provision of infrastructure or services to a building or proposed building, or to any place, provided that any development authorisation required by or under the **Development Act 1993* has been obtained.

   *Superseded by the PDI Act.

2.7. Development Application information (if applicable)

The proposed development is within the Rural Zone of the Planning and Design Code (version 2023.16 dated 9 November 2023). A total of 14 Overlays apply to various allotments (sections) (but not all land parcels) within the Development Area (Table 2.2).

A detailed assessment against all of the relevant planning policy has been undertaken by MasterPlan, which is contained in Volume 2 of the Development Application documents.

Table 2.2 The overlays that apply to across the Development Area

Overlay	
Environmental	Water Resources
	Native Vegetation
	Environment and Food Production Area
	Murray-Darling Basin
Hazards	Flooding – Evidence Required
	Bushfire – Regional Risk
	Bushfire – General Risk
Heritage	Heritage Adjacency
	Local Heritage Place
	State Heritage Place
Land Division	Dwelling Excision

Overlay	
	Limited Land Division
Road and Rail	Key Outback and Rural Routes
Rural and Primary Production	Resource Extraction Protection Area

3. METHODOLOGY

3.1.1. Protected Matters Search Tool report

A PMST report was generated on 12 September 2024 to identify flora, fauna and TECs listed under the EPBC Act as threatened or migratory (DCCEEW 2024). Only species and TECs identified in the PMST report as known to occur within the Search Area were assessed for their likelihood of occurrence within the Development Area.

Species identified as known to occur were entered into the scoresheets for the purposes of calculating the threatened fauna score, conservation significance score and SEB obligations of the clearance. Species assessed as unlikely to occur in the Development Area may be removed from the calculations by the Native Vegetation Council (NVC) during the clearance approvals process.

Those species that are listed in Appendix 3 of the Scattered Tree Assessment Manual (NVC, 2020b) as 'scattered tree using wildlife' have been entered in the STAM scoresheet.

3.1.2. Biological Database of South Australia data extract

A data extract from the Biological Database of South Australia (BDBSA) was obtained from the DEW to identify flora and fauna species that have been recorded within 5 km of the Development Area (data extracted 31/10/2023; DEW 2023a. **Recordset number: DEWNRBDBSA231031-4**).

The BDBSA is comprised of an integrated collection of species records from the South Australian Museum, conservation organisations, private consultancies, Birds SA, Birdlife Australia, and the Australasian Wader Study Group, which meet the DEW's standards for data quality, integrity and maintenance. Only species with records since 1995 and a spatial reliability of less than 1 km were assessed for their likelihood of occurrence.

All threatened fauna identified by the BDBSA extract were entered into the scoresheets for the purposes of calculating the threatened fauna score, conservation significance score and SEB obligations of the clearance. Species assessed as unlikely to occur in the Development Area may be removed from the calculations by NVC during the clearance approvals process.

3.2. Flora assessment

The flora assessment was undertaken by NVC Accredited Consultant J. Carpenter and Ecologists E. West, S. Greer and D. Hoadley from 30 October to 1 November 2023. A second field survey was undertaken by NVC Accredited Consultant J. Skewes and Ecologist E. West from 10 to 12 January 2024 in accordance with the Bushland Assessment Method (BAM) and Scattered Tree Assessment Method (STAM) (NVC, 2020a and NVC, 2020b).

3.2.1. Bushland Assessment Method

The BAM is derived from the Nature Conservation Society of South Australia's Bushland Condition Monitoring methodology (Croft *et al.* 2007, 2008a, 2008b, 2009; Milne and Croft 2012; Milne and McCallum 2012). The BAM is used to assess areas of native vegetation requiring clearance and calculate the SEB requirements.

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

The Conservation Significance Scores were calculated from direct observations of flora and direct and historical observations of fauna species of conservation significance. All fauna identified as known or likely to occur in the Protected Matters Search Tool (PMST), and fauna with Biological Database of South Australia (BDBSA) records since 1995 and with a spatial reliability of less than 1 km, within 5 km of the Development

Area, were included in the BAM scoresheets. Species determined as unlikely to occur within the Development Area will be removed from the calculations by the Native Vegetation Branch during the clearance assessment process if the finding is supported. Marine and/or wetland species were omitted from the scoresheets given the Development Area is terrestrial.

Two species have been discounted from the BAM scoresheets. This includes wetland species *Rostratula australis* (Australian Painted Snipe) and *Tringa nebularia* (Common Greenshank). No wetlands are located within the Development Area and the nearest water bodies where these species may reside is within the Murray River approximately 38 km east of the Development Area. Although drainage lines and water bodies exist within the Development Area, these areas are seasonally inundated and do not provide a permanent source of water or habitat for these species.

As the *Eucalyptus camaldulensis* Woodland was inaccessible at the time of the field survey, areas nearby were surveyed instead. The top and the bottom of the creek were assessed to get an average score (BAM sites B2 and B2a).

Benchmark communities were chosen based on the Nature Conservation Society of South Australia's Bushland Condition Monitoring Methodology Northern and York (Croft *et al.* 2007, 2008a, 2008b, 2009; Milne and Croft 2012; Milne and McCallum 2012).

3.2.2. Scattered Tree Assessment Method

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

- Individual scattered trees (i.e., canopy does not overlap). The spatial distribution of trees may vary from approaching what would be considered their original distribution (pre-European) through to single isolated trees in the middle of a paddock; or
- Dead trees (when a dead tree is considered native vegetation); or
- Clumps of trees (contiguous overlapping canopies) if the clump is small (approximately <0.1 ha); and

For both scattered trees and clumps:

- The ground layer comprises wholly or largely of introduced species
- Some scattered colonizing native species may be present, but represent <5% of the ground cover
- The area around the trees consists of introduced pasture or crops.

Details of the scattered tree Point Scoring System are outlined in the *Scattered Tree Assessment Manual* (NVC 2020b).

The numbers of uncommon and threatened scattered trees using fauna species, entered into the Scattered Tree Scoresheet, were calculated by cross-referring the BDBSA data extract and the lists of Scattered Trees using fauna in the *Scattered Tree Assessment Manual* (NVC 2020). The resource use of each species identified was considered when determining each tree's suitability for threatened fauna species (e.g., species that only use hollows in scattered trees were only assigned to scattered trees containing hollows).

3.2.3. Provisional List of Threatened Ecosystems

The *Provisional List of Threatened Ecosystems* (Department for Environment and Heritage, 2005) was reviewed to determine whether any vegetation associations impacted meet the criteria for listing as a threatened ecosystem at the state level.

3.3. Fauna Assessment

A desktop assessment was undertaken to determine the potential for any threatened fauna species and Threatened Ecological Communities (TECs) to occur within the Development Area. This included species listed under both the EPBC Act and the NPW Act.

The search was undertaken by applying a 5 km buffer around the Development Area, referred to as the Search Area. The following databases were searched to obtain records of threatened species:

- PMST Report generated by the Department of Climate Change, Energy, Environment and Water (DCCEEW) to identify any MNES that may or are known to occur in the Search Area.
- BDBSA Data extract obtained from the Department for Environment and Water (DEW) that identifies the location of historical records of flora and fauna in the Search Area.

3.3.1. Field Survey

Fauna surveys were conducted in conjunction with the flora assessments in 2023 and 2024 within the Development Area. Weather conditions during the survey were favourable, based on the season that the survey was undertaken.

All native and exotic fauna species opportunistically encountered (directly observed, or tracks, scats, burrows, nests, and other signs of presence) during the native vegetation clearance assessment were recorded during the 2023 and 2024 survey. Potential fauna refuge sites, such as hollows, were noted as an indication of availability of suitable habitat. Particular attention was paid to identifying habitat for threatened species identified in the desktop assessment. For each opportunistic fauna observation, the species, number of individuals, GPS location, detection methodology (sight, sound, or sign) and habitat were recorded.

Pygmy Blue-tongue Lizard

Two independent field surveys were undertaken within the Disturbance Footprint across the Development Area. The first survey was undertaken by four EBS Ecologists (J. Carpenter, S. Greer, C. Panozzo and J. Jantke) from 18 to 22 March 2024. The second field survey was undertaken by three EBS Ecologists (E. West, C. Panozzo and S. Bulling) from 8 to 12 April 2024. All surveyors were highly experienced in undertaking PBTL surveys.

Survey timing was planned for early autumn to enable maximum visibility in grassland vegetation (i.e. low grass and exotic pasture cover).

The survey method was consistent with the Survey guidelines for Australia's threatened reptiles: Guidelines for detecting reptiles listed as threatened under the EPBC Act (DSEWPaC 2011).

Bird and Bat Monitoring

Bird and bat monitoring was undertaken by EBS Ecology four times per year (one survey per season) starting in July (winter) 2020 and concluding in April (autumn) 2022 for a total of eight surveys. Morning (AM) and afternoon (PM) bird surveys were undertaken at 16 dedicated point count sites during each survey period, for a total of 255 surveys or 127.5 hours of bird survey work (EBS 2020, EBS 2021, EBS 2021a, EBS 2021b, EBS 2021c, EBS 2022).

3.3.2. Likelihood of occurrence

Threatened species and TECs that were identified by the desktop assessment were assessed for their likelihood of occurrence in the Development Area. All species with historical records since 1995 with a spatial reliability of <1 km and species listed as 'known to occur' by the PMST report were assessed.

The assessment was based on recency or records, habitat preferences and the results of the field survey, with criteria for the likelihood of occurrence described in Appendix 5. Marine, wetland were not assessed, as the clearance does not impact these or associated habitats.

Table 3.1 Criteria for the Likelihood of Occurrence of Threatened Species within the Development Area

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

3.3.3. Limitations

Flora and fauna records were retrieved from the PMST and BDBSA extract. The BDBSA only includes verified flora and fauna records submitted to DEW or partner organisations. It is recognized that information is imperfectly captured, and it is possible that significant species may occur in the Development Area that are not reflected by database records. Although much of the BDBSA data has 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 is accurate or fit for any particular purpose of the user or any person to whom the user discloses the information.

3.3.4. Spatial Data Limitations

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

Datum: Geocentric Datum of Australia 2020 (GDA2020).

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

4. ASSESSMENT OUTCOMES

4.1. Vegetation Assessment

4.1.1. General Description of the Vegetation, the Site and Matters of Significance

A total of 12 native vegetation associations have been mapped across the Development Area (Table 4.1). An additional three VA have been mapped across the Development Area (Figure 4.1). However, these associations do not form part of the application as they are not protected under the NV Act, this includes, Cropping, Pasture grassland / exotic grassland and Planted species.

The wind farm area consisted mainly of *Austrostipa* and *Lomandra* grasslands in varying condition, interspersed by cropping land. Native vegetation was scattered along the TL Route as most of the land is used for cropping. Due to the sparseness of remnant vegetation across the Development Area, vegetation has been split into numerous blocks (Block A–E). The Development Area is dominated by ridgelines deeply dissected by drainage lines and creeks. Larger creeks within the proposed wind farm area include Freshwater Creek, Spring Creek and Light River. The landform of the TL Route consists of more plains to the northwest with smaller undulating hills towards the southeast end. Drainage lines and creeks are also scattered across this part of the Development Area.

The closest conservation reserves (managed by DEW) to the proposed Twin Creek Wind Farm footprint are Kaiserstuhl Conservation Park (approximately 25 km south) and Brookfield Conservation Park (approximately 32 km east). Three existing Heritage Agreements under the NV Act are situated 4 km south (Heritage Agreement No.287) and 6 km east of the Development Area (Heritage Agreement numbers 677 and 1314).

Table 4.1 Overall summary of vegetation associations

Vegetation association	Description	Total Area in Development Area (ha)	Clearance Area (ha)	Location
A1	*Lomandra* spp. Tussock Grassland	156.50	7.68	Wind Farm
A2	*Austrostipa* spp. Grassland	1,959.98	147.02	Wind Farm
A3	*Eucalyptus leucoxylon pruinosa* Open Woodland	48.05	1.25	Wind Farm
A4	*Juncus* spp. and *Cyperus* spp. Sedgeland	26.28	1.03	Wind Farm
B1	*E. odorata* and *E. porosa Open* Woodland	0.13	0.07	TL Route
B2	*E. camaldulensis* Woodland	0.39	0.27	TL Route
B3	*E. leucoxylon pruinosa* Open Woodland	0.19	0.12	TL Route
C1	*E. leucoxylon pruinosa* Open Woodland	1.71	0.31	TL Route
D1	*Austrostipa* spp. Grassland	5.05	1.75	TL Route
E1	*E. leucoxylon pruinosa* Open Woodland	41.21	15.88	TL Route
E2	*E. odorata* and *E. porosa* Open Woodland	1.21	1.21	TL Route
E3	*Lomandra effusa* and *Austrostipa* sp. Grassland	1.64	0.19	TL Route
	Total clearance (ha)	**3,672.33**	**176.78**	

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

Details of vegetation under the application are described in Table 4.2 to Table 4.13**.** Details of Scattered Trees under application are described in Table 4.14**.**

Table 4.2 Summary of vegetation association A1

<table>
<tr><td>Vegetation association</td><td colspan="5">Lomandra spp. Tussock Grassland</td></tr>
<tr><td>Benchmark Community</td><td colspan="5">NA 3.2 Grasslands</td></tr>
<tr><td>BAM sites</td><td colspan="5">A1, A1a, A1b, A1c, A1d and A1e</td></tr>
<tr><td colspan="6">  
Direction of photo: West, photo point: -34.3295, 139.0471, survey period: October 2023
Direction of photo: South, photo point: -34.293, 139.0662, survey period: January 2024</td></tr>
<tr><td>General description</td><td colspan="5">The condition of the Lomandra Grasslands varied across Block A. Dominance from one Lomandra species (Lomandra effusa (Scented Iron grass)). Most of these sites were impacted from grazing and weed incursions.
Over storey | Mid storey | Under storey
NA | NA | Lomandra effusa (Scented-Mat-rush)
Enneapogon nigricans (Black-head Grass)
Austrostipa nitida (Balcarra Spear-grass)
Austrostipa elegantissima (Rusty Spear-grass)
Convolvulus angustissimus (Narrow-leaf Bindweed)
Vittadinia gracilis (Woolly New Holland Daisy)
*Briza maxima (Large Quaking-grass)
*Carthamus lanatus (Saffron Thistle)
*Moraea setifolia (Thread Iris)</td></tr>
<tr><td>Threatened species or community</td><td colspan="5"><u>Threatened Ecological Communities</u>
This community classifies as a State (Provisional List of Threatened Ecosystems of SA) Endangered community. This community may also classify as the EPBC protected Iron-grass Natural Temperate Grassland (INTG) of South Australia. However, due to the dry conditions in October broad leaf herbs were limited with some species difficult to ID due to unidentifiable features. It is likely that this patch represents condition class C (indicative patches that are degraded but could be rehabilitated to the listed TEC).
<u>Threatened species observed in this vegetation:</u>
• Black Falcon (Falco subniger): NPW Act: Rare
• Blue-winged Parrot (Neophema chrysostoma): EPBC Act VU, NPW Act V
• Peregrine Falcon (Falco peregrinus macropus): NPW Act: Rare
• Pygmy Blue-tongue Lizard (Tiliqua adelaidensis): EPBC Act EN, NPW Act E.
<u>Additional threatened fauna records:</u>
• Elegant Parrot (Neophema elegans elegans): NPW Act: Rare.
• Southern Whiteface (Aphelocephala leucopsis leucoposis): EPBC Act: VU.</td></tr>
<tr><td>Landscape context score</td><td>1.19</td><td>Vegetation Condition Score</td><td>31.53</td><td>Conservation significance score</td><td>1.40</td></tr>
<tr><td>Unit biodiversity Score</td><td>52.53</td><td>Area (ha)</td><td>7.68</td><td>Total biodiversity Score</td><td>403.37</td></tr>
</table>

** Denotes exotic species.*

Table 4.3 Summary of vegetation association A2

Vegetation association	***Austrostipa* Grassland**				
Benchmark Community	NA 3.2 Grasslands				
BAM sites	A2, A2a, A2b, A2c A2d, A2e, A2f, A2g, A2h, A2i A2j and A2k				
  **Direction of photo:** South, **photo point:** -34.3332, 139.0688, **survey period**: October 2023 **Direction of photo:** Southeast, **photo point:** -34.3085, 139.064, **survey period**: January 2024.					
General description	Grasslands across Block A consisted of varying conditions. Native grass species such as *Austrostipa* and *Enneapogon* were dominant. Herbaceous forbs were also scattered throughout these grasslands. Weeds were common and dominance varied across the block. Infestations of Declared weeds such as *Solanum elaeagnifolium* (Silver- leaf Nightshade) and *Marrubium vulgare* (Horehound) were also common along the northern end of the Block A.				
	Over storey	**Mid storey**	**Under storey**		
	NA	NA	*Aristida behriana* (Brush wiregrass) *Austrostipa nitida* (Balcarra Spear-grass) *Convolvulus angustissimus* (Narrow-leaf Bindweed) *Enneapogon nigricans* (Black-head Grass) *Lomandra effusa* (Scented-Mat-rush) *Ptilotus spathulatus* (Pussy-tails) *Vittadinia gracilis* (Woolly New Holland Daisy) **Solanum elaeagnifolium* (Silver- leaf Nightshade) **Marrubium vulgare* (Horehound) **Carthamus lanatus* (Saffron Thistle) **Moraea setifolia* (Thread Iris)		
Threatened species or community	**Threatened species observed in this vegetation:** • Black Falcon (*Falco subniger*): NPW Act: Rare • Blue-winged Parrot (*Neophema chrysostoma*): EPBC Act VU, NPW Act V • Peregrine Falcon (*Falco peregrinus macropus*): NPW Act: Rare • Pygmy Blue-tongue Lizard (*Tiliqua adelaidensis*): EPBC Act EN, NPW Act E. **Additional threatened fauna records:** • Elegant Parrot (*Neophema elegans elegans*): NPW Act: Rare. • Southern Whiteface (*Aphelocephala leucopsis leucoposis*): EPBC Act: VU.				
Landscape context score	1.19	**Vegetation Condition Score**	20.68	**Conservation significance score**	1.10
Unit biodiversity Score	27.07	**Area (ha)**	147.02	**Total biodiversity Score**	3,979.44

** Denotes exotic species.*

Table 4.4 Summary of vegetation association A3

<table>
<tr><td>Vegetation association</td><td colspan="3">Eucalyptus leucoxylon pruinosa Open Woodland</td></tr>
<tr><td>Benchmark Community</td><td colspan="3">NA 3.1 Woodlands with an Open Grassy Understorey</td></tr>
<tr><td>BAM sites</td><td colspan="3">A3 and A3a</td></tr>
<tr><td colspan="4"> 
Direction of photo: South, photo point: -34.3251, 139.0735, survey period: October 2023.</td></tr>
<tr><td rowspan="3">General description</td><td colspan="3">Over storey dominated by Eucalyptus leucoxylon pruinosa (Inland South Australian Blue Gum) with scattered E. odorata (Peppermint Box). No mid storey and understorey dominated by a variety of grass species (both exotic and native).</td></tr>
<tr><td>Over storey</td><td>Mid storey</td><td>Under storey</td></tr>
<tr><td>Eucalyptus leucoxylon pruinosa (Inland South Australian Blue Gum)
Eucalyptus odorata (Peppermint Box)</td><td>NA</td><td>Aristida behriana (Brush wiregrass)
Austrostipa spp. (Spear-grass)
Calocephalus citreus (Lemon Beauty-heads)
Rytidosperma sp. (Wallaby-grass)
Vittadinia cuneata (Fuzzy New Holland Daisy)
*Hordeum sp.
*Carthamus lanatus (Saffron Thistle)
*Moraea setifolia (Thread Iris)
*Bromus rubens (Red Brome)</td></tr>
<tr><td>Threatened species or community</td><td colspan="3">The State Rare Black Falcon was observed within the vegetation, additional threatened fauna records that may utilise this vegetation are listed below.
<u>Additional threatened fauna records:</u>
Blue-winged Parrot (Neophema chrysostoma): EPBC Act VU, NPW Act V
Diamond Firetail (Stagonopleura guttata) EPBC Act: VU, NPW Act: V
Elegant Parrot (Neophema elegans elegans): NPW Act: Rare
Peregrine Falcon (Falco peregrinus macropus): NPW Act: Rare
Pygmy Blue-tongue Lizard (Tiliqua adelaidensis): EPBC Act EN, NPW Act E
Satin Flycatcher (Myiagra inquieta): NPW Act: Rare.
South-eastern Hooded Robin (Melanodryas cucullata cucullata) EPBC Act: EN, NPW Act: R
Southern Whiteface (Aphelocephala leucopsis leucoposis): EPBC Act: VU.
White-winged Chough (Corcorax melanorhamphos): NPW Act: Rare</td></tr>
</table>

Landscape context score	1.19	**Vegetation Condition Score**	45.93	**Conservation significance score**	1.10
Unit biodiversity Score	60.12	**Area (ha)**	1.25	**Total biodiversity Score**	75.15

** Denotes exotic species.*

Table 4.5 Summary of vegetation association A4

<table>
<tr><td>Vegetation association</td><td colspan="5">Juncus spp. and Cyperus spp. Sedgeland</td></tr>
<tr><td>Benchmark Community</td><td colspan="5">NA 7.2 Common Reed &/ or Bulrush Dominated Sedgelands</td></tr>
<tr><td>BAM Sites</td><td colspan="5">A4</td></tr>
<tr><td colspan="6"> 
Direction of photo: Southwest, photo point: -34.3065, 139.0559, survey period: January 2024.</td></tr>
<tr><td rowspan="2">General description</td><td colspan="5">Dominance from numerous sedge species such as Juncus spp. Cyperus spp. Schoenoplectus pungens and a mixture of native and exotic aquatic forbs such as Cotula coronopifolia, with dense mats of algae (Chara sp.). Evidence of disturbance by livestock.</td></tr>
<tr><td>Over storey</td><td colspan="2">Mid storey</td><td colspan="2">Under storey</td></tr>
<tr><td>NA</td><td colspan="2">NA</td><td colspan="2">Cyperus gymnocaulos (Spiny Flat-sedge)
Juncus kraussii (Sea Rush)
Juncus pallidus (Pale Rush)
Mimulus repens (Creeping Monkey-flower)
Schoenoplectus spp. (Club-rush)
Triglochin striata (Streaked Arrowgrass)
Distichlis distichophylla (Emu-grass)
* Solanum elaeagnifolium (Silver-leaf Nightshade)
* Cotula coronopifolia (Water Buttons)</td></tr>
<tr><td>Threatened species or community</td><td colspan="5">No threatened flora or fauna observed within this vegetation.
No suitable habitat for threatened species.</td></tr>
<tr><td>Landscape context score</td><td>1.19</td><td>Vegetation Condition Score</td><td>64.22</td><td>Conservation significance score</td><td>1.00</td></tr>
<tr><td>Unit biodiversity Score</td><td>76.43</td><td>Area (ha)</td><td>1.03</td><td>Total biodiversity Score</td><td>78.72</td></tr>
</table>

** Denotes exotic species.*

Table 4.6 Summary of vegetation association B1

<table>
<tr><td>Vegetation association</td><td colspan="3">Eucalyptus odorata and E. porosa Open Woodland</td></tr>
<tr><td>Benchmark Community</td><td colspan="3">NA 3.1 Woodlands with an Open Grassy Understorey</td></tr>
<tr><td>BAM Sites</td><td colspan="3">B1</td></tr>
<tr><td colspan="4"> 
Direction of photo: Southwest, photo point: -34.3065, 139.0559, survey period: January 2024.</td></tr>
<tr><td rowspan="3">General description</td><td colspan="3">Due to the linear nature of the site, diversity of the over and mid-storey is minimal with dominance from mallee species such as Eucalyptus porosa and E. odorata. The understorey was diverse, with a mixture of sedges, grasses, and herbaceous forbs.</td></tr>
<tr><td>Over storey</td><td>Mid storey</td><td>Under storey</td></tr>
<tr><td>Eucalyptus porosa (Mallee box)
Eucalyptus odorata (Peppermint Box)</td><td>NA</td><td>Dianella revoluta var. revoluta (Black-anther Flax-lily)
Aristida behriana (Brush Wire-grass)
Austrostipa spp. (Spear-grass)
Vittadinia cuneata var. (Fuzzy New Holland Daisy)
Leiocarpa websteri (Narrow Plover-daisy)
*Scabiosa atropurpurea (Pincushion)
*Salvia verbenaca var. (Wild Sage)
*Avena barbata (Bearded Oat)</td></tr>
<tr><td>Threatened species or community</td><td colspan="3">Does not classify as TEC Peppermint Box Grassy Woodland (PBGW) and no threatened fauna or flora species were observed. Threatened fauna that could potentially use this vegetation are listed below.
<u>Threatened fauna records</u>
Black Falcon (Falco subniger): NPW Act: Rare
Blue-winged Parrot (Neophema chrysostoma): EPBC Act VU, NPW Act V
Diamond Firetail (Stagonopleura guttata) EPBC Act: VU, NPW Act: V
Elegant Parrot (Neophema elegans elegans): NPW Act: Rare
Peregrine Falcon (Falco peregrinus macropus): NPW Act: Rare
Plumed Egret (Ardea intermedia plumifera): NPW Act: Rare
Pygmy Blue-tongue Lizard (Tiliqua adelaidensis): EPBC Act EN, NPW Act E
Satin Flycatcher (Myiagra inquieta): NPW Act: Rare.
South-eastern Hooded Robin (Melanodryas cucullata cucullata) EPBC Act: EN, NPW Act: R
Southern Whiteface (Aphelocephala leucopsis leucoposis): EPBC Act: VU.</td></tr>
</table>

	• White-winged Chough (*Corcorax melanorhamphos*): NPW Act: Rare				
Landscape context score	1.17	**Vegetation Condition Score**	38.65	**Conservation significance score**	1.10
Unit biodiversity Score	49.74	**Area (ha)**	0.07	**Total biodiversity Score**	3.48

** Denotes exotic species.*

Table 4.7 Summary of vegetation association B2

Vegetation association	***Eucalyptus camaldulensis* (River Red Gum) Woodland**
Benchmark Community	NA 7.1 Riparian Woodlands
BAM Sites	B2 and B2a


Site: B2, direction of photo: south, photo point: -34.3452, 139.0865, survey period: October 2023.

Site: B2a, direction of photo: north, photo point: -34.3558, 139.0798, survey period: October 2023.

General description

These woodlands consisted of *Eucalyptus camaldulensis* (River Red Gum) with a mid storey of *Allocasuarina verticillata* (Drooping Sheoak). The under storey consisted of both native and exotic grasses and forbs.

Over storey	Mid storey	Under storey
Eucalyptus camaldulensis (River Red Gum)	*Allocasuarina verticillata* (Drooping Sheoak)	*Themeda triandra* (Kangaroo Grass) *Juncus* sp. (Rush) *Austrostipa eremophila* (Rusty Spear-grass) *Dianella revoluta* var. *revoluta* (Black Anther Flax Lily) **Avena barbata* (Bearded Oat) **Plantago lanceolata* var. (Ribwort) **Allium triquetrum* (Three-cornered Garlic) **Scabiosa atropurpurea* (Pincushions)

Threatened species or community

No threatened flora or fauna species were observed. Fauna that could potentially utilise the vegetation is listed below.

Threatened fauna records

- Black Falcon (*Falco subniger*): NPW Act: Rare
- Blue-winged Parrot (*Neophema chrysostoma*): EPBC Act VU, NPW Act V
- Diamond Firetail (*Stagonopleura guttata*) EPBC Act: VU, NPW Act: V
- Elegant Parrot (*Neophema elegans elegans*): NPW Act: Rare
- Peregrine Falcon (*Falco peregrinus macropus*): NPW Act: Rare
- Satin Flycatcher (*Myiagra inquieta*): NPW Act: Rare.
- South-eastern Hooded Robin (*Melanodryas cucullata cucullata*) EPBC Act: EN, NPW Act: R
- Southern Whiteface (*Aphelocephala leucopsis leucoposis*): EPBC Act: VU.
- White-winged Chough (*Corcorax melanorhamphos*): NPW Act: Rare

Landscape context score	1.17	**Vegetation Condition Score**	34.31	**Conservation significance score**	1.10

Unit biodiversity Score	44.15	**Area (ha)**	0.27	**Total biodiversity Score**	11.92

** Denotes exotic species.*

Table 4.8 Summary of vegetation association B3

<table>
<tr><td>Vegetation association</td><td colspan="3">Eucalyptus leucoxylon pruinosa Open Woodland</td></tr>
<tr><td>Benchmark Community</td><td colspan="3">NA 2 Open Forests & Woodlands with a mid-dense Shrub & Grassy Understorey</td></tr>
<tr><td>BAM Sites</td><td colspan="3">B3</td></tr>
<tr><td colspan="4"> 
Direction of photo: South, photo point: 139.0887, -34.3494, survey period: October 2023.</td></tr>
<tr><td rowspan="3">General description</td><td colspan="3">Overstorey dominated by Eucalyptus leucoxylon pruinosa (Inland South Australian Blue Gum) with scattered E. odorata (Peppermint Box). Mid storey absent, and understorey dominated by a variety of native and exotic grass species.</td></tr>
<tr><td>Over storey</td><td>Mid storey</td><td>Under storey</td></tr>
<tr><td>Eucalyptus leucoxylon ssp. pruinosa (Inland South Australian Blue-gum)
E. porosa (Mallee Box)</td><td>NA</td><td>Rytidosperma sp. (Wallaby-grass)
Einadia nutans ssp. (Climbing Saltbush)
Atriplex semibaccata (Berry Saltbush)
Austrostipa scabra (Rough Spear-grass)
Austrostipa sp.
Einadia nutans ssp. (Climbing Saltbush)
*Scabiosa atropurpurea (Pincushion)
*Asparagus asparagoides f. (Bridal Creeper)
*Rosa Canina (Dog Rose)</td></tr>
<tr><td>Threatened species or community</td><td colspan="3">No threatened flora or fauna species were observed. Fauna that could potentially utilise the vegetation is listed below.
<u>Threatened fauna records</u>
• Black Falcon (Falco subniger): NPW Act: Rare
• Blue-winged Parrot (Neophema chrysostoma): EPBC Act VU, NPW Act V
• Diamond Firetail (Stagonopleura guttata) EPBC Act: VU, NPW Act: V
• Elegant Parrot (Neophema elegans elegans): NPW Act: Rare
• Peregrine Falcon (Falco peregrinus macropus): NPW Act: Rare
• Pygmy Blue-tongue Lizard (Tiliqua adelaidensis): EPBC Act EN, NPW Act E
• Satin Flycatcher (Myiagra inquieta): NPW Act: Rare.
• South-eastern Hooded Robin (Melanodryas cucullata cucullata) EPBC Act: EN, NPW Act: R</td></tr>
</table>

	• Southern Whiteface (*Aphelocephala leucopsis leucoposis*): EPBC Act: VU • White-winged Chough (*Corcorax melanorhamphos*): NPW Act: Rare.				
Landscape context score	1.17	**Vegetation Condition Score**	25.96	**Conservation significance score**	1.10
Unit biodiversity Score	33.41	**Area (ha)**	0.12	**Total biodiversity Score**	4.01

** Denotes exotic species.*

Table 4.9 Summary of vegetation association C1

<table>
<tr><td>Vegetation association</td><td colspan="3">Eucalyptus leucoxylon pruinosa Open Woodland</td></tr>
<tr><td>Benchmark Community</td><td colspan="3">NA 2 Open Forests & Woodlands with a mid-dense Shrub & Grassy Understorey</td></tr>
<tr><td>BAM sites</td><td colspan="3">C1</td></tr>
<tr><td colspan="4"> 
Direction of photo: south, photo point: -34.4022, 139.1757, survey period: October 2023.</td></tr>
<tr><td rowspan="3">General description</td><td colspan="3">The vegetation was in poor condition due to historical clearance and dominance of weed species such as Avena barbata (pictured above). Numerous Lomandra species (L. collina, L. effusa and L. multiflora etc.) were present within this VA along with other native forbs, however, their density was low.</td></tr>
<tr><td>Over storey</td><td>Mid storey</td><td>Under storey</td></tr>
<tr><td>Eucalyptus leucoxylon ssp. pruinosa (Inland South Australian Blue-gum)</td><td>Allocasuarina verticillata (Drooping Sheoak)
Bursaria spinosa ssp. spinosa (Sweet Bursaria)</td><td>Lomandra spp. (Mat-rush)
Chrysocephalum apiculatum (Common Everlasting)
Ptilotus spathulatus (Pussy-tails)
*Avena barbata (Bearded Oat)
*Bromus diandrus (Great Brome)
*Echium plantagineum (Salvation Jane)</td></tr>
<tr><td>Threatened species or community</td><td colspan="3">No threatened flora or fauna species were observed. Fauna that could potentially utilise the vegetation is listed below.
<u>Threatened fauna records</u>
Black Falcon (Falco subniger): NPW Act: Rare
Blue-winged Parrot (Neophema chrysostoma): EPBC Act VU, NPW Act V
Diamond Firetail (Stagonopleura guttata) EPBC Act: VU, NPW Act: V
Elegant Parrot (Neophema elegans elegans): NPW Act: Rare
Peregrine Falcon (Falco peregrinus macropus): NPW Act: Rare
Pygmy Blue-tongue Lizard (Tiliqua adelaidensis): EPBC Act EN, NPW Act E
Satin Flycatcher (Myiagra inquieta): NPW Act: Rare.
South-eastern Hooded Robin (Melanodryas cucullata cucullata) EPBC Act: EN, NPW Act: R</td></tr>
</table>

	• Southern Whiteface (*Aphelocephala leucopsis leucoposis*): EPBC Act: VU • White-winged Chough (*Corcorax melanorhamphos*): NPW Act: Rare.				
Landscape context score	1.15	**Vegetation Condition Score**	21.94	**Conservation significance score**	1.10
Unit biodiversity Score	27.75	**Area (ha)**	0.31	**Total biodiversity Score**	8.60

** Denotes exotic species.*

Table 4.10 Summary of vegetation association D1

Vegetation association	***Austrostipa* spp. Grassland**				
Benchmark Community	NA 2 in MDBSA Open Forest/Woodlands with Mid dense shrub and Grassy understorey				
BAM Sites	D1				
 **Direction of photo: North, photo point: -34.3699, 139.1216, survey period: January 2024.**					
General description	A large patch of *Austrostipa* grassland scattered across two properties and along Valley Farm Road. This grassland was in good condition with dominance from *Austrostipa blackii* (Crested Spear-grass)				
	Over storey	**Mid storey**	**Under storey**		
	NA	NA	*Austrostipa blackii* (Crested Spear-grass) *Rytidosperma* sp. (Wallaby-grass) *Convolvulus angustissimus* (Narrow-leaf Bindweed) *Aristida behriana* (Brush Wire-grass) *Euphorbia drummondii* *Maireana enchylaenoides* (Wingless Fissure-plant) **Avena barbata* **Vulpia* sp. **Salvia verbenaca* var.		
Threatened species or community	No threatened species were observed within this vegetation. Threatened fauna that are likely to utilise this vegetation is listed below. • Black Falcon (*Falco subniger*): NPW Act: Rare • Blue-winged Parrot (*Neophema chrysostoma*): EPBC Act VU, NPW Act V • Peregrine Falcon (*Falco peregrinus macropus*): NPW Act: Rare • Pygmy Blue-tongue Lizard (*Tiliqua adelaidensis*): EPBC Act EN, NPW Act E. • Elegant Parrot (*Neophema elegans elegans*): NPW Act: Rare. • Southern Whiteface (*Aphelocephala leucopsis leucoposis*): EPBC Act: VU.				
Landscape context score	1.15	**Vegetation Condition Score**	11.53	**Conservation significance score**	1.10
Unit biodiversity Score	14.59	**Area (ha)**	1.75	**Total biodiversity Score**	25.53

** Denotes exotic species.*

Table 4.11 Summary of vegetation association E1

<table>
<tr><td>Vegetation association</td><td colspan="3">Eucalyptus leucoxylon pruinosa Open Woodland</td></tr>
<tr><td>Benchmark Community</td><td colspan="3">NA 2 Open Forests & Woodlands with a mid-dense Shrub & Grassy Understorey</td></tr>
<tr><td>BAM Sites</td><td colspan="3">E1, E1a and E1b</td></tr>
<tr><td colspan="4"> 
Direction of photo: south, photo point: -34.4022, 139.1757, survey period: October 2023.</td></tr>
<tr><td rowspan="2">General description</td><td colspan="3">Over storey dominated by Eucalyptus leucoxylon pruinosa (Inland South Australian Blue Gum) with scattered E. odorata (Peppermint Box). No mid storey and understorey dominated by a variety of grass species (both exotic and native).</td></tr>
<tr><td>Over storey</td><td>Mid storey</td><td>Under storey</td></tr>
<tr><td>Eucalyptus leucoxylon ssp. pruinosa (Inland South Australian Blue-gum)
E. porosa (Mallee Box)</td><td>NA</td><td>Aristida behriana (Brush Wiregrass)
Einadia nutans ssp. (Climbing Saltbush)
Rytidosperma sp. (Wallaby-grass)
Salsola australis (Buckbush)
Vittadinia gracilis (Woolly New Holland Daisy)
*Hordeum sp.
*Cynara cardunculus ssp. flavescens (Artichoke Thistle)
*Marrubium vulgare (Horehound)
*Moraea setifolia (Thread Iris)</td></tr>
<tr><td>Threatened species or community</td><td colspan="3">The State Rare Maireana rohrlachii (Rohrlach’s Bluebush) was observed within this vegetation. No threatened fauna species was observed. Threatened species that may utilise this habitat are listed below.
<u>Threatened fauna records</u>
• Black Falcon (Falco subniger): NPW Act: Rare
• Blue-winged Parrot (Neophema chrysostoma): EPBC Act VU, NPW Act V
• Diamond Firetail (Stagonopleura guttata) EPBC Act: VU, NPW Act: V
• Elegant Parrot (Neophema elegans elegans): NPW Act: Rare
• Peregrine Falcon (Falco peregrinus macropus): NPW Act: Rare
• Pygmy Blue-tongue Lizard (Tiliqua adelaidensis): EPBC Act EN, NPW Act E
• Satin Flycatcher (Myiagra inquieta): NPW Act: Rare.
• South-eastern Hooded Robin (Melanodryas cucullata cucullata) EPBC Act: EN, NPW Act: R
• Southern Whiteface (Aphelocephala leucopsis leucoposis): EPBC Act: VU
• White-winged Chough (Corcorax melanorhamphos): NPW Act: Rare.</td></tr>
</table>

Landscape context score	1.18	**Vegetation Condition Score**	36.20	**Conservation significance score**	1.11
Unit biodiversity Score	47.46	**Area (ha)**	15.88	**Total biodiversity Score**	753.75

** Denotes exotic species.*

Table 4.12 Summary of vegetation association E2

Vegetation association	*Eucalyptus odorata* and *E. porosa* Open Woodland
Benchmark Community	MDBSA 9.1 Woodlands with an Open Grassy Understorey
BAM Sites	E2

Direction of photo: south, photo point: -34.4007 139.1861, survey period: October 2023.

General description

This open woodland consisted of scattered *E. porosa* (Mallee Box) trees with no mid-storey and an understorey consisting of grasses (both native and exotic). *Avena barbata* (Bearded Oat) had a high cover rating followed by *Bromus diandrus* (Great Brome). Due to the large cover of weeds and the degraded over and mid-storey this vegetation association had a low condition score.

Over storey	Mid storey	Under storey
Eucalyptus porosa (Mallee Box)	NA	*Maireana brevifolia* (Short-leaf Bluebush) *Austrostipa* sp. *Einadia nutans* ssp. (Climbing Saltbush) *Rytidosperma* sp. (Wallaby-grass) *Salsola australis* (Buckbush) **Avena barbata* (Bearded Oat) **Echium plantagineum* (Salvation Jane) **Scabiosa atropurpurea* (Pincushion) **Asteriscus spinosus* (Golden Pallensis)

Threatened species or community

The State Rare *Maireana rohrlachii* (Rohrlach's Bluebush) was observed within this vegetation. No threatened fauna species was observed. Threatened species that may utilise this habitat are listed below.

Threatened fauna records

- Black Falcon (*Falco subniger*): NPW Act: Rare
- Blue-winged Parrot (*Neophema chrysostoma*): EPBC Act VU, NPW Act V
- Diamond Firetail (*Stagonopleura guttata*) EPBC Act: VU, NPW Act: V
- Elegant Parrot (*Neophema elegans elegans*): NPW Act: Rare
- Peregrine Falcon (*Falco peregrinus macropus*): NPW Act: Rare
- Pygmy Blue-tongue Lizard (*Tiliqua adelaidensis*): EPBC Act EN, NPW Act E
- Satin Flycatcher (*Myiagra inquieta*): NPW Act: Rare.
- South-eastern Hooded Robin (*Melanodryas cucullata cucullata*) EPBC Act: EN, NPW Act: R
- Southern Whiteface (*Aphelocephala leucopsis leucoposis*): EPBC Act: VU

	• White-winged Chough (*Corcorax melanorhamphos*): NPW Act: Rare.				
Landscape context score	1.18	**Vegetation Condition Score**	22.05	**Conservation significance score**	1.14
Unit biodiversity Score	29.66	**Area (ha)**	1.21	**Total biodiversity Score**	35.89

** Denotes exotic species.*

Table 4.13 Summary of vegetation association E3

<table>
<tr><td>Vegetation association</td><td colspan="5">Lomandra effusa and Austrostipa sp. Grassland</td></tr>
<tr><td>Benchmark Community</td><td colspan="5">MDBSA 9.1 Woodlands with an Open Grassy Understorey</td></tr>
<tr><td>BAM Sites</td><td colspan="5">E3</td></tr>
<tr><td colspan="6"> 
Direction of photo: south, photo point: 139.1754, -34.402, survey period: October 2023.</td></tr>
<tr><td rowspan="4">General description</td><td colspan="5">This Lomandra grassland was in low condition with very limited native species diversity.</td></tr>
<tr><td>Over storey</td><td colspan="2">Mid storey</td><td colspan="2">Under storey</td></tr>
<tr><td>NA</td><td colspan="2">NA</td><td colspan="2">Lomandra effusa (Scented Mat-rush)
Austrostipa spp. (Spear-grass)
Aristida behriana (Brush wire-Grass)
Enneapogon nigricans (Black-head Grass)
*Avena barbata (Bearded Oat)
*Hordeum sp.
*Trifolium sp.</td></tr>
<tr><td>Threatened species or community</td><td colspan="5"><u>Threatened Ecological Communities</u>
This community classifies as a State (Provisional List of Threatened Ecosystems of SA) Endangered community. This community may also classify as the EPBC protected Iron-grass Natural Temperate Grassland (INTG) of South Australia. However, due to the dry conditions in October broad leaf herbs were limited with some species difficult to identify due to lack of distinguishable features (i.e. flowering or fruiting bodies). It is likely that this patch represents condition class C (indicative patches that are degraded but could be rehabilitated to the listed ecological community). Threatened fauna species that may utilise the vegetation is listed below.
<u>Threatened fauna</u>
• Black Falcon (Falco subniger): NPW Act: Rare
• Blue-winged Parrot (Neophema chrysostoma): EPBC Act VU, NPW Act V
• Elegant Parrot (Neophema elegans elegans): NPW Act: Rare.
• Peregrine Falcon (Falco peregrinus macropus): NPW Act: Rare
• Pygmy Blue-tongue Lizard (Tiliqua adelaidensis): EPBC Act EN, NPW Act E.
• Southern Whiteface (Aphelocephala leucopsis leucoposis): EPBC Act: VU.</td></tr>
<tr><td>Landscape context score</td><td>1.18</td><td>Vegetation Condition Score</td><td>9.19</td><td>Conservation significance score</td><td>1.40</td></tr>
<tr><td>Unit biodiversity Score</td><td>15.18</td><td>Area (ha)</td><td>0.19</td><td>Total biodiversity Score</td><td>2.88</td></tr>
</table>

** Denotes exotic species.*

Table 4.14 Details of the Scattered Trees Proposed to be Impacted

Tree #	Tree spp.	No. of trees	Height (m)	Hollows	Diameter (cm)	Canopy dieback (%)	Total Biodiversity Score	General comments
Mopami IBRA Association								
1	*Eucalyptus porosa*	1	4.2	0	17.5	5	0.55	Small mallee tree in good condition
2	*E. porosa*	1	5.5	0	25.5	10	1.18	Large mallee tree in good condition
3	*E. porosa*	1	6	0	69	80	1.34	Large mallee tree in poor condition
4	*E. leucoxylon pruinosa*	1	10.1	3 small	91	25	3.94	Large tree in good condition
5	*E. leucoxylon pruinosa*	1	9	0	77	15	2.55	Large tree in good condition
6	*E. leucoxylon pruinosa*	1	9	1 large 5 small	107	50	3.82	Large tree in good condition
7	*E. leucoxylon pruinosa*	1	6.5	3 small	134	5	4.34	Large tree in good condition
8	*E. leucoxylon pruinosa*	2	2.5	0	13	8	0.55	Small tree with little habitat value
9	*E. leucoxylon pruinosa*	1	11	1 medium	70	25	3.63	Large tree in good condition
10	*E. leucoxylon pruinosa*	1	9	10 small 3 med	57	25	2.61	Large tree in good condition
11	*E. porosa*	1	5.5	0	35	5	1.99	Medium size mallee tree in good condition
12	*E. porosa*	1	7	2 small	66	8	4.64	Large tree in good condition
Rufus IBRA Association								
13	*E. leucoxylon pruinosa*	1	9	1 large 3 med. 2 small	108	40	4.05	Large tree with good habitat value
14	*E. leucoxylon pruinosa*	1	6.5	2 large 1 med. 2 small	115	30	3.84	Large tree with good habitat value
15	*E. leucoxylon pruinosa*	1	10.3	2 large 1 med. 3 smalls	123	15	6.48	Large tree with good habitat value
16	*E. leucoxylon pruinosa*	1	10	1 large 1 med. 2 small	76	5	4.60	Large tree with good habitat value
17	*E. leucoxylon pruinosa*	1	10	3 med 1 small	109	2	6.51	Large tree with good habitat value

Tree #	Tree spp.	No. of trees	Height (m)	Hollows	Diameter (cm)	Canopy dieback (%)	Total Biodiversity Score	General comments
18	*E. odorata*	1	10	1 large 2 med.	72	2	6.85	Large tree with good habitat value
19	*E. leucoxylon pruinosa*	1	8.2	2 large 1 med. 1 small	86	20	4.00	Large tree with good habitat value
20	*E. leucoxylon pruinosa*	1	8.2	1 large 1 med. 3 small	78	15	3.96	Large tree with good habitat value
21	*E. leucoxylon pruinosa*	1	8.5	1 large 5 med. 5 small	124	10	6.07	Large tree with good habitat value
22	*E. leucoxylon pruinosa*	1	9	3 med 3 small	83	10	4.41	Large tree with good habitat value
23	*E. leucoxylon pruinosa*	1	7	1 large 1 small	89	30	3.53	Large tree with good habitat value
24	*E. leucoxylon pruinosa*	1	8	2 large 1 med. 1 small	97	70	2.37	Large tree in poor condition
25	*E. leucoxylon pruinosa*	1	13	3 large 2 small	106	20	8.76	Large tree with good habitat value
26	*E. odorata*	1	10.5	1 large	60	30	4.58	Medium sized tree in good condition
27	*E. leucoxylon pruinosa*	1	11	4 large 2 small	70	15	4.36	Large tree with good habitat value
28	*E. leucoxylon pruinosa*	1	10	3 large 1 small	78	60	3.28	Large tree in poor condition
29	*E. leucoxylon pruinosa*	1	6.5	0	150	3	4.10	Large tree is good condition
30	*E. leucoxylon pruinosa*	1	9	3 small 2 med. 2 large	170	15	7.23	Large tree is moderate condition
31	*E. leucoxylon pruinosa*	1	12	3 small 1 med. 1 large	88	2	6.68	Large tree is good condition
32	*E. leucoxylon pruinosa*	1	11	3 med. 3 large	111	15	6.42	Large tree is good condition
33	*E. leucoxylon pruinosa*	1	9	1 small 1 med. 3 large	93	40	3.80	Large tree is moderate condition
34	*E. leucoxylon pruinosa*	1	8	1 med. 3 large	39	50	1.25	Large tree is moderate condition

4.1.3. Site map showing areas of proposed impact

Native vegetation assessed as part of this application and the proposed impact of the Project are shown in Figure 4.1 to Figure 4.6.

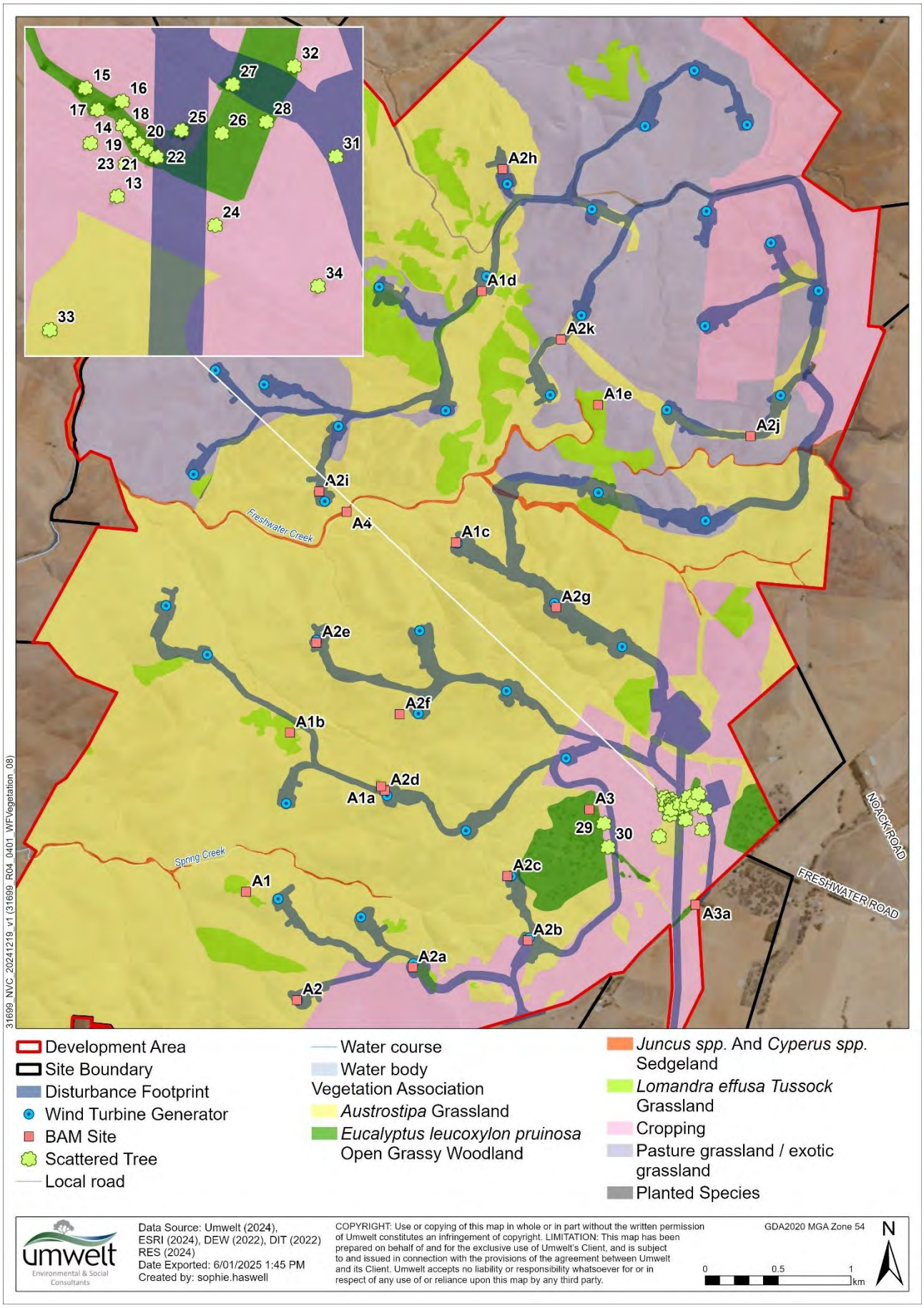


Figure 4.1 **Vegetation Associations and Scattered Trees impacted by Development Area**

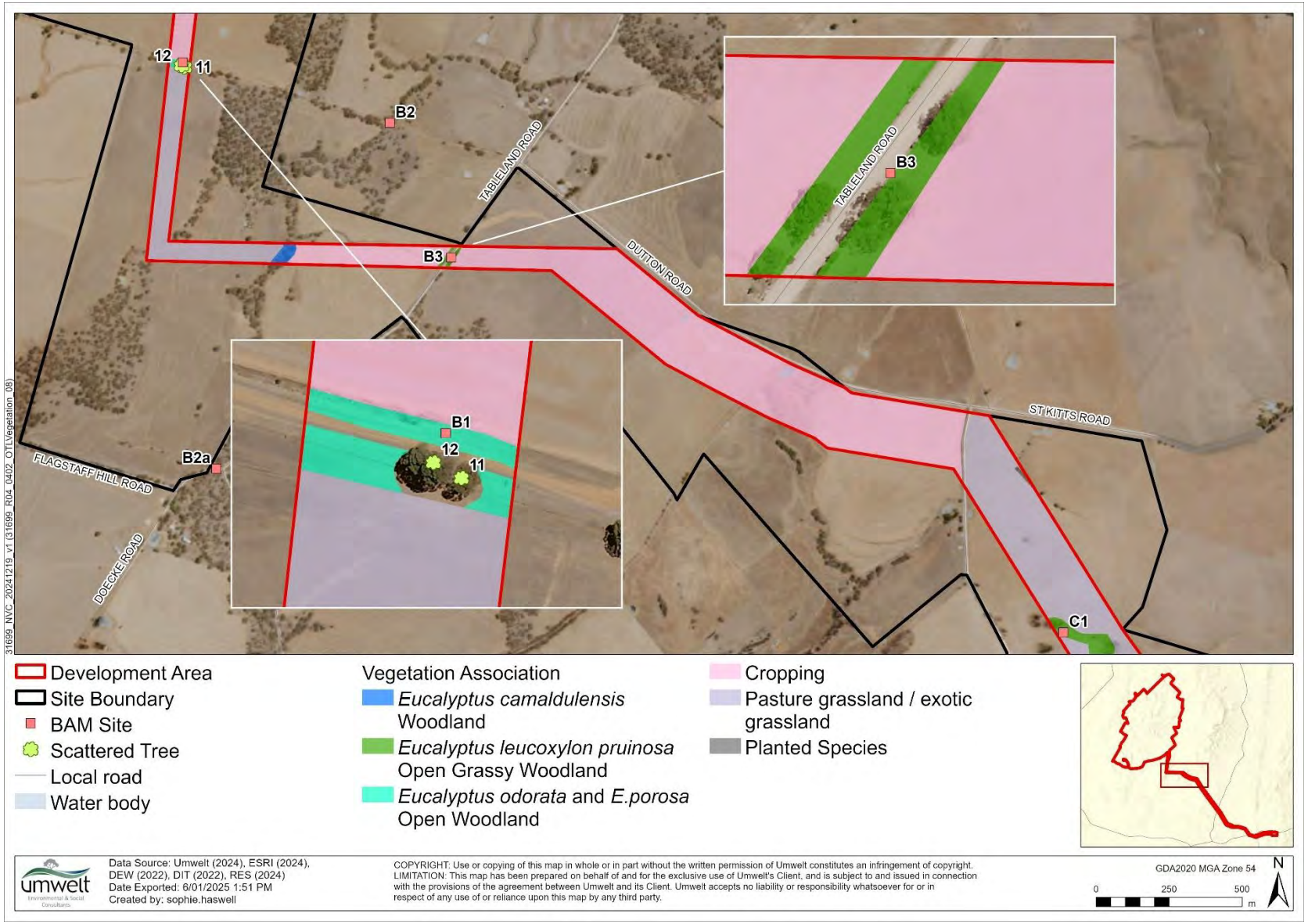


Figure 4.2 **Native Vegetation Impacted by the Transmission Line Route (Map 1 of 4)**

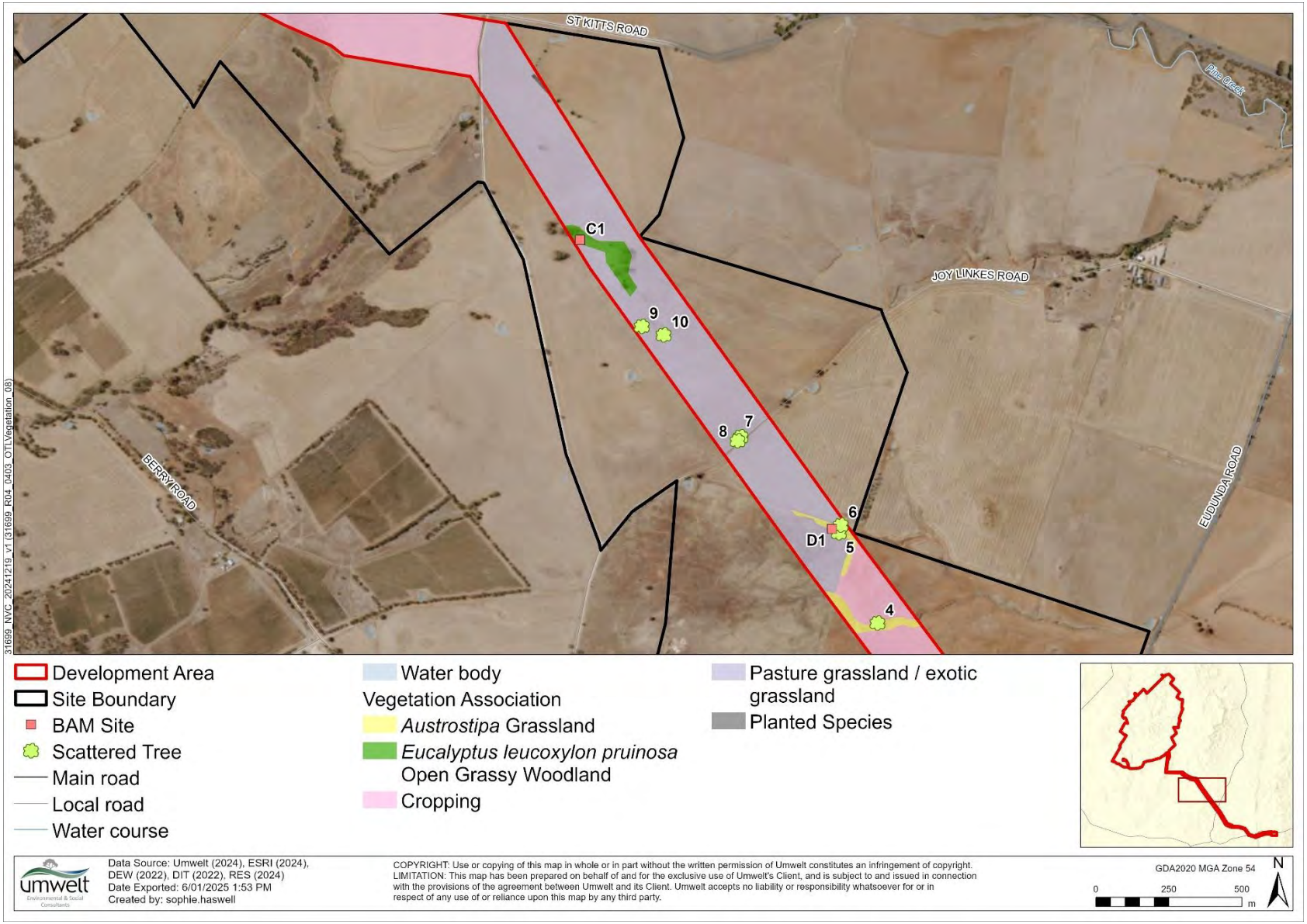


Figure 4.3 **Native vegetation impacted by the Transmission Line Route (Map 2 of 4)**

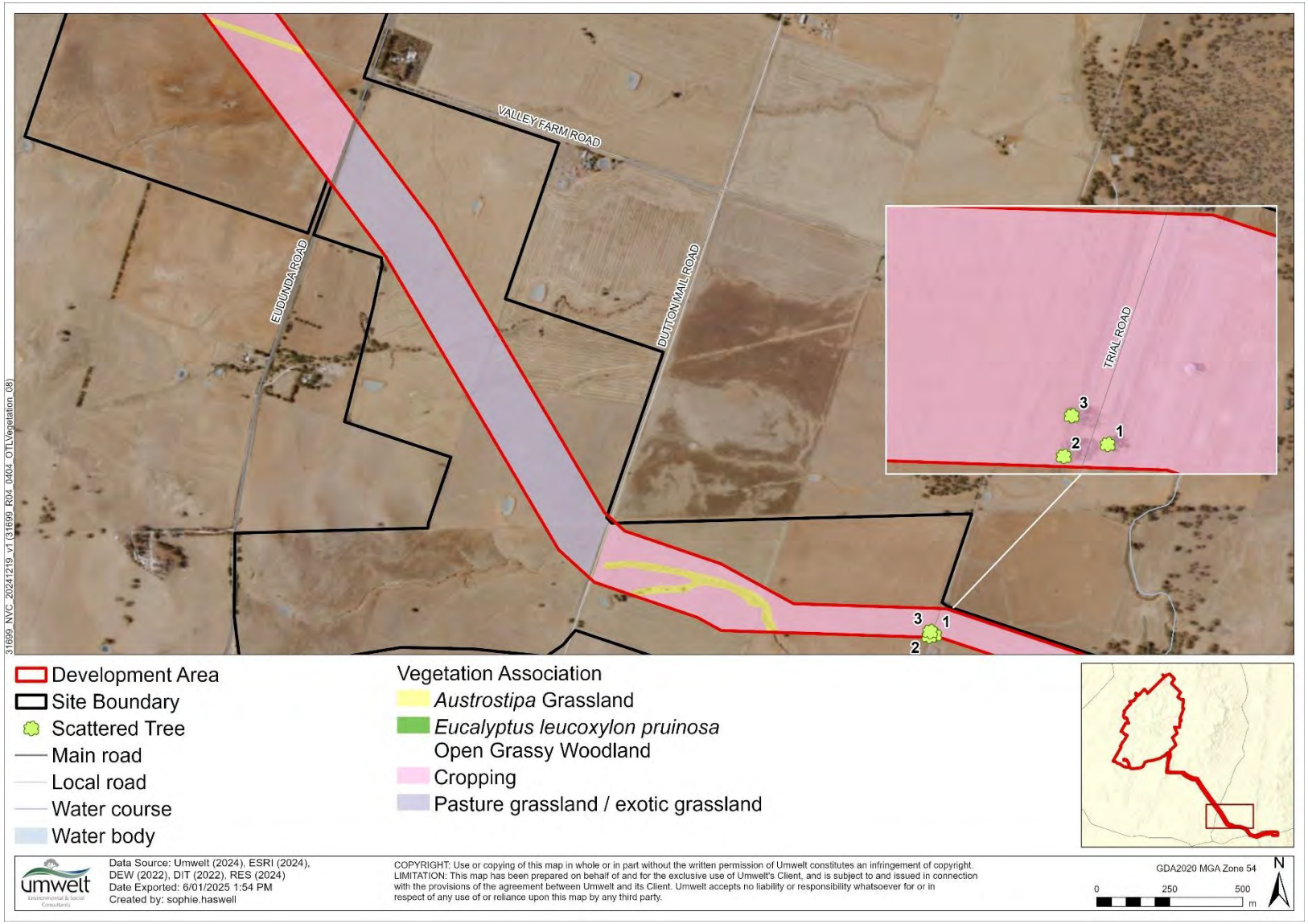


Figure 4.4 **Native vegetation impacted by the Transmission Line Route (Map 3 of 4)**

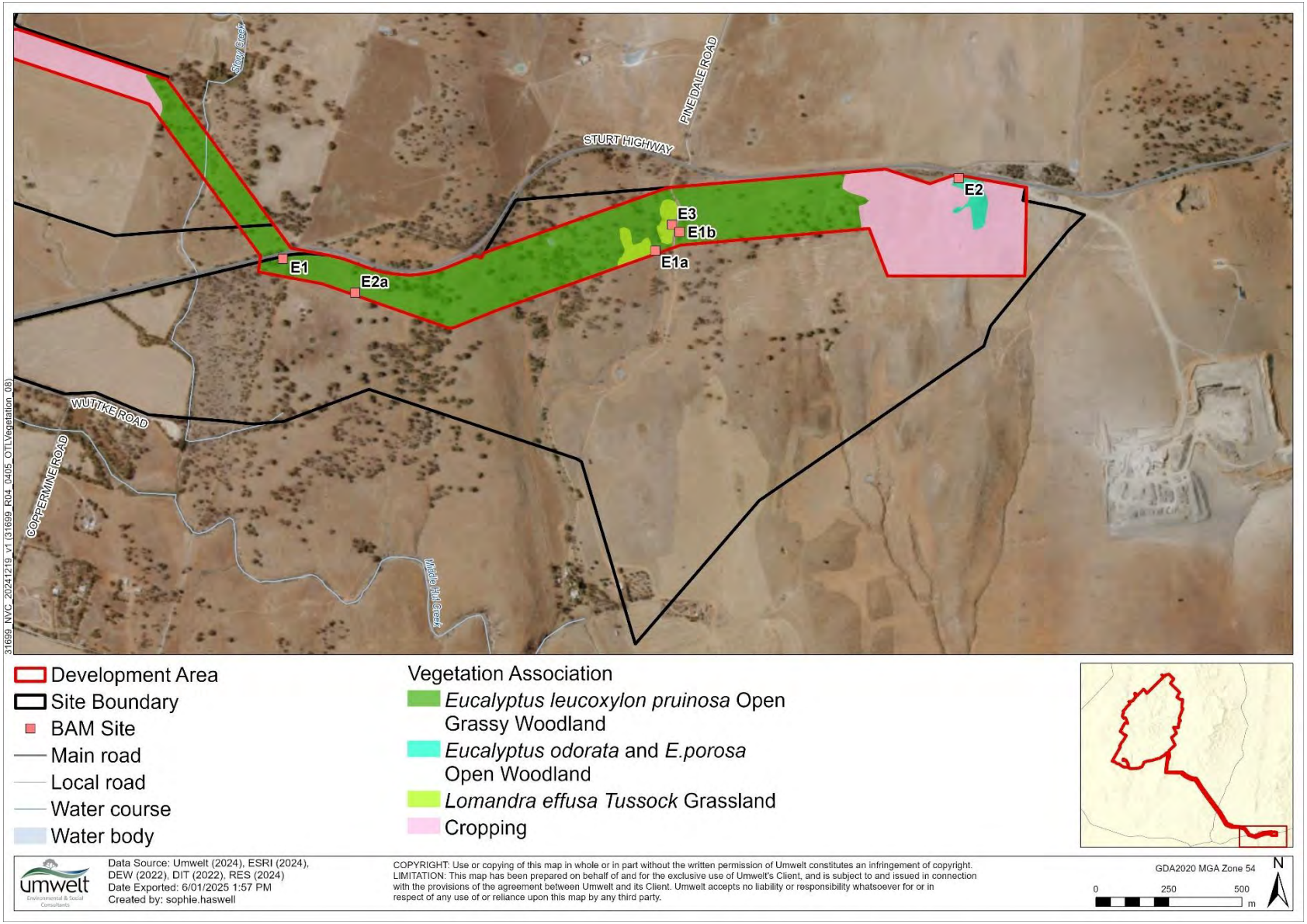


Figure 4.5 **Native vegetation impacted by the Transmission Line Route (Map 4 of 4)**

4.2. Threatened Ecological Communities

The database searches indicated that four TECs might occur:

- Peppermint Box (*Eucalyptus odorata*) Grassy Woodland of South Australia
- Iron-grass Natural Temperate Grassland of South Australia
- Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions
- Plains Mallee Box Woodlands of the Murray Darling Depression, Riverina and Naracoorte Coastal Plain Bioregions.

Vegetation in the Development Area has been assessed against the definitions of each TEC identified in Table 4.15. The assessment found that two TECs occur within the Development Area.

Table 4.15 Assessment of the Presence of Threatened Ecological Communities in the Development Area

Threatened Ecological Community	Conservation Status	Definition	Assessment
Peppermint Box (*Eucalyptus odorata*) Grassy Woodland of South Australia (PBGW)	Critically Endangered	The PBGW is restricted to SA and consists of an open to dense woodland dominated by *Eucalyptus odorata* and typically occurs with other tree species including *E. leucoxylon*, *E. microcarpa* or *E. porosa.* Canopy height comprises low trees, 5-10m tall with an understorey comprised of diverse grasses and herbs including *Austrostipa* sp.*, Lomandra* sp. and *Acacia pycnantha.* (DEWHA 2008b; Turner 2012). This TEC can be categorised under three different condition classes (A, B and C), based on remnant patch size and native species diversity and composition. Class C does not make up the TEC but is of sufficient biodiversity value to target for restoration (DEWR 2007; Turner 2012).	**Absent** – no relevant vegetation in the Development Area.
Iron-grass Natural Temperate Grassland of South Australia (INTG)	Critically Endangered	INTG is endemic to SA and consists of tussock-forming perennial grasses, Iron-grasses (*Lomandra effusa* and/or *L. multiflora* ssp. *dura)* and a low presence (<10%) of trees and tall shrubs (DEWR 2007; Turner 2012). This TEC can be categorised under three different condition classes (A, B and C), based on patch size, native species diversity and composition, and tussock density. Class A and Class B, make up this TEC, while Class C does not make up the TEC but is of sufficient biodiversity value to target for restoration (DEWR 2007; Turner 2012, DEWHA 2008b).	**Present** – relevant vegetation in the Development Area. Areas surveyed during the 2023 and 2024 survey only classified as condition class C. However, due to the abnormally dry spring conditions in 2023, broad leaf herbaceous forbs were hard to detect.
Mallee Bird Community (MBC) of the Murray Darling Depression Bioregion	Endangered	A fauna community found in the Murray Darling Depression (MDD) bioregion comprising an assemblage of 20 bird species that are dependent on the mallee vegetation that characterises the bioregion. Criteria for listing includes being within the MDD, containing at least 5 ha dominated by mallee habitats and at least three MBC bird species recorded within 20 km in the last 10 years (DAWE 2021a).	**Absent** – TL route within the MDDB. However, no suitable mallee vegetation was assessed within the impact area.
Buloke Woodlands of the Riverina and	Endangered	Woodland communities where Buloke (*Allocasuarina luehmannii*) is the dominant or	**Absent** – no relevant vegetation present

Threatened Ecological Community	Conservation Status	Definition	Assessment
Murray-Darling Depression Bioregions		co-dominant tree species. Co-dominant species include *Callitris gracilis, Callitris glaucophylla, Eucalyptus largiflorens, Eucalyptus leucoxylon* ssp. *pruinosa* and *Eucalyptus microcarpa.* In SA, the community is only known from the Bordertown district (Cheal, Lucas, & Macaulay 2011).	within the Development Area.

4.3. Threatened Species Assessment

4.3.1. Threatened flora

One threatened flora species was recorded during both surveys (2023 and 2024):

- *Maireana rohrlachii* (Rohrlach's Bluebush): NPW Act Rare.

A patch of 28 individuals of *Maireana rohrlachii* (Rohrlach's Bluebush) were within the Development Area (Figure 4.7).

The database searches identified 23 threatened flora species that may occur in the Search Area, of which 10 were assessed as possible, likely or highly likely to occur in the Development Area. These species are listed in Table 4.16 and species with BDBSA records area mapped in Figure 4.8**.** The full likelihood of occurrence assessment for all species is provided in Appendix 5.

Table 4.16 Likelihood of occurrence of threatened flora species identified in the desktop assessment. The data source and threat levels are described in the table footer

Scientific Name	Common Name	Conservation status		Data Source	PMST occurrence/ BDBSA Sighting (year)	Likelihood of Occurrence in Development Area
		EPBC Act	NPW Act			
Acacia glandulicarpa	Hairy-pod Wattle	VU	E	1	May	Unlikely
Acacia iteaphylla	Flinders Ranges Wattle		R	2	2002	Possible
Acacia menzelii	Menzel's Wattle	VU	V	1	May	Unlikely
Acacia spilleriana	Spiller's Wattle	EN	E	1	May	Unlikely
Austrostipa breviglumis	Cane Spear-grass		R	2	2011	**Likely**
Caladenia argocalla	White-beauty Spider-orchid	EN	E	1	Likely	Unlikely
Caladenia concolor	Crimson Spider-orchid	VU		1	May	Unlikely
Caladenia tensa	Greencomb Spider-orchid	EN		1	Likely	Unlikely
Cryptandra campanulata	Long-flower Cryptandra		R	2	2015	**Likely**
Dodonaea procumbens	Trailing Hop-bush	VU	V	1	Likely	Unlikely
Dodonaea subglandulifera	Peep Hill Hop-bush	EN	E	1	Likely	Possible
Eucalyptus behriana	Broad-leaf Box		R	2	2018	**Likely**
Euphrasia collina subsp. osbornii	Osborn's Eyebright	EN	V	1	May	Unlikely
Maireana excavata	Bottle Fissure-plant		V	2	2022	**Likely**

Scientific Name	Common Name	Conservation status		Data Source	PMST occurrence/ BDBSA Sighting (year)	Likelihood of Occurrence in Development Area
		EPBC Act	NPW Act			
Maireana rohrlachii	Rohrlach's Bluebush		R	2, 3	2017	**Highly Likely/ Known**
Olearia pannosa subsp. pannosa	Silver Daisy-bush	VU	V	1	Likely	Unlikely
Pterostylis xerophila	Desert Greenhood	VU	V	1	May	Unlikely
Ptilotus erubescens	Hairy-tails		R	2	2017	**Likely**
Rumex dumosus	Wiry Dock		R	2	2011	**Likely**
Sclerolaena muricata var. *villosa*	Five-spine Bindyi		R	2	2017	**Likely**
Senecio macrocarpus	Large-fruit Fireweed	VU	V	1	May	Unlikely
Swainsona behriana	Behr's Swainson-pea		V	2	2011	Unlikely
Swainsona pyrophila	Yellow Swainson-pea	VU	R	1	May	Unlikely

Conservation status

EPBC Act: (*Environment Protection and Biodiversity Conservation Act 1999*). NPW Act (*National Parks and Wildlife Act 1972*). Conservation Codes: CE: Critically Endangered. EN/E: Endangered. VU/V: Vulnerable. R: Rare. ssp.: the conservation status applies at the sub-species level. Mi: listed as migratory under the EPBC Act. Ma: listed as marine under the EPBC Act.

Source of Information

1. EPBC Act Protected Matters Report (DCCEEW 2024) – 5 km buffer applied to Development Area.
2. Biological Database of South Australia data extract (DEW 2023a) – 5 km buffer applied to Development Area.
3. Recorded during the 2023/24 field survey.

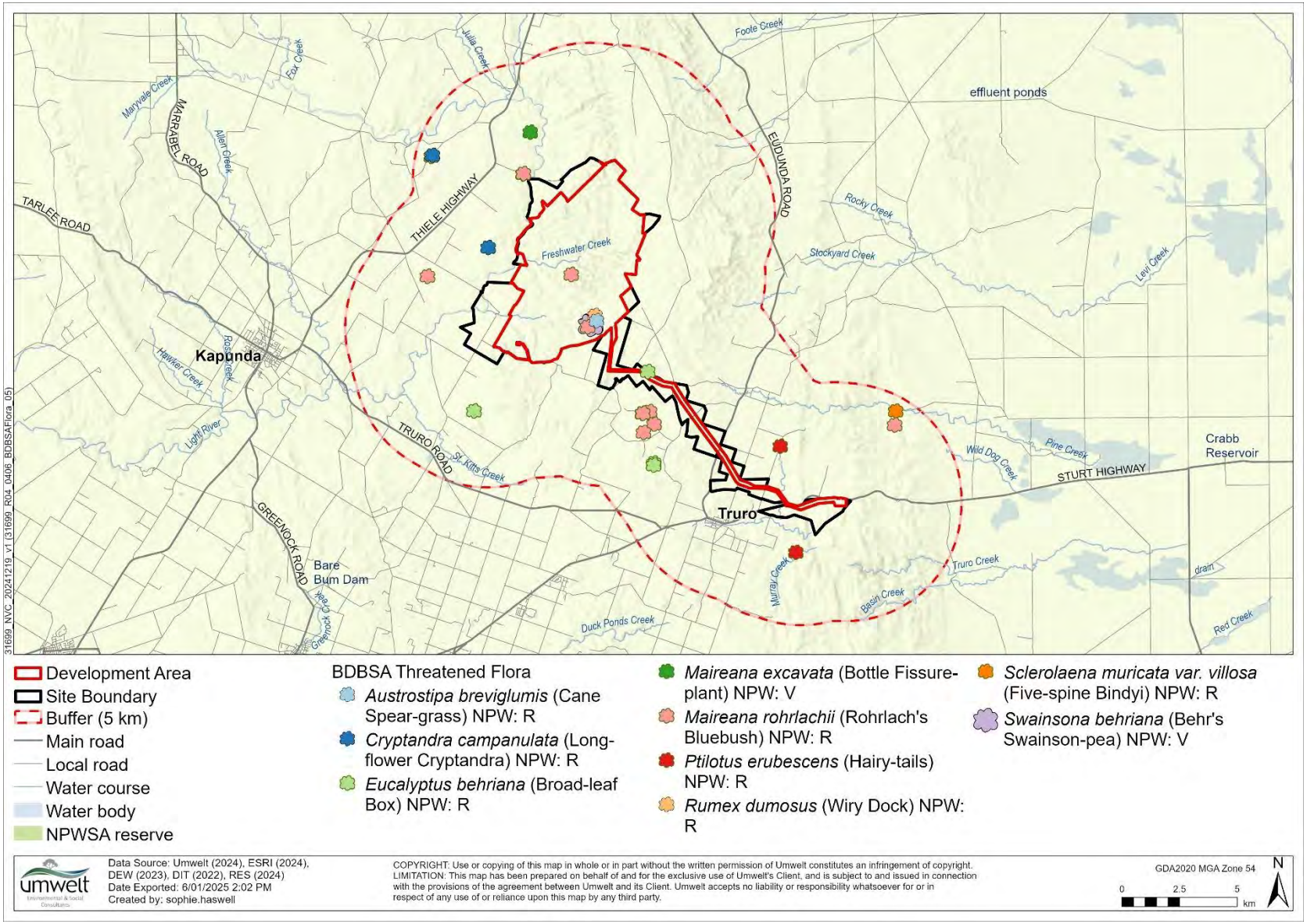


Figure 4.6 **NPW Act Listed Threatened Flora Records within 5 km of the Development Area**

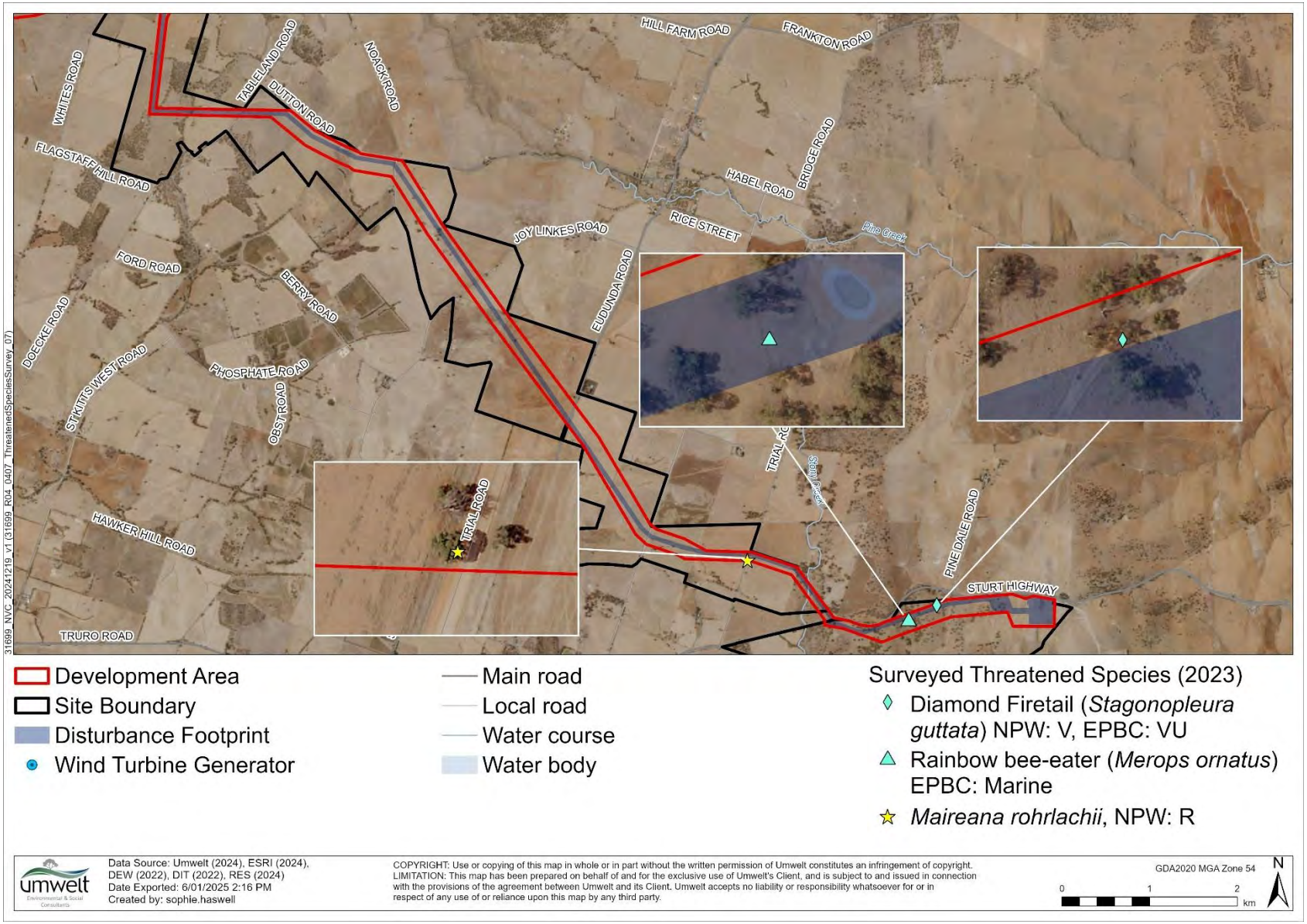


Figure 4.7 Threatened Flora and Fauna Observed During the 2023/2024 Surveys

4.3.2. *Threatened fauna*

The database searches identified 29 threatened fauna species (one amphibian, one fish, one mammal, 24 birds and two reptiles), which may occur in the Search Area. Four species were assessed as likely to occur within the Development Area, this includes:

- White-winged Chough (*Corcorax melanorhamphos*) – NPW Act: Rare
- Restless Flycatcher (*Myiagra inquieta*) – NPW Act: Rare
- Southern Whiteface (*Aphelocephala leucopsis leucopsis*) – EBPC Act: Vulnerable
- South-eastern Hooded Robin (*Melanodryas cucullata cucullata*) – EPBC Act: Endangered and State Rare.

All threatened fauna species are listed in Table 4.17 and species with BDBSA records area mapped in Figure 4.6. The full likelihood of occurrence assessment for all species is provided in Appendix 5.

2024 surveys

Three threatened fauna species (two birds and one reptile) were recorded during the survey:

- Two Rainbow Bee-eaters were observed resting on a tree in *Eucalyptus leucoxylon pruinosa* Open Woodland (Figure 4.7).
- Four Diamond Firetails were seen foraging on the ground along the eastern end of the TL Route within *Eucalyptus leucoxylon pruinosa* Open Woodland (Figure 4.7).
- A total of 200 PBTL were observed within the Disturbance Footprint (Appendix 7).
- Black Falcon was observed flying over vegetation in A3.

Historical surveys

- Three individual Blue-winged Parrots were observed flying over vegetation Associations 1 and 2: *Lomandra effusa* grasslands and *Austrostipa* sp. grassland (respectively). It is believed that Blue-winged Parrots utilise these vegetation associations for foraging (EBS 2017) (Figure 4.8).
- Black Falcon and Peregrine Falcon were observed during a Bird Utilisation Survey (BUS) in 2021 and 2022, respectively.

Table 4.17 Threatened species identified as Known to occur (DCCEEW 2024). This also includes species that have been observed within the Development Area

Scientific Name	Common Name	Conservation status		Data Source	PMST Occurrence/ BDBSA Last Sighting (year)	Likelihood of Occurrence in Development Area
		EPBC Act	NPW Act			
AMPHIBIANS						
Litoria raniformis	Southern Bell Frog	VU	V	1		Unlikely
AVES						
Ardea intermedia plumifera	Plumed Egret		R	2	2010	Unlikely
Amytornis striatus howei	Murray Mallee Striated Grasswren	EN	R	1	May	Unlikely
Aphelocephala leucopsis	Southern Whiteface	VU		1	Known	Possible
Botaurus poiciloptilus	Australasian Bittern	EN	E	1	May	Unlikely
Calidris acuminata	Sharp-tailed Sandpiper	VU, Mi (W)		1	May	Unlikely

Scientific Name	Common Name	Conservation status		Data Source	PMST Occurrence/ BDBSA Last Sighting (year)	Likelihood of Occurrence in Development Area
		EPBC Act	NPW Act			
Calidris ferruginea	Curlew Sandpiper	CE, Mi (W)	E	1	May	Unlikely
Corcorax melanorhamphos	White-winged Chough		R	2	2011	**Likely**
Falco hypoleucos	Grey Falcon	VU	R	1	Likely	Unlikely
Falco peregrinus macropus	Peregrine Falcon		R	2, 4	2009	**Known**
Falco subniger	Black Falcon		R	2, 3, 4	1999	**Known**
Gallinago hardwickii	Latham's Snipe	VU, Mi (W)	R	1	May	Unlikely
Grantiella picta	Painted Honeyeater	VU	R	1	Likely	Possible
Leipoa ocellata	Malleefowl	VU	V	1	Likely	Unlikely
Lophochroa leadbeateri leadbeateri	Major Mitchell's Cockatoo (eastern)	EN		1	May	Unlikely
Melanodryas cucullata cucullata	South-eastern Hooded Robin	EN	R	1, 2	Known/2015	**Likely**
Merops ornatus	Rainbow Bee-eater	Ma		3,4	May	**Known**
Myiagra inquieta	Restless Flycatcher		R	2	1999	**Likely**
Neophema chrysostoma	Blue-winged Parrot	VU	V	1, 2, 4	Known/2011	**Known**
Neophema elegans elegans	Elegant Parrot		R	2	1999	Possible
Pedionomus torquatus	Plains-wanderer	CE	E	1	May	Unlikely
Polytelis anthopeplus monarchoides	Regent Parrot (eastern)	VU	V	1	Likely	Unlikely
Rostratula australis	Australian Painted Snipe	EN	E	1	Known	Unlikely
Stagonopleura guttata	Diamond Firetail	VU	V	1,2,3	Known/2018	**Known**
Tringa nebularia	Common Greenshank	EN, Mi (W)		1	Likely	Unlikely
FISH						
Galaxias rostratus	Flathead Galaxias	CE		1	Likely	Unlikely
MAMMALS						
Pteropus poliocephalus	Grey-headed Flying-fox	VU	R	1	May	Unlikely

Scientific Name	Common Name	Conservation status		Data Source	PMST Occurrence/ BDBSA Last Sighting (year)	Likelihood of Occurrence in Development Area
		EPBC Act	NPW Act			
REPTILES						
Aprasia pseudopulchella	Flinders Ranges Worm-lizard	VU		1	Likely	Possible
Tiliqua adelaidensis	Pygmy Blue-tongue Lizard	EN	E	1,2,3,4	Known/2021	**Known**

Conservation status

EPBC Act: (*Environment Protection and Biodiversity Conservation Act 1999*). **NPW Act** (*National Parks and Wildlife Act 1972*). **Conservation Codes**: **CE**: Critically Endangered. **EN/E**: Endangered. **VU/V**: Vulnerable. **R**: Rare. **ssp**.: the conservation status applies at the sub-species level. **Mi**: listed as migratory under the EPBC Act. **Ma**: listed as marine under the EPBC Act.

Source of Information

1. EPBC Act Protected Matters Report (DCCEEW 2024) – 5 km buffer applied to Development Area.
2. Biological Database of South Australia data extract (DEW 2023a) - 5 km buffer applied to Development Area.
3. Recorded during the 2023/24 field survey.
4. Recorded during the previous field surveys.

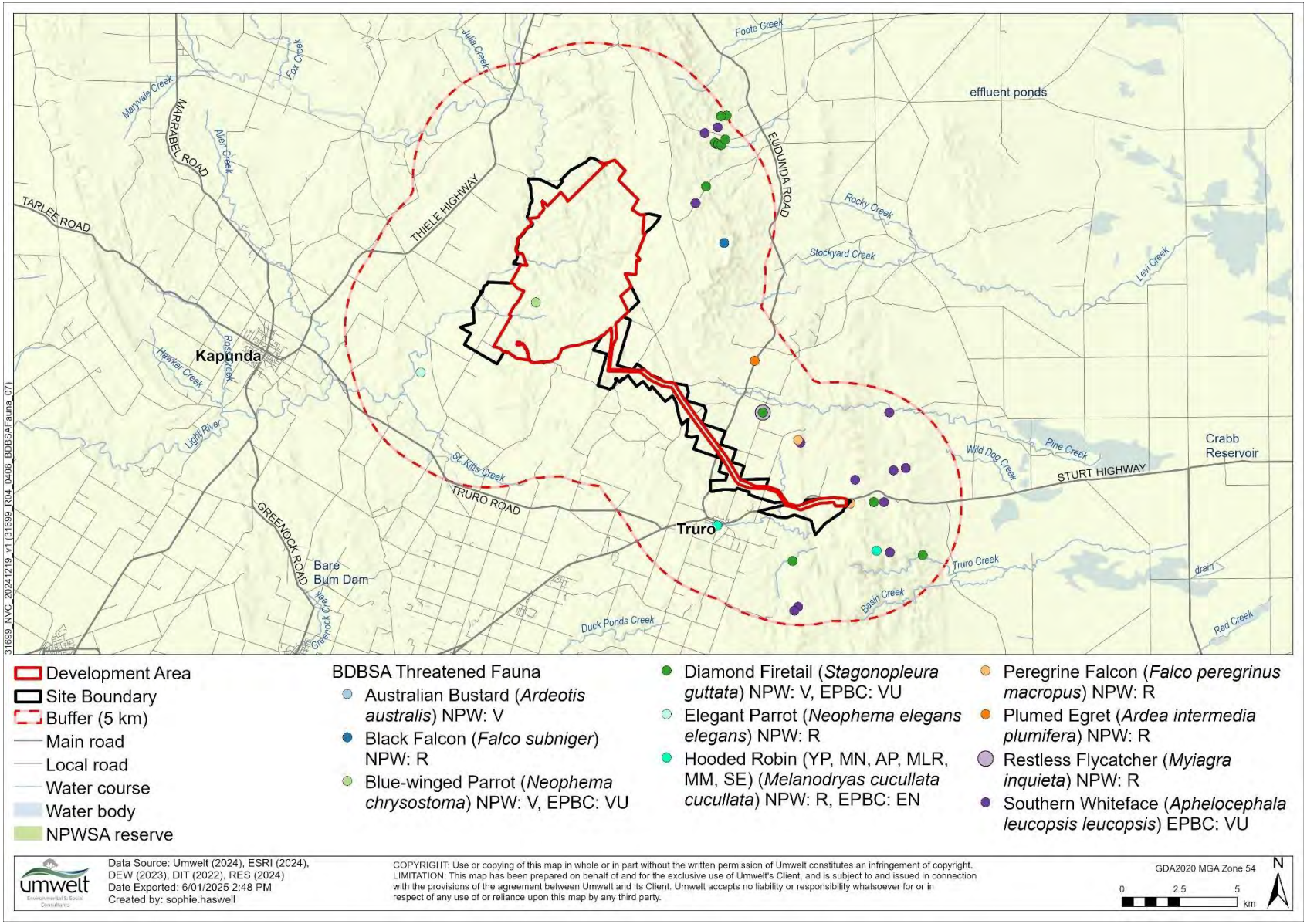


Figure 4.8 NPW Act Listed Threatened Fauna Records within 5 km of the Development Area Since 1995

4.4. Cumulative Impacts

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

Direct Clearance

To calculate the impact to native vegetation, all infrastructure associated with TCWF, including WTG sites, access tracks, cable routes and a construction compound has been mapped in ArcGIS and overlaid onto native vegetation association information. This includes all associated infrastructure and construction areas, such as turbine site hardstands, crane hardstands, stockpiles, batter slopes and construction compounds/laydown areas (Disturbance Footprint).

A worst-case scenario complete clearance of the Disturbance Footprint along the TL Route (approximately 50 m width) has been assumed as part of this clearance application.

Indirect Clearance

- Construction and operation of the TCWF has the potential to cause indirect impacts to native vegetation associated with construction machinery, dust, weeds, herbicide use, altered hydrology/stormwater drainage and potentially changes to local grazing regimes/levels. These impacts will be minimised and managed through construction and operation management plans. Examples of indirect clearance mitigation is addressed Section 4.5 below.

4.5. Addressing the Mitigation Hierarchy

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

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

All stages of the project design have been undertaken considering vegetation mapping, threatened ecological community mapping and the known locations of threatened species populations. Whilst every effort has been made to avoid sensitive areas where possible, such as locating turbines outside of *Lomandra* spp. grasslands and Peppermint Box grassy woodlands, engineering and landscape constraints mean that clearing of native vegetation cannot be completely avoided. The clearance areas showcase the worst-case scenario. That is, calculation of areas required for clearance of vegetation for the Wind Turbine Generators (WTG) and ancillary infrastructure associated with the construction of the TL route has been overstated and overcalculated. For example, the SEB calculated for the TL Route has assumed clearance of vegetation with the entire corridor, however, this is not the intended construction methodology. The poles and infrastructure required for the TL will be micro-sited to avoid vegetation included scattered trees resulting in partial clearance. This micro-siting also applies to WTG hard stands areas, access tracks and associated infrastructure (i.e. construction compound). To enable opportunities for avoidance as the project progresses through detailed design, a micrositing corridor (shown on the RES plans as a planning corridor) has been prepared and is shown in Appendix 6.

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

During the final design of the development, the infrastructure will be microsited to mimise native vegetation clearance. Clearance has been reduced to the smallest extent possible, given the design and specification constraints for the Project. The following measures have been taken to minimise native vegetation clearance and associated direct and indirect impacts:

- Existing farm tracks and council roads will be utilised where possible.
- Wherever possible, the location of infrastructure in grasslands that are in poor condition, currently being impacted by weeds and grazing
- Micro siting of infrastructure wherever possible, particularly to avoid scattered trees
- A Construction Environmental Management Plan (CEMP) aims to highlight the minimization measures for this Project. Some of these include, but are not limited to:
    - Limit vegetation clearing to that required for construction and safety and where possible, retain established trees and native shrub under storeys.
    - All vegetation clearing or disturbance is approved and undertaken in compliance with permits and/ or site management plans.
    - Tree pruning instead of removal where possible.
    - Provide an induction for all project team members for identification and management of protected flora and fauna prior to the commencement of works, particularly Pygmy-blue Tongue Lizards, Iron-grass (*Lomandra* spp.) and Peppermint Box (*Eucalyptus odorata*).
    - Accurately and clearly mark out the edge of clearing and trees/vegetation to be retained including hollow trees, significant species, riparian zones.
    - Identify, retain and protect old or mature trees (alive or dead) which are in close proximity to the corridor by marking out/fencing.
    - Clearly identify buffer areas around protected species, including existing wedge tailed eagle nests.
    - Fence or mark buffer areas around protected species prior to the commencement of works.
    - Controls in place to minimise disturbance to flora and fauna are maintained and effective.
    - Disturbed/ exposed areas are stabilised and revegetated progressively.
    - Cease work immediately if any previously unknown threatened flora species are encountered
    - Vegetation clearing methods shall be conducted in a manner that encourages natural regeneration of rootstock, minimises land disturbance and maintains soil stability and line clearance.
    - Avoid the removal of trees with hollows (alive or dead.) Where removal cannot be avoided, maintain the tree intact (as far as possible) and place it on the ground in adjoining vegetation.
    - Vegetation clearing methods shall be conducted in a manner that encourages natural regeneration of rootstock, minimises land disturbance and maintains soil stability and line clearance.

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

Clearance for the Wind Farm footprint and TL Route poles will be permanent, and no rehabilitation will occur within those areas. However, areas between the TL Route poles will not be cleared. The following rehabilitation methods will be implemented:

- Disturbed/ exposed areas are stabilised and revegetated progressively. Revegetation of areas beside access tracks and hardstands both during and following construction. Species selection will most likely be with a native seed mix/pasture seed mix. Often oversown with a sterile rye grass to ensure soil stabilisation.
- wherever practical, trenches will be backfilled immediately upon cable installation in accordance with the CEMP, with measures adopted to slow stormwater flows and to prevent the scouring of open trench or disturbed ground prior to revegetation.
- Storing cleared vegetation and/ or topsoil containing seed bank for re-establishment after construction has been completed.

- Vegetation clearing methods shall be conducted in a manner that encourages natural regeneration of rootstock, minimises land disturbance and maintains soil stability and line clearance.
- Where removal of trees cannot be avoided, maintain the tree intact (as far as possible) and place it on the ground in adjoining vegetation.

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

The proponent aims to offset part the clearance with an on-ground SEB Area (Offset Area).

The Offset Area protects three vegetation associations, 21.174 hectares of Peppermint Box Grassy Woodland (in varying conditions) and 4.197 hectares of River Red Gum Riparian Open Woodland. The vegetation associations are listed below:

- A1 (Peppermint Box open Grassy Woodland) UBS 39.05 – 14.019 ha
- A2 (Peppermint Box Grassy Woodland) UBS 90.66 – 7.155 ha
- A3 (River Red Gum Riparian Open Woodland) UBS 27.35 – 4.197 ha.

Peppermint Box Grassy Woodland is listed as a nationally TEC under the EPBC Act. BAM site A2 meets the condition class B TEC requirements in its current condition, the implementation of this management plan will assist in significantly improving its condition. The Offset Area management plan also aims to improve the condition of A1 (currently condition Class C, patches amendable to rehabilitation). The Offset Area would also contribute to the total area under conservation management in the area. Approximately 6% of the of Mopami EA contains native vegetation and only 2% is within the Reserve System. Therefore, the Offset Area significantly contributes to the management of native vegetation in the region.

The balance amount will be paid into the fund. The NVC will only consider an offset once avoidance, minimization and restoration have been documented and fulfilled. The *SEB Policy* explains the biodiversity offsetting principles that must be met.

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

The Native Vegetation Council will consider Principles 1(b), 1(c) and 1(d) when assigning a level of Risk under Regulation 16 of the Native Vegetation Regulations. The Native Vegetation Council will consider all the Principles of clearance of the Act as relevant, when considering an application referred under the Planning, Development and Infrastructure Act 2016. The clearance is assessed against the Principles of Clearance as set out in Table 4.18.

Table 4.18 Assessment Against the Principles of Clearance

<table>
<tr><th>Principle of clearance</th><th>Considerations</th></tr>
<tr><td>Principle 1(a) – it comprises a high level of diversity of plant species</td><td><u>Relevant information</u>
<table>
<tr><th>Vegetation association</th><th># Native</th><th># Introduced</th><th>Plant Diversity score</th></tr>
<tr><td>A1*</td><td>13</td><td>10</td><td>14</td></tr>
<tr><td>A2*</td><td>9</td><td>9</td><td>11</td></tr>
<tr><td>A3</td><td>13</td><td>9</td><td>18</td></tr>
<tr><td>A4</td><td>14</td><td>10</td><td>28</td></tr>
<tr><td>B1</td><td>17</td><td>7</td><td>21</td></tr>
<tr><td>B2*</td><td>10</td><td>14</td><td>13</td></tr>
<tr><td>B3</td><td>7</td><td>4</td><td>12</td></tr>
<tr><td>C1</td><td>11</td><td>7</td><td>10</td></tr>
<tr><td>D1</td><td>6</td><td>6</td><td>6</td></tr>
<tr><td>E1*</td><td>13</td><td>6</td><td>11</td></tr>
<tr><td>E2</td><td>9</td><td>7</td><td>12</td></tr>
</table></td></tr>
</table>

<table>
<tr><th>Principle of clearance</th><th>Considerations</th></tr>
<tr><td></td><td>
<table>
<tr><td>E3</td><td>5</td><td>4</td><td>6</td></tr>
</table>
* Averaged score

<u>Assessment against the principles</u>

Seriously at Variance

A4 and B1

At Variance

A1, A2, A3, B2, B3, C1, E1, E2

<u>Moderating factors that may be considered by the NVC</u>

The total area of each vegetation association in the Development Area compared to the clearance area is shown in Table 4.1
</td></tr>
<tr><td>Principle 1(b) – significance as a habitat for wildlife</td><td>
<u>Relevant information</u>

Three threatened fauna species were recorded during the 2023/2024 field survey:

Black Falcon (Falco subniger) – NPW Act: R.
Diamond Firetail (Stagonopleura guttata) – EPBC: VU, NPW Act: V
Pygmy Blue-tongue Lizard (Tiliqua adelaidensis) – EPBC: EN, NPW Act: E
Rainbow Bee-eater (Merops ornatus) – EPBC: Ma

Historical threatened fauna species was recorded during previous Umwelt surveys:

Blue-winged Parrot (Neophema chrysostoma) – EPBC: VU, NPW Act: V.
Black Falcon (Falco subniger) – NPW Act: R
Peregrine Falcon (Falco peregrinus macropus) -NPW Act: Rare.

Two other species have been assessed as “Known to occur” based on the PMST, this includes:

Southern-eastern Hooded Robin (Melanodryas cucullata cucullata) – EPBC Act: EN, NPW Act: R. A 2015 record was identified within the Search Area. Suitable habitat does exist within the Development Area. As further explained in Appendix 5, the Hooded Robin prefers woodland of eucalypt, mallee, mulga; coastal heath; semi cleared farmland. As this habitat is present within the Development Area (A3, B1, B2, C1, E1 and E2).
Southern Whiteface (Aphelocephala leucopsis) – EPBC Act: VU. There are no historical records within the area. However, this species has a broad distribution and habitat requirements and likely to disperse across grasslands and woodlands across the Development Area.

Bushland Assessment

Most of the impacted vegetation within the Project consists of grasslands, which does not support a high diversity of species. However, these areas are known habitat for the Pygmy Blue-tongue Lizard and possible habitat for the Flinders Ranges Worm Lizard.

Woodland trees provide hollows and shelter refuge for certain species, specifically large birds of prey such as Wedge-tailed Eagles. Four known nests were observed within A3. Areas that support a high diversity of species are large, connected patches of woodland, particularly along the TL Route, which includes E1 and E2.

<table>
<tr><th>Vegetation association</th><th>Threatened fauna score</th><th>Unit biodiversity score</th></tr>
<tr><td>A1*</td><td>0.1</td><td>52.53</td></tr>
<tr><td>A2*</td><td>0.1</td><td>27.07</td></tr>
<tr><td>A3</td><td>0.1</td><td>60.12</td></tr>
<tr><td>A4</td><td>0.0</td><td>76.43</td></tr>
<tr><td>B1</td><td>0.1</td><td>49.74</td></tr>
<tr><td>B2*</td><td>0.1</td><td>44.15</td></tr>
<tr><td>B3</td><td>0.1</td><td>33.41</td></tr>
<tr><td>C1</td><td>0.1</td><td>27.75</td></tr>
<tr><td>D1</td><td>0.1</td><td>14.59</td></tr>
</table>
</td></tr>
</table>

Principle of clearance	Considerations
	<table><tr><td>E1*</td><td>0.1</td><td>47.46</td></tr><tr><td>E2</td><td>0.1</td><td>29.66</td></tr><tr><td>E3</td><td>0.1</td><td>15.18</td></tr></table> ** Averaged score* **Scattered Tree Assessment** Biodiversity score for scattered trees outlined in Table 4.14. All scattered trees received a fauna score of 1.8.
	Assessment against the principles All scattered trees are *Seriously at Variance*. All vegetation associations are Seriously at Variance except A4.
	Moderating factors that may be considered by the NVC *Impact significance* It is uncertain whether the clearance of 19.11 ha of woodland will lead to a long-term decrease in population for the Diamond Firetail. However, a referral to DCCEEW will be a part of the process for TCWF. It is unlikely that the clearance will fragment a population as large patches of connecting woodland exist outside of the Development Area. Similarly for Blue-winged Parrots and Rainbow Bee-eaters, large amounts of suitable habitat exist outside of the Development Area. The clearance is unlikely to result in invasive species becoming established, as numerous weed species already exist and are widespread within the area. PBTL surveys were undertaken during March and April 2024. A total of 453 PBTL were identified, of which 200 PBTL were located within the Disturbance Footprint (refer to Appendix 7) and likely to be impacted by the Project. Currently, it is not known whether this Project will have a significant impact on PBTL. A Significant Impact Assessment under the provisions of the EPBC Act will form part of the referral process. *Non-essential habitat* Given the high level of impact from weeds, fragmentation and historical clearing, the vegetation under application is unlikely to represent essential habitat for any threatened fauna species. *Common species* All species recorded in the Development Area on fauna surveys are species that are commonly found in grasslands and woodlands. The Development Area does include habitat features essential for maintaining local populations, such as hollow trees and a reduction in impacts to these have been considered during the design phase.

<table>
<tr><th>Principle of clearance</th><th>Considerations</th></tr>
<tr><td rowspan="3">Principle 1(c) – plants of a rare, vulnerable or endangered species</td><td><u>Relevant information</u>

One State Rare flora species was identified within the Development Area:
• Maireana rohrlachii (Rohrlach's Bluebush). There were two BAM sites that included this species. A total of 28 individuals were identified within a patch of native vegetation on Trial Road (Figure 4.7). Scattered individuals were recorded in VA E1 (individuals not counted).

Species listed as likely or possible within the Development Area have not been observed. Most native vegetation across the Development Area is dominated by grassy and herbaceous species and dominance of weed species, with ground layer vegetation sparse to absent. As the Development Area is continuously grazed, there is little chance of threatened forb species, such as orchids, persisting under such conditions.

<table>
<tr><th>Vegetation association</th><th>Threatened flora score</th></tr>
<tr><td>A1*</td><td>0</td></tr>
<tr><td>A2*</td><td>0</td></tr>
<tr><td>A3</td><td>0</td></tr>
<tr><td>A4</td><td>0</td></tr>
<tr><td>B1</td><td>0</td></tr>
<tr><td>B2*</td><td>0</td></tr>
<tr><td>B3</td><td>0</td></tr>
<tr><td>C1</td><td>0</td></tr>
<tr><td>D1</td><td>0</td></tr>
<tr><td>E1*</td><td>0.04</td></tr>
<tr><td>E2</td><td>0.04</td></tr>
<tr><td>E3</td><td>0</td></tr>
</table>
* Averaged score</td></tr>
<tr><td><u>Assessment against the principles</u>

At Variance
E1 and E2</td></tr>
<tr><td><u>Moderating factors that may be considered by the NVC</u>

Impact significance
These shrubs are already fragmented by a road and are impacted by weeds. It is unlikely that the removal of these shrubs will have a significant impact on this species.

Numbers of plants to be cleared
All plants will be cleared based on the current design. It is likely that > 1% of the plants will be affected.

Significant benefit
N/A</td></tr>
<tr><td>Principle 1(d) – the vegetation comprises the whole or part of a plant community that is Rare, Vulnerable or</td><td><u>Relevant information</u>

A State (Provisional List of Threatened Ecosystems of SA) Endangered community was observed in Block A (A1) and Block E (E3). This community may also classify as the EPBC protected Iron-grass Natural Temperate Grassland (INTG) of South Australia. However, due to the dry conditions during the 2023 October survey, broad leaf herbs were limited with some species difficult to identify due to a lack of distinguishable features such as flowering or fruiting bodies. It is likely that this patch represents condition class C (indicative patches that are degraded but could be rehabilitated to the listed ecological community).</td></tr>
</table>

<table>
<tr><th>Principle of clearance</th><th>Considerations</th></tr>
<tr><td>endangered</td><td>
<table>
<tr><th>Vegetation association</th><th>Threatened community score</th></tr>
<tr><td>A1*</td><td>1.3</td></tr>
<tr><td>A2*</td><td>0</td></tr>
<tr><td>A3</td><td>0</td></tr>
<tr><td>A4</td><td>0</td></tr>
<tr><td>B1</td><td>0</td></tr>
<tr><td>B2*</td><td>0</td></tr>
<tr><td>B3</td><td>0</td></tr>
<tr><td>C1</td><td>0</td></tr>
<tr><td>D1</td><td>0</td></tr>
<tr><td>E1*</td><td>0</td></tr>
<tr><td>E2</td><td>0</td></tr>
<tr><td>E3</td><td>1.3</td></tr>
</table>
* Averaged score

<u>Assessment against the principles</u>

Seriously at Variance
A1 and E3

<u>Moderating factors that may be considered by the NVC</u>

Impact significance
It is unlikely that the clearance of these VAs will lead to a long-term effect on the plant community. These patches of Lomandra are already isolated at patchy due to the long history of clearance and grazing within the area. The vegetation is also largely impacted by weeds (both Declared and environmental).

Area of impact
A total of 158.14 ha of Lomandra Tussock Grasslands are mapped across the Development Area. Of that 158.14 ha, 7.87 ha will be impacted by the proposed clearance (4.97% of that community in the Development Area).

Condition of the vegetation
The condition of the vegetation is not representative of a remnant vegetation due to large incursions of weeds and impacts from grazing.</td></tr>
<tr><td>Principle 1(e) – it is significant as a remnant of vegetation in an area which has been extensively cleared</td><td><u>Relevant information</u>

The Development Area contains one IBRA Subregion (Broughton) and two associations (Rufus and Mopami). The Broughton subregion has been heavily cleared for agriculture, generally with scattered patches of vegetation remaining in areas unsuitable for farming.
<table>
<tr><th>Subregion</th><th>Remnancy</th><th>Association</th><th>Remnancy</th></tr>
<tr><td rowspan="2">Broughton</td><td rowspan="2">10%</td><td>Rufus</td><td>9%</td></tr>
<tr><td>Mopami</td><td>6%</td></tr>
</table>
Total Biodiversity Score (TBS) – 5528.89

<u>Assessment against the principles</u>

Seriously at Variance
All vegetation within the Development Area. Remnancy is 3-10% and TBS IS >500.

<u>Moderating factors that may be considered by the NVC</u>

N/A. The condition of vegetation varies across the Development Area. Vegetation varies from poor to good condition.</td></tr>
</table>

Principle of clearance	Considerations
Principle 1(f) – it is growing in, or in association with, a wetland environment	**Relevant information** No wetlands are present within the Development Area.
	Assessment against the principles N/A
	Moderating factors that may be considered by the NVC N/A
Principle 1(g) – it contributes significantly to the amenity of the area in which it is growing or is situated	**Relevant information** The northern agricultural region has a long history of clearing. The existing vegetation occurs scattered across private property and roadsides. Most of the vegetation is situated on private property. In a few areas, grassland and woodland vegetation occurs alongside public roads. These woodland areas are frequented by the public and in relatively good condition and are likely to provide amenity to the area. The Project will become a highly visible component of the landscape once complete, although remote from any areas accessible to the general public. The Mid North Region Plan (a volume of the SA Planning Strategy) identifies and encourages wind farm development within the Mid North region.
	N/A
	Moderating factors that may be considered by the NVC N/A

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

4.7. Risk assessment

The *Guide for applications to clear native vegetation* (Native Vegetation Council, 2020b) sets out how the risk level of a clearance application is assessed. This is summarised in Table 4.19. This table indicates that this Project is a Level 4 clearance, due the Total Biodiversity Score being greater than 250.The summary of the clearance and risk assessment is summarised in Table 4.20.

Table 4.19 Risk assessment for native vegetation clearance applications in the agricultural regions of South Australia

	Patches – clearance	Trees – clearance	Escalating matters Clearance assessment will be raised to the next level if;
Level 1	0.05 ha or less	5 trees or less	The site contains a listed species or contains a threatened community under either the NP&W Act or EPBC Act Or Clearance of any trees of the specified circumference.
	And clearance does not involve any trees with a trunk circumference measured at 1 m above the ground of (for multi stemmed trees, measure the largest trunk/stem): 50 cm or more.		
Level 2	>0.05 ha to 0.5 ha	6–20 trees	Clearance is seriously at variance with Principle of Clearance 1(b), 1(c) or 1(d).
Level 3	Total Biodiversity Score of less than or equal to 250		Clearance is seriously at variance with Principle of Clearance 1(b), 1(c) or 1(d).
Level 4	Total Biodiversity Score of greater than 250		

Table 4.20 Summary of clearance and risk assessment

Total clearance	No. of trees	35
	Area (ha)	176.78
	Total biodiversity Score	5,382.74
Seriously at variance with principle 1(b), 1(c) or 1 (d)		1(b), 1(c) and 1(d)
Risk assessment outcome		Level 4

5. CLEARANCE SUMMARY

Clearance summary tables for the clearance application are shown in Table 5.1 for vegetation associations and Table 5.2 for scattered trees. The summary tables indicate the SEB points and SEB payment obligations of the clearances.

The total SEB obligations of the clearance are summarised in Table 5.3.

Table 5.1 Clearance summary and total Significant Environmental Benefit (SEB) obligations for vegetation associations impacted by the Project

Impact type	Block	Site	Species diversity score	Threatened Ecological community Score	Threatened plant score	Threatened fauna score	UBS	Area (ha)	TBS	Loss factor	Loadings	Reductions	SEB Points required	SEB payment	Admin Fee
Wind Farm	A	1	14	1.3	0	0.1	53.41	7.68	410.16	1	0	0	430.67	$298,245.53	$16,403.50
	A	1a	14	1.3	0	0.1	51.69		396.95	1	0	0	416.80	$292,998.61	$16,114.92
	A	1b	14	1.3	0	0.1	51.26		393.65	1	0	0	413.34	$285,626.79	$15,709.47
	A	1c	18	1.3	0	0.1	66.68		512.08	1	0	0	537.68	$374,764.32	$20,612.04
	A	1d	10	1.3	0	0.1	22.49		172.73	1	0	0	181.37	$126,141.95	$6,937.81
	A	1e	16	1.3	0	0.1	69.62		534.67	1	0	0	561.41	$397,163.32	$21,843.98
	A	**1 Mean**	**14**	**1.3**	**0**	**0.1**	**52.53**		**403.37**	**1**	**0**	**0**	**423.55**	**$295,823.42**	**$16,270.29**
	A	2	12	1	0	0.1	27.44	147.02	4032.22	1	0	0	4235.93	$3,021,973.67	$166,208.55
	A	2a	12	1	0	0.1	16.46		2420.53	1	0	0	2541.56	$1,809,390.93	$99,516.50
	A	2b	8	1	0	0.1	28.5		4189.38	1	0	0	4398.85	$3,210,421.50	$176,573.18
	A	2c	8	1	0	0.1	28.12		4133.52	1	0	0	4340.20	$3,070,449.75	$168,874.74
	A	2d	14	1	0	0.1	36.47		5362.40	1	0	0	5630.52	$3,958,075.48	$217,694.15
	A	2e	8	1	0	0.1	24.65		3624.59	1	0	0	3805.82	$2,590,163.10	$142,458.97
	A	2f	16	1	0	0.1	47.28		6951.26	1	0	0	7298.83	$4,967,436.09	$273,208.98
	A	2g	6	1	0	0.1	15.3		2249.85	1	0	0	2362.34	$1,646,547.69	$90,560.12
	A	2h	14	1	0	0.1	22.38		3290.88	1	0	0	3455.43	$2,382,636.50	$131,045.01
	A	2i	14	1	0	0.1	31.58		4642.45	1	0	0	4874.57	$3,281,161.16	$180,463.86
	A	2j	10	1	0	0.1	24.32		3574.94	1	0	0	3753.68	$2,666,728.85	$146,670.09

Impact type	Block	Site	Species diversity score	Threatened Ecological community Score	Threatened plant score	Threatened fauna score	UBS	Area (ha)	TBS	Loss factor	Loadings	Reductions	SEB Points required	SEB payment	Admin Fee
TL Route	A	2k	14	1	0	0.1	22.32		3281.26	1	0	0	3445.32	$2,452,801.86	$134,904.10
	A	**2 Mean**	**11**	**1**	**0**	**0.1**	**27.07**		**3979.44**	**1**	**0**	**0**	**4178.59**	**$2,921,482.22**	**$160,681.52**
	A	3	12	1	0	0.1	53.64		67.05	1	0	0	70.40	$50,331.62	$2,786.24
	A	3a	24	1	0	0.1	66.60	1.25	83.24	1	0	0	87.41	$63,531.14	$3,494.21
	A	**3 Mean**	**18**	**1**	**0**	**0.1**	**60.12**		**75.15**	**1**	**0**	**0**	**78.91**	**$56,931.38**	**$3,131.23**
	A	**4**	**28**	**1**	**0**	**0.1**	**76.43**	**1.03**	**78.72**	**1**	**0**	**0**	**82.66**	**$56,006.78**	**$3,080.37**
	B	**1**	**21**	**1**	**0**	**0.1**	**49.74**	**0.07**	**3.48**	**1**	**0**	**0**	**3.66**	**$2,695.39**	**$148.25**
	B	2	12	1	0	0.1	43.86		11.84	1	0	0	12.44	$9,056.94	$498.13
	B	2a	14	1	0	0.1	44.44	0.27	12.00	1	0	0	12.6	$9,175.69	$504.66
	B	**2 Mean**	**13**	**1**	**0**	**0.1**	**44.15**		**11.92**	**1**	**0**	**0**	**12.52**	**$9,116.32**	**$501.40**
	B	**3**	**12**	**1**	**0**	**0.1**	**33.41**	**0.12**	**4.01**	**1**	**0**	**0**	**4.21**	**$3,104.11**	**$170.73**
	C	**1**	**10**	**1**	**0**	**0.1**	**27.75**	**0.31**	**8.60**	**1**	**0**	**0**	**9.03**	**$6,808.23**	**$374.45**
	D	**1**	**6**	**1**	**0**	**0.1**	**14.59**	**1.75**	**25.53**	**1**	**0**	**0**	**26.80**	**$19,482.18**	**$1,071.52**
	E	1	6	1	0	0.1	57.44		912.22	1	0	0	957.83	$614,712.29	$33,809.18
	E	1a	14	1	0	0.1	44.11		700.49	1	0	0	735.52	$456,668.91	$25,116.79
	E	1b	14	1	0.04	0.1	40.84	15.88	648.53	1	0	0	680.96	$422,792.38	$23,253.58
	E	**1 Mean**	**11**	**1**	**0.01**	**0.1**	**47.46**		**753.75**	**1**	**0**	**0**	**791.44**	**$498,057.86**	**$27,393.18**
	E	**2**	**12**	**1**	**0.04**	**0.1**	**29.66**	**1.21**	**35.89**	**1**	**0**	**0**	**37.69**	**$23,229.21**	**$1,277.61**
	E	**3**	**6**	**1.3**	**0**	**0.1**	**15.18**	**0.19**	**2.88**	**1**	**0**	**0**	**3.03**	**$1,880.00**	**$103.40**

Impact type	Block	Site	Species diversity score	Threatened Ecological community Score	Threatened plant score	Threatened fauna score	UBS	Area (ha)	TBS	Loss factor	Loadings	Reductions	SEB Points required	SEB payment	Admin Fee
TOTAL							478.09	176.78	5,382.74				5,652.07	3,894,617.09	$214,203,94

Table 5.2 Clearance summary and total Significant Environmental Benefit (SEB) obligations for Scattered Trees impacted by the Project

Tree Number	Number of Trees	Fauna Habitat Score	Threatened Flora Score	Total Biodiversity Score	Loss Factor	SEB Points Required	SEB Payment (includes admin fee)
1	1	1.8	0	0.55	1	0.58	$447.31
2	1	1.8	0	1.18	1	1.23	$948.42
3	1	1.8	0	1.34	1	1.41	$1,081.54
4	1	1.8	0	3.94	1	4.13	$3,177.26
5	1	1.8	0	2.55	1	2.68	$2,060.14
6	1	1.8	0	3.82	1	4.02	$3,085.73
7	1	1.8	0	4.34	1	4.56	$3,501.34
8	2	1.8	0	0.55	1	0.57	$441.25
9	1	1.8	0	3.6	1	3.82	$2,931.60
10	1	1.8	0	2.61	1	2.74	$2,107.92
11	1	1.8	0	1.99	1	2.09	$1,602.52
12	1	1.8	0	4.64	1	4.87	$3,742.92
13	1	1.8	0	4.05	1	4.26	$3,016.48
14	1	1.8	0	3.84	1	4.03	$2,856.28
15	1	1.8	0	6.48	1	6.80	$4,817.47
16	1	1.8	0	4.6	1	4.83	$3,423.13
17	1	1.8	0	6.51	1	6.83	$4,842.33
18	1	1.8	0	6.85	1	7.20	$5,098.51
19	1	1.8	0	4	1	4.20	$2,976.77
20	1	1.8	0	3.96	1	4.16	$2,945.11
21	1	1.8	0	6.07	1	6.37	$4,516.79
22	1	1.8	0	4.41	1	4.63	$3,280.25
23	1	1.8	0	3.53	1	3.71	$2,627.11
24	1	1.8	0	2.37	1	2.49	$1,764.96
25	1	1.8	0	8.76	1	9.20	$6,520.98
26	1	1.8	0	4.58	1	4.81	$3,407.08
27	1	1.8	0	4.36	1	4.58	$3,243.48
28	1	1.8	0	3.28	1	3.44	$2,440.72
29	1	1.8	0	4.10	1	4.31	$3,052.24
30	1	1.8	0	7.23	1	7.59	$5,376.63
31	1	1.8	0	6.68	1	7.01	$4,970.05
32	1	1.8	0	6.42	1	6.74	$4,775.19
33	1	1.8	0	3.80	1	3.99	$2,828.22
34	1	1.8	0	1.25	1	1.31	$928.00
Total	**35**			**138.28**		**145.19**	**$104,835.71**

Table 5.3 Summary of the total SEB obligations of the clearance

	Total Biodiversity score	Total SEB points required	SEB Payment	Admin Fee	Total Payment
Application	5,382.74	5,652.07	$3,894,617.09	$214,203.94	$4,108,821.03
Economies of Scale Factor			**0.5**		
Rainfall (mm)			**Differs across the Development Area**		

6. SIGNIFICANT ENVIRONMENTAL BENEFIT

A Significant Environmental Benefit (SEB) is required for approval to clear under Division 5 of Part 2 of the Native Vegetation Regulations 2017. The NVC must be satisfied that as a result of the loss of vegetation from the clearance, a SEB will result in a positive impact on the environment that is over and above the negative impact of the clearance.

ACHIEVING A SEB

It is likely that the proponent will achieve the SEB by payment into the Native Vegetation Fund. However, the establishment of a new SEB area on land owned by the proponent will also be investigated.

Options for achieving SEB are:

- ☒ Establish a new SEB Area on land owned by the proponent.
- ☐ Use SEB Credit that the proponent has established.
- ☐ Apply to have SEB Credit assigned from another person or body.
- ☐ Apply to have an SEB to be delivered by a Third Party.
- ☒ Pay into the Native Vegetation Fund.

PAYMENT SEB

The SEB Policy states that if a SEB is required as a result of an approved activity undertaken under the Regulations, the applicant has a choice of either providing an on-ground SEB or a Payment SEB. However, if a proposed clearance will have an offset obligation of greater than 150 SEB Points required, the NVC will first request that a reasonable attempt be made to identify an on-ground SEB before a payment will be accepted.

The total SEB required to offset the clearance of **176.78** ha of native vegetation and **35** scattered trees is **5,652.07** SEB points or **$4,108,821.03** (including administration fee and GST).

The Proponent will be looking at establishing an on-ground SEB Area which is owned by the Proponent. This detail is outlined below, and the SEB Management Plan is attached in Appendix 7.

The on-ground SEB Area will offset a total of **188.34** SEB gain points. The balance amount will be paid into the Native Vegetation Fund, the total amount left to offset the clearance is **5,463.73 SEB points.**

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

7. ON-GROUND SEB AREA

Details about the St Kitts SEB Area for the Twin Creek Wind Farm are summarised in Table 7.1.

Table 7.1 SEB Area details

Ownership:	**RES Australia Pty Ltd**		
Site Address:	188 Whites Road, St Kitts.		
Local Government Area:	Light Regional Council	**Hundred:**	Belvidere
Title ID:	5476 305 5485 289 5569 233	**Parcel ID**	H160100 S190 F16260 A500 H160100 S239
Landscape Board	Northern and Yorke	**Total SEB Offset Area (ha)**	25.371
SEB Points	188.34		

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

The St Kitts Offset Area occurs within a property that was purchased by RES Australia in June 2021. The total property size is ~153 ha. The Offset Area is typical of land which has historically been used for stock grazing.

There are no encumbrances or easements on the Title and the land is zoned Rural, with the following Overlays:

- Environment and Food Production Area
- Hazards (Bushfire – General)
- Heritage Adjacency
- Hazards (Flooding – Evidence Required)
- Native Vegetation
- Water Resources.

The St Kitts Offset Area is located within the Flinders Lofty Block IBRA Bioregion within the Broughton IBRA Subregion and the Mopami Environmental Association (EA). The Mopami EA contains approximately 6% (4,257 ha) remnant native vegetation, of which 2% (110 ha) is formally conserved.

The closest conservation reserves (managed by DEW) to the proposed Twin Creek Wind Farm footprint are Kaiserstuhl Conservation Park (approximately 25 km south) and Brookfield Conservation Park (approximately 32 km east). Three existing Heritage Agreements under the NV Act are situated 4 km south (Heritage Agreement No.287) and 6 km east of the Development Area (Heritage Agreement numbers 677 and 1314).

The Offset Area site is characterised by low hills with a 440 metre (m) maximum elevation in the southern area. A River Red Gum (*Eucalyptus camaldulensis*) lined creek runs north south in the eastern side of the Offset Area with the elevation dropping to 380–390 m in this area. However, grazing has resulted in a depauperate understorey, lacking the pre-European diversity of grass, forb and herbaceous species, and instead proliferating in pasture weed species. The site is long unburnt, with no known fire history impacting the site.

The Offset area is 25.371 ha in size and consists of predominantly Peppermint Box (*Eucalyptus odorata*) Low Grassy Woodland grading to River Red Gum Open Grassy Woodland in the riparian zone. The

overstorey of the woodland is relatively intact with the understorey dominated by introduced grasses and herbs. One small dam occurs within the southern section of the Woodland area; however, it will be excluded from the Offset Area. This dam will be fenced so that stock can still access it. A fenced dam is also located adjacent to the northern section; however, it has access through an open gate on the western side, from the cropping land.

The Offset area protects three Vegetation Associations (VAs), 21.174 ha of Peppermint Box Grassy Woodland (in varying conditions) and 4.197 hectares of River Red Gum Riparian Open Woodland. The Vegetation Associations are listed below:

- A1 (Peppermint Box open Grassy Woodland) UBS 39.05 – 14.019 ha
- A2 (Peppermint Box Grassy Woodland) UBS 90.66 – 7.155 ha
- A3 (River Red Gum Riparian Open Woodland) UBS 27.35 – 4.197 ha.

Peppermint Box Grassy Woodland is listed as a nationally TEC under the EPBC Act. BAM site A2 meets the condition class B TEC requirements in its current condition, the implementation of this management plan will assist in significantly improving its condition. The management plan also aims to improve the condition of A1 (currently condition Class C, patches amendable to rehabilitation). The Offset Area would also contribute to the total area under conservation management in the area. Approximately 6% of the of Mopami EA contains native vegetation and only 2% is within the Reserve System. Therefore, the Offset Area significantly contributes to the management of native vegetation in the region.

Additionally, the Offset Area provides some connectivity between patches and corridors of vegetation within an environment where extensive clearance has occurred. The southern portion adjoins a neighbouring patch of vegetation, and the drainage line area continues through the neighbouring property.

The area retains an intact mature overstorey stratum and is amenable to rehabilitation.

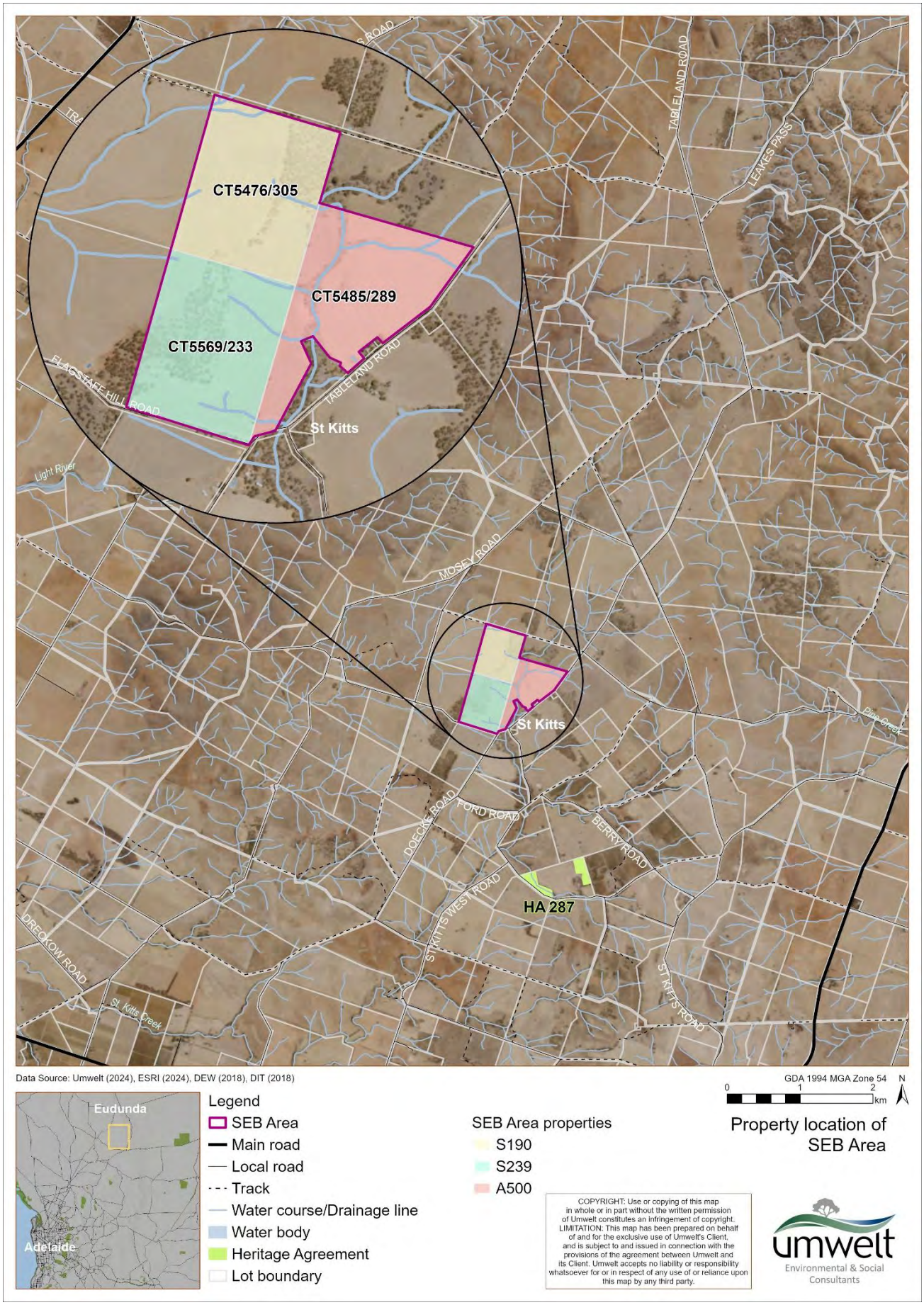


Figure 7.1 Property location of SEB Area

7.2. Description of the vegetation

Vegetation mapped in the SEB Area are visualized in and described in Table 7.2 to Table 7.4.

Table 7.2 Vegetation Association A1

Vegetation Association	Peppermint Box (*E. odorata*) Low Open Woodland over mixed native grass and exotic weedy understorey in fair condition.				
  **Easting: 323568, Northing: 6197957 (direction of photo not provided)**					
General description	Peppermint Box (*E. odorata*) Low Open Woodland over mixed native grass and exotic weedy understorey in poor to fair condition. Site consists of widely scattered large remnant Peppermint Box trees intermixed with no observable regeneration. A native shrub mid-stratum is entirely absent from the site and the ground cover varies from moderate condition native grassland to weed dominated.				
Threatened species or community	No threatened flora or fauna was observed within the VA. This VA has been classified as a condition Class C Peppermint Box Grassy Woodland TEC (not protected under the EPBC Act). A total of eight threatened species were identified as potentially ustilising the BDBSA records and PMST Report: • Blue-winged Parrot (*Neophema chrysostoma*): EPBC Act VU, NPW Act V • Diamond Firetail (*Stagonopleura guttata*) EPBC Act: VU, NPW Act: V • South-eastern Hooded Robin (*Melanodryas cucullata cucullata*) EPBC Act: EN, NPW Act: R • Southern Whiteface (*Aphelocephala leucopsis leucoposis*) EPBC Act: VU • White-winged Chough (*Corcorax melanorhamphos*): NPW Act: R.				
Landscape context score	1.15	**Vegetation Condition Score**	30.34	**Conservation significance score**	1.10
UBS Gain Score	7.05	**Area (ha)**	14.019	**SEB Points**	98.81

Table 7.3 Vegetation Association A2

Vegetation Association	Peppermint Box (*E. odorata*) Low Open Woodland over Spear Grass (*Austrostipa spp.*) and introduced grasses.				
 Easting: 323568 Northing: 6197957 (no direction provided)					
General description	Site consists of widely scattered large remnant Peppermint Box trees intermixed with various age classes of naturally regenerated single stemmed Peppermint Box. A native shrub mid-stratum is absent from the site except for several singular shrubs (i.e. *Rhagodia parabolica*). The ground cover varies from moderate condition native grassland to weed dominated. No significant infestations of woody weeds or serious environmental weeds were recorded within this community, except for a singular Bridal Creeper (*Asparagus asparagoides*) plant and scattered Dog Rose (*Rosa canina*). The remaining weed species are common weeds that occur throughout the region including introduced grasses, Soursob (*Oxalis pes-caprae*) and Wild Sage (*Salvia verbenaca*).				
Threatened species or community	No threatened flora or fauna was observed within the VA. This VA has been classified as a condition Class B Peppermint Box Grassy Woodland TEC (protected under the EPBC Act). A total of eight threatened species were identified as potentially ustilising the BDBSA records and PMST Report: • Blue-winged Parrot (*Neophema chrysostoma*): EPBC Act VU, NPW Act V • Diamond Firetail (*Stagonopleura guttata*) EPBC Act: VU, NPW Act: V • South-eastern Hooded Robin (*Melanodryas cucullata cucullata*) EPBC Act: EN, NPW Act: R • Southern Whiteface (*Aphelocephala leucopsis leucoposis*) EPBC Act: VU • White-winged Chough (*Corcorax melanorhamphos*): NPW Act: R				
Landscape context score	1.17	**Vegetation Condition Score**	51.66	**Conservation significance score**	1.50
UBS Gain Score	8.84	**Area (ha)**	7.155	**SEB Points**	63.22

Table 7.4 Vegetation Association A3

Vegetation Association	River Red Gum (*E. camaldulensis var. camaldulensis*) Open Woodland over mixed native grasses and weedy species				
 **Easting: 323531.42, Northing: 6197305.35 (no direction provided).**					
General description	Riparian area including the creekline and banks ~25 m either side. Riparian zone exhibited a similar mix of native and weedy species to the Grassy Woodland (Site 1 and 2) but the overstorey was dominated by River Red Gum (*E. camaldulensis*). Several significant weed species were recorded within this area including Dog Rose (*Rosa canina*) and a singular large African Boxthorn (*Lycium ferocissimum*). Some areas of old erosion were present as well as a section of active gully erosion. The southern boundary fence across the creekline, to a neighbouring a property which is not managed for agriculture (pers. comms with current property manager), showed a significant improvement in understorey condition, structure and species diversity, including species such as *Acacia pycnantha*, *Bursaria spinosa* and *Themeda triandra.*				
Threatened species or community	No threatened flora or fauna were observed within this VA. This VA does not qualify as a TEC. A total of eight threatened species were identified as potentially ustilising the BDBSA records and PMST Report: • Blue-winged Parrot (*Neophema chrysostoma*): EPBC Act VU, NPW Act V • Diamond Firetail (*Stagonopleura guttata*) EPBC Act: VU, NPW Act: V • South-eastern Hooded Robin (*Melanodryas cucullata cucullata*) EPBC Act: EN, NPW Act: R • Southern Whiteface (*Aphelocephala leucopsis leucoposis*) EPBC Act: VU • White-winged Chough (*Corcorax melanorhamphos*): NPW Act: R.				
Landscape context score	1.17	**Vegetation Condition Score**	21.25	**Conservation significance score**	1.10
UBS Gain Score	6.27	**Area (ha)**	4.197	**SEB Points**	26.31

Figure 7.2 Vegetation associations and BAM sites within the Offset Area

7.2.1. Photo log

Figure 7.3 Active erosion was recorded at several locations within the River Red Gum creekline

Figure 7.4 Neighbouring property creekline with denser understorey shrubs, native grasses, rushes and sedges

Figure 7.5 One large Boxthorn was recorded within the River Red Gum creekline

Figure 7.6 Isolated Bridal Creeper was recorded within the Peppermint Box Woodland

7.3. Future management issues

The following management issues may arise within the SEB Area in the future.

7.3.1. Weeds

Environmental weeds are an ongoing threat to all ecosystems where disturbance and seed dispersal potential occurs. Riparian environments provide perfect conditions for the establishment of weeds spreading easily along pathways and waterways and taking advantage of the heightened nutrient availability from runoff, and water availability (Croft *et al*. 2007). Within the Offset Area, twenty-one (21) weed species were recorded during the field survey, including three declared weeds and two environmental weeds (weed threat rating >3). It is likely that additional weed species may be present within the reserve, but not observed during the survey due to survey timing.

7.3.2. Pest animals

Pest animals present an ongoing management threat to all natural areas, where they reduce survivorship of native fauna, and impact on native vegetation through grazing. Within the Offset Area one species of pest animal, rabbit (*Oryctolagus cuniculus*), was observed during the field survey. It is likely that additional pest animal species, such as foxes (*Vulpes vulpes*) and feral cat (*Felis cattus*) would occur within the Offset Area.

7.3.3. Inappropriate grazing pressure

Stock grazing is currently undertaken within the majority of the site with no grazing occurring in the northern section woodland in recent times. Sections of new and replacement fencing will be required to ensure stock grazing is prevented in the future. Rabbits were observed on the site, and there was some evidence of diggings. Currently there is very little cover for rabbits provided by a shrub layer, however with the

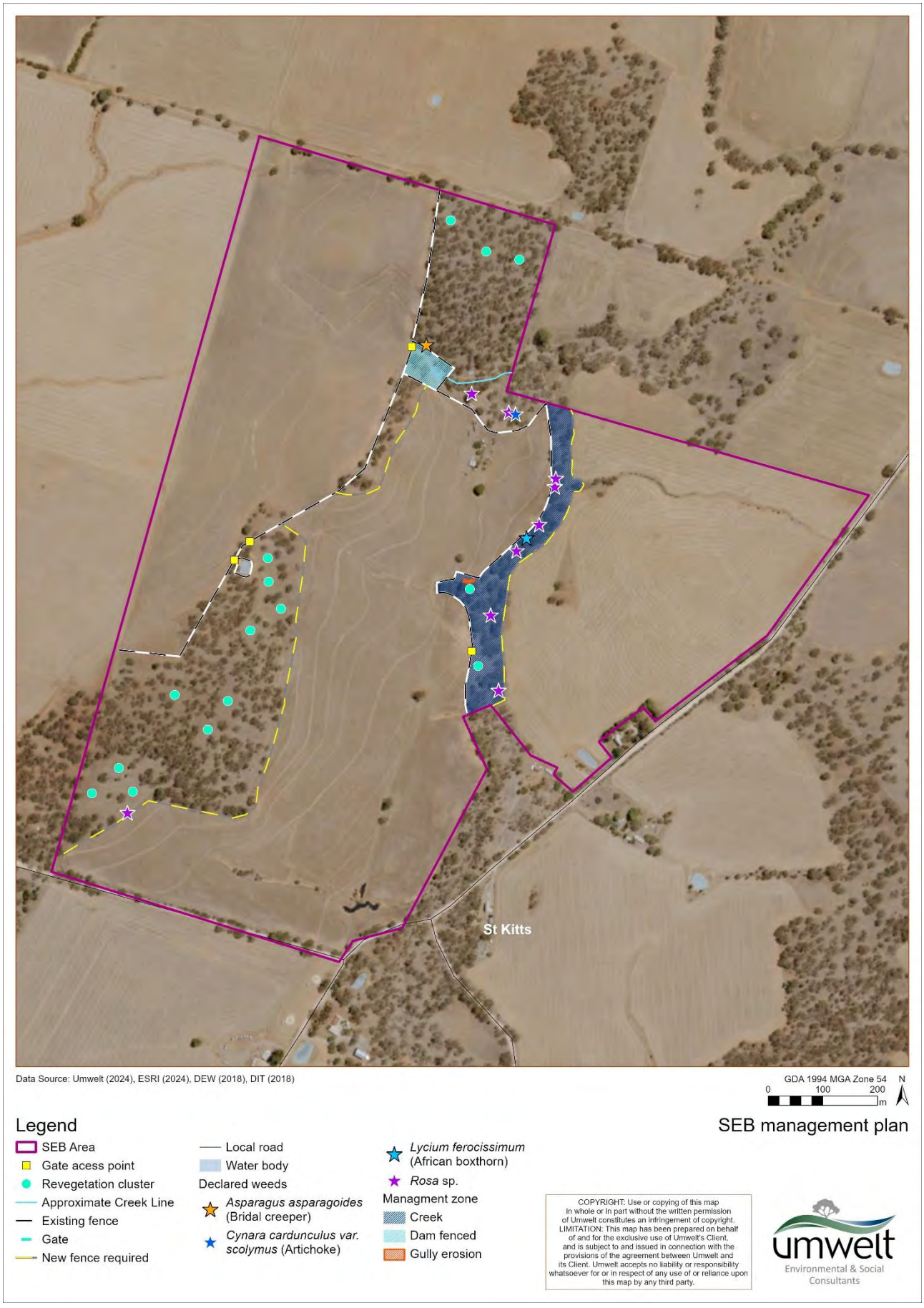


Figure 7.7 Management issues across the SEB Area

7.4. Flora and fauna assessment

The PMST report generated on the 17 of September 2024, identified 2 TEC, 29 threatened species (10 flora and 19 fauna species) and 9 migratory species that may occur within 5 km of the Offset Area (Appendix 8), An additional NatureMaps (DEW 2024) identified an additional five species that may occur within 5 km of the Offset Area.

The following threatened flora species occur within woodland and open woodland and suitable habitat may exist in the Offset Area; this includes:

- *Dodonaea procumbens* (Trailing Hop-bush) – EPBC Act and NPW Act: Vulnerable
- *Dodonaea subglandulifera* (Peep Hill Hop-bush) - EPBC Act and NPW Act: Endangered
- *Senecio macrocarpus* (Large-fruit Fireweed) - EPBC Act and NPW Act: Endangered
- *Austrostipa breviglumis* (Cane Spear-grass) – NPW Act: Rare
- *Eucalyptus behriana* (Broad-leaf Box) – NPW Act: Rare
- *Maireana rohrlachii* (Rohrlach's Bluebush) – NPW Act: Rare
- *Rumex dumosus* (Wiry Dock) – NPW Act: Rare.

Of the 20 threatened fauna species species, five of these species are likely to have foraging or breeding habitat within the Offset Area. This includes:

- South-eastern Hooded Robin (*Melanodryas cucullata cucullata*) – EPBC Act: Endangered and NPW Act: Rare
- Diamond Firetail (*Stagonopleura guttata*) – EPBC Act and NPW Act: Vulnerable
- Southern Whiteface (*Aphelocephala leucopsis*) – EPBC Act: Vulnerable
- Blue-winged Parrot (*Neophema chrysostoma*) – EPBC Act and NPW Act: Vulnerable
- White-winged Chough (*Corcorax melanorhamphos*) – NPW Act: Rare.

A full description of suitable habitat for these species is outlined in Appendix 5.

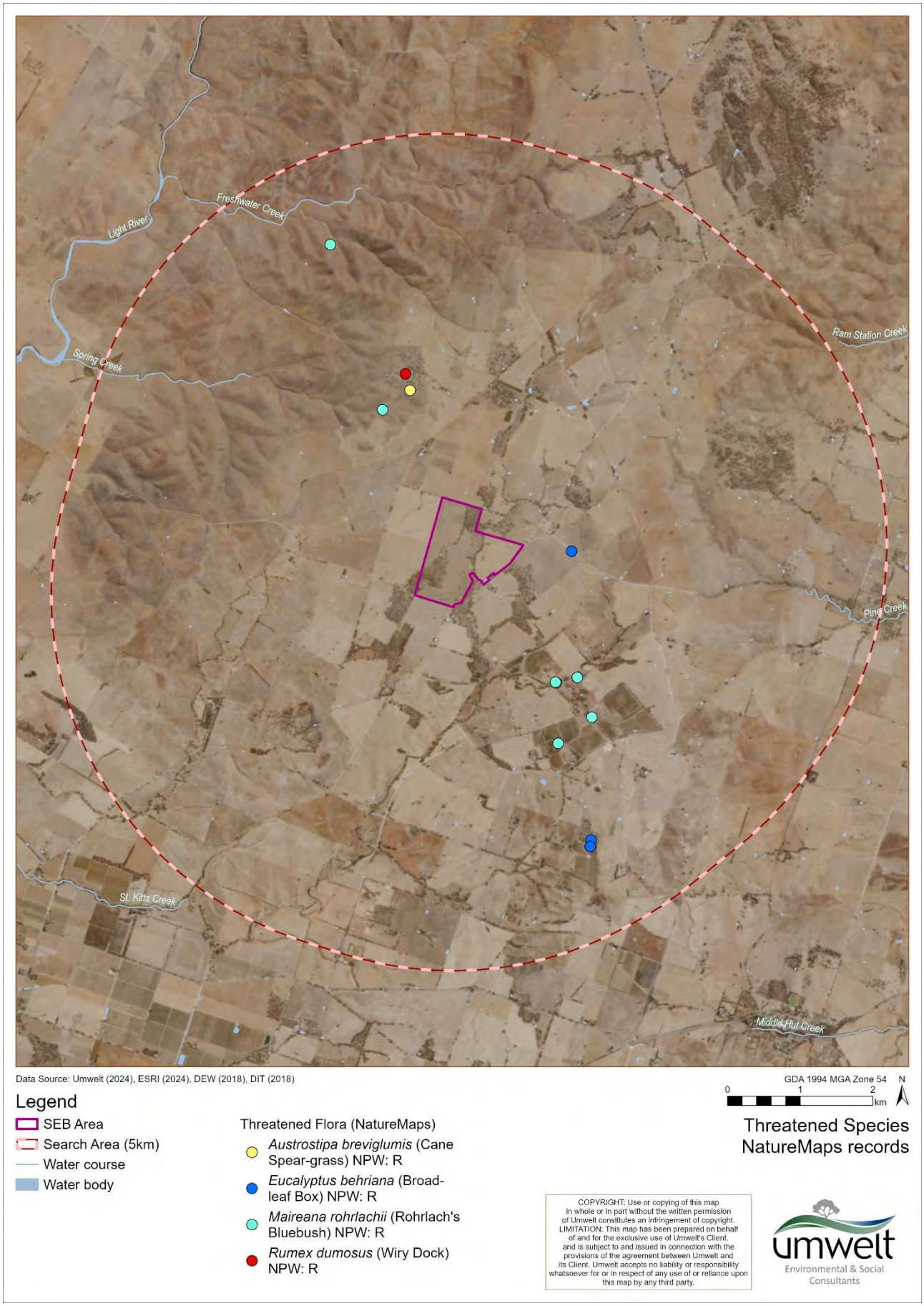


Figure 7.8 NatureMaps threatened flora records (DEW 2024)

Figure 7.9 NatureMaps threatened fauna records (DEW 2024)

7.5. Environmental benefits

A total of five goals have been outlined in the management plan, this includes:

- Reduce the weed species across the Offset Area.
- Increase natural regeneration, species diversity and native grass cover across the Offset Area.
- Prevent and manage new infestation of non-native plants or animals.
- Prevent stock grazing.
- Rehabilitate and stabilise erosion gullies.

These goals will aim to improve the condition the existing vegetation back to its pre-European form. This will result in the establishment of the threatened TEC Peppermint Box Grassy Woodlands. Revegetation will form a large part of this management plan and will include the planting of State threatened species such as:

- *Dianella longifolia* (Pale Flax-lily) – State Rare
- *Cullen parvum* (Scurf-pea) – State Vulnerable.

7.6. Summary Table

Block	Site	Vegetation Association	UBS	UBS Gain Score	Area (ha)	SEB points provided
A	**1**	*Eucalyptus odorata* open woodland over *Austrostipa* sp. and *Rytidosperma* sp. grassy understorey.	**39.05**	**7.05**	**14.019**	**98.81**
A	**2**	*Eucalyptus odorata* open woodland over *Austrostipa* sp. and *Rytidosperma* sp. grassy understorey.	**90.66**	**8.84**	**7.155**	**63.22**
A	**3**	*Eucalyptus camaldulensis* dominant riparian habitat with occasional *E. odorata*	**27.35**	**6.27**	**4.197**	**26.31**
				Total	**25.371**	**188.34**

The Management Plan for the proposed SEB area is attached in the appendices.

A Native Vegetation Management Plan is required as part of the Conditions of Consent for clearance.

The Management Plan should be provided at the time of submitting the application to clear vegetation, however it can be lodged during the assessment process if required but must be received before a decision can be made by the NVC in relation to the associated clearance. The Simple and Complex SEB Management Plan template and Template Instructions are found under Tools for Accredited Consultants.

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9. APPENDICES

9.1. Appendix 1 – Wind farm and grid connection infrastructure land parcels supplied by MasterPlan on the 16/12/2024

Allotment/ Section	Volume[1]	Folio	Number	Infrastructure	Local Government Area
A15	Vol 5293	Fol 926	F158976	T3 Hardstand, Access Track, Planning Corridor, Cables.	Regional Council Of Goyder
A12	Vol 5293	Fol 926	F158976	No Infrastructure Planned	Regional Council Of Goyder
A13	Vol 5293	Fol 926	F158976	No Infrastructure Planned	Regional Council Of Goyder
A14	Vol 5293	Fol 926	F158976	No Infrastructure Planned	Regional Council Of Goyder
A16	Vol 5293	Fol 926	F158976	No Infrastructure Planned	Regional Council Of Goyder
A17	Vol 5293	Fol 926	F158976	No Infrastructure Planned	Regional Council Of Goyder
A18	Vol 5293	Fol 926	F158976	No Infrastructure Planned	Regional Council Of Goyder
S220	Vol 5293	Fol 927	H160300	T1, T2 Hardstand, Access Track, Planning Corridor, Cables.	Regional Council Of Goyder
S219	Vol 5293	Fol 927	H160300	T30 Access Track, Planning Corridor, Cables.	Regional Council Of Goyder
S218	Vol 5293	Fol 927	H160300	Access Track, Planning Corridor, Cables	Regional Council Of Goyder
S236	Vol 5293	Fol 928	H160300	T6 Hardstand, Access Track, Planning Corridor, Cables.	Regional Council Of Goyder
S237	Vol 5293	Fol 928	H160300	T7 Hardstand, Access Track, Planning Corridor, Cables.	Regional Council Of Goyder
S239	Vol 5293	Fol 928	H160300	T11, T12 Hardstand, Access Track, Planning Corridor, Cables.	Regional Council Of Goyder
S240	Vol 5293	Fol 928	H160300	T23 Hardstand, Access Track, Planning Corridor, Cables.	Regional Council Of Goyder
S238	Vol 5293	Fol 928	H160300	No Infrastructure Planned	Regional Council Of Goyder
S122	Vol 5293	Fol 930	H160300	T13, T14 Hardstand, Access Track, Planning Corridor, Cables.	Regional Council Of Goyder
S127	Vol 5293	Fol 930	H160300	T15, T20 Hardstand, Access Track, Planning Corridor, Cables.	Regional Council Of Goyder
S124	Vol 5293	Fol 930	H160300	T16 Hardstand, Access Track, Planning Corridor, Cables.	Regional Council Of Goyder
S128	Vol 5293	Fol 930	H160300	T19 Hardstand, Access Track, Planning Corridor, Cables.	Regional Council Of Goyder
S125	Vol 5293	Fol 930	H160300	T21 Hardstand, Access Track, Planning Corridor, Cables.	Regional Council Of Goyder

[1] All references Certificates of Title (CT) with Volume and Folio, unless otherwise stated. CR refers to Crown Record

Allotment/ Section	Volume[1]	Folio	Number	Infrastructure	Local Government Area
S126	Vol 5293	Fol 930	H160300	Access Track, Planning Corridor, Cables.	Regional Council Of Goyder
S123	Vol 5293	Fol 930	H160300	Access Track, Planning Corridor, Cables.	Regional Council Of Goyder
S121	Vol 5293	Fol 930	H160300	No Infrastructure Planned	Regional Council Of Goyder
S129	Vol 5293	Fol 930	H160300	No Infrastructure Planned	Regional Council Of Goyder
S232	Vol 5293	Fol 931	H160300	T4, T10 Hardstand, Access Track, Planning Corridor, Cables.	Regional Council Of Goyder
S235	Vol 5293	Fol 931	H160300	T5 Hardstand, Access Track, Planning Corridor, Cables.	Regional Council Of Goyder
S233	Vol 5293	Fol 931	H160300	T17, T22 Hardstand, Access Track, Planning Corridor, Cables.	Regional Council Of Goyder
S234	Vol 5293	Fol 931	H160300	T18 Hardstand, Access Track, Planning Corridor, Cables.	Regional Council Of Goyder
A3	Vol 5293	Fol 933	F158974	Access Track, Planning Corridor, Cables	Regional Council Of Goyder
A10	Vol 5293	Fol 934	F158975	T8 Access Track, Planning Corridor, Cables.	Regional Council Of Goyder
A11	Vol 5293	Fol 934	F158975	T9 Hardstand, Access Track, Planning Corridor, Cables.	Regional Council Of Goyder
A4	Vol 5293	Fol 934	F158975	No Infrastructure Planned	Regional Council Of Goyder
A5	Vol 5293	Fol 934	F158975	No Infrastructure Planned	Regional Council Of Goyder
A6	Vol 5293	Fol 934	F158975	No Infrastructure Planned	Regional Council Of Goyder
A7	Vol 5293	Fol 934	F158975	No Infrastructure Planned	Regional Council Of Goyder
A8	Vol 5293	Fol 934	F158975	No Infrastructure Planned	Regional Council Of Goyder
A9	Vol 5293	Fol 934	F158975	No Infrastructure Planned	Regional Council Of Goyder
A104	Vol 5390	Fol 991	F199397	Access Track, Planning Corridor, Cables	Light Regional Council
A105	Vol 5390	Fol 991	F199397	No Infrastructure Planned	Light Regional Council
A91	Vol 5390	Fol 991	F199397	No Infrastructure Planned	Light Regional Council
Q99	Vol 5390	Fol 991	F199397	No Infrastructure Planned	Light Regional Council
Q100	Vol 5390	Fol 991	F199397	No Infrastructure Planned	Light Regional Council
Q101	Vol 5390	Fol 991	F199397	No Infrastructure Planned	Light Regional Council
Q102	Vol 5390	Fol 991	F199397	No Infrastructure Planned	Light Regional Council
Q103	Vol 5390	Fol 991	F199397	No Infrastructure Planned	Light Regional Council
A92	Vol 5390	Fol 991	F199397	No Infrastructure Planned	Light Regional Council
A93	Vol 5390	Fol 991	F199397	No Infrastructure Planned	Light Regional Council
A94	Vol 5390	Fol 991	F199397	No Infrastructure Planned	Light Regional Council
A95	Vol 5390	Fol 991	F199397	No Infrastructure Planned	Light Regional Council

Allotment/ Section	Volume[1]	Folio	Number	Infrastructure	Local Government Area
A96	Vol 5390	Fol 991	F199397	No Infrastructure Planned	Light Regional Council
A97	Vol 5390	Fol 991	F199397	No Infrastructure Planned	Light Regional Council
A98	Vol 5390	Fol 991	F199397	No Infrastructure Planned	Light Regional Council
S105	Vol 5531	Fol 405	H160100	No Infrastructure Planned	Light Regional Council
S103	Vol 5531	Fol 406	H160100	No Infrastructure Planned	Light Regional Council
S271	Vol 5618	Fol 687	H160100	T31, T32 Hardstand, Access Track, Planning Corridor, Cables	Light Regional Council
S284	Vol 5618	Fol 688	H160100	Access Track, Construction Compound And Material Laydown Area, Planning Corridor, 275kv Line, Cables	Light Regional Council
S283	Vol 5618	Fol 688	H160100	No Infrastructure Planned	Regional Council Of Goyder
S272	Vol 5618	Fol 689	H160100	T28, T29 Hardstand, Access Track, Planning Corridor, Cables.	Light Regional Council
S249	Vol 5618	Fol 690	H60100	No Infrastructure Planned	Light Regional Council
S285	Vol 5618	Fol 691	H160100	Access Track, Site Entrance, Planning Corridor, 275kv Line, Cables.	Light Regional Council
S273	Vol 5618	Fol 692	H160100	T33 Hardstand, Access Track, Planning Corridor, Cables	Light Regional Council
S278	Vol 5618	Fol 693	H160100	Access Track, Battery Energy Storage Facility, Concrete Batching Plant Area, Operation And Maintenance Facilitiesm 33kv/275kv Substation, Planning Corridor, 275kv Line, Cables	Light Regional Council
S255	Vol 5618	Fol 694	H160100	T39 Hardstand, Access Track, Planning Corridor, Cables.	Light Regional Council
S250	Vol 5618	Fol 694	H160100	No Infrastructure Planned	Light Regional Council
S251	Vol 5618	Fol 694	H160100	No Infrastructure Planned	Light Regional Council
S254	Vol 5618	Fol 694	H160100	No Infrastructure Planned	Light Regional Council
Ag	Vol 5618	Fol 694	R2497	No Infrastructure Planned	Light Regional Council
S263	Vol 5618	Fol 695	H160100	T24 Hardstand, Access Track, Planning Corridor, Cables	Light Regional Council
S265	Vol 5618	Fol 696	H160100	T25 Hardstand, Access Track, Planning Corridor, Cables	Light Regional Council
S269	Vol 5618	Fol 697	H160100	T27 Hardstand, Access Track, Planning Corridor, Cables	Light Regional Council
S279	Vol 5618	Fol 698	H160100	No Infrastructure Planned	Light Regional Council
S258	Vol 5618	Fol 699	H160100	T40 Hardstand, Access Track, Planning Corridor, Cables	Light Regional Council
S270	Vol 5618	Fol 700	H160100	T35 Hardstand, Access Track, Planning Corridor, Cables.	Light Regional Council
S267	Vol 5618	Fol 701	H160100	T26 Hardstand, Access Track, Planning Corridor, Cables	Light Regional Council
S257	Vol 5618	Fol 702	H160100	No Infrastructure Planned	Light Regional Council

Allotment/ Section	Volume[1]	Folio	Number	Infrastructure	Local Government Area
S268	Vol 5618	Fol 703	H160100	T34 Hardstand, Access Track, Planning Corridor, Cables	Light Regional Council
Q91	Vol 5618	Fol 704	F217083	No Infrastructure Planned	Light Regional Council
Q92	Vol 5618	Fol 704	F217083	No Infrastructure Planned	Light Regional Council
A569	Vol 5618	Fol 705	F176641	No Infrastructure Planned	Light Regional Council
A91	Vol 5618	Fol 706	F199399	Hardstand, Access Track, Planning Corridor, Cables.	Light Regional Council
A102	Vol 5618	Fol 707	F214685	No Infrastructure Planned	Light Regional Council
A571	Vol 5618	Fol 708	F176643	No Infrastructure Planned	Light Regional Council
A20	Vol 5625	Fol 166	F217158	T36, S37 Hardstand, Access Track, Planning Corridor, Cables.	Light Regional Council
A23	Vol 5625	Fol 166	F217158	T38 Hardstand, Access Track, Planning Corridor, Cables.	Light Regional Council
A22	Vol 5625	Fol 166	F217158	T41 Hardstand, Access Track, Planning Corridor, Cables	Light Regional Council
A24	Vol 5625	Fol 166	F217158	T42 Hardstand, Access Track, Planning Corridor, Cables	Light Regional Council
A21	Vol 5625	Fol 166	F217158	Access Track, Planning Corridor, Cables	Light Regional Council
A25	Vol 5625	Fol 166	F217158	No Infrastructure Planned	Light Regional Council
A572	Vol 5826	Fol 797	F176644	No Infrastructure Planned	Light Regional Council
A1	Vol 5878	Fol 290	F160535	No Infrastructure Planned	Regional Council Of Goyder
S241	Vol 5964	Fol 335	H160300	No Infrastructure Planned	Regional Council Of Goyder
S242	Vol 5964	Fol 335	H160300	Access Track, Planning Corridor, Cables	Regional Council Of Goyder
S243	Vol 5964	Fol 335	H160300	Access Track, Planning Corridor, Cables	Regional Council Of Goyder

Allotment/ Section	Volume	Folio	Number	Infrastructure	Local Government Area
S581	Vol 5146	Fol 519	H160100	275kv Overhead Line	Light Regional Council
S290	Vol 5264	Fol 963	H160100	275kv Overhead Line	Light Regional Council
S314	Vol 5274	Fol 160	H160100	275kv Overhead Line	Light Regional Council
Q94	Vol 5304	Fol 717	F163638	275kv Overhead Line	Mid Murray Council
S221	Vol 5315	Fol 264	H121100	275kv Overhead Line	Mid Murray Council
A1	Vol 5322	Fol 638	D44123	275kv Overhead Line	Mid Murray Council
Q101	Vol 5360	Fol 970	F174415	275kv Overhead Line	Mid Murray Council
S87	Vol 5460	Fol 955	H120600	275kv Overhead Line	Mid Murray Council
S190	Vol 5476	Fol 305	H160100	275kv Overhead Line	Light Regional Council
A500	Vol 5485	Fol 289	F16260	275kv Overhead Line	Light Regional Council
S38	Vol 5485	Fol 579	H120600	275kv Overhead Line	Mid Murray Council
S36	Vol 5485	Fol 733	H120600	275kv Overhead Line	Mid Murray Council

Allotment/ Section	Volume	Folio	Number	Infrastructure	Local Government Area
A99	Vol 5486	Fol 561	D48414	275kv Overhead Line	Light Regional Council
S34	Vol 5503	Fol 860	H120600	275kv Overhead Line	Mid Murray Council
S37	Vol 5517	Fol 458	H120600	275kv Overhead Line	Mid Murray Council
S286	Vol 5552	Fol 876	H160100	No Infrastructure Planned	Light Regional Council
S239	Vol 5569	Fol 233	H160100	No Infrastructure Planned	Light Regional Council
S83	Vol 5616	Fol 778	H120600	275kv Overhead Line	Mid Murray Council
S85	Vol 5616	Fol 778	H120600	275kv Overhead Line	Mid Murray Council
S319	Vol 5616	Fol 778	H160100	275kv Overhead Line	Light Regional Council
S287	Vol 5663	Fol 19	H160100	275kv Overhead Line	Light Regional Council
S51	Vol 5812	Fol 749	H120600	275kv Overhead Line	Mid Murray Council
A110	Vol 5947	Fol 941	D65818	275kv Overhead Line	Mid Murray Council
S218	Vol 5950	Fol 567	H121100	275kv Overhead Line	Mid Murray Council
A1	Vol 6124	Fol 753	D36071	275kv Overhead Line	Light Regional Council
Q118	Vol 6157	Fol 823	F174416	275kv Overhead Line	Mid Murray Council
A910	Vol 6221	Fol 131	D119571	275kv Overhead Line Terminal Substation, Access Track, Vegetative Screening, Electrical Infrastructure	Mid Murray Council
A397	Vol 6288	Fol 554	D132059	275kv Overhead Line	Mid Murray Council
Q392	Vol 6288	Fol 558	D132058	275kv Overhead Line	Mid Murray Council
Q386	Vol 6290	Fol 429	D132328	275kv Overhead Line	Mid Murray Council

9.2. Appendix 2 – Flora species recorded by the field survey

Introduced	Scientific Name	Common Name	Conservation Status	
			EPBC Act	NPW Act
	Acacia acinacea	Wreath Wattle		
	Acacia argyrophylla	Silver Mulga-bush		
	Acacia pycnantha	Golden Wattle		
*	*Aira* sp.	Hair-grass		
*	*Allium triquetrum*	Three-cornered Garlic		
	Allocasuarina verticillata	Drooping Sheoak		
*	*Arctotheca calendula*	Cape Weed		
	Aristida behriana	Brush Wire-grass		
*	*Asparagus asparagoides f.*	Bridal Creeper		
	Asperula conferta	Common Woodruff		
*	*Asphodelus fistulosus*	Onion Weed		
*	*Asteriscus spinosus*	Golden Pallensis		
	Atriplex semibaccata	Berry Saltbush		
	Atriplex vesicaria	Bladder Saltbush		
	Austrostipa blackii	Crested Spear-grass		
	Austrostipa drummondii	Cottony Spear-grass		
	Austrostipa eremophila	Rusty Spear-grass		
	Austrostipa nitida	Balcarra Spear-grass		
	Austrostipa nitida	Balcarra Spear-grass		
	Austrostipa nodosa	Tall Spear-grass		
	Austrostipa scabra ssp.	Rough Spear-grass		
	Austrostipa sp.	Spear-grass		
*	*Avena barbata*	Bearded Oat		
*	*Avena barbata*	Bearded Oat		
*	*Avena* sp.	Oat		
	Boerhavia dominii	Tar-vine		
*	*Brassica tournefortii*	Wild Turnip		
*	*Briza maxima*	Large Quaking-grass		
*	*Bromus diandrus*	Great Brome		
*	*Bromus hordeaceus* ssp. *hordeaceus*	Soft Brome		
*	*Bromus rubens*	Red Brome		
	Bromus sp.	Brome		
	Bursaria spinosa ssp.	Bursaria		
	Calocephalus citreus	Lemon Beauty-heads		
*	*Carex divisa*	Divided Sedge		
*	*Carthamus lanatus*	Saffron Thistle		
	Chloanthaceae sp.			
	Chloris truncata	Windmill Grass		
*	*Chondrilla juncea*	Skeleton Weed		
	Chrysocephalum apiculatum	Common Everlasting		
*	*Cirsium vulgare*	Spear Thistle		
*	*Citrullus* sp.	Wild Melon		

Introduced	Scientific Name	Common Name	Conservation Status	
			EPBC Act	NPW Act
	Convolvulus angustissimus	Narrow-leaf Bindweed		
	Convolvulus angustissimus ssp.	Narrow-leaf Bindweed		
	Convolvulus remotus	Grassy Bindweed		
	Convolvulus sp.	Bindweed		
*	*Cotula coronopifolia*	Water Buttons		
	Cymbopogon ambiguus	Lemon-grass		
*	*Cynara cardunculus* ssp. *flavescens*	Artichoke Thistle		
	Cyperus gymnocaulos	Spiny Flat-sedge		
	Cyperus vaginatus	Stiff Flat-sedge		
	Dianella revoluta var. *revoluta*	Black Anther Flax Lily		
	Distichlis distichophylla	Emu-grass		
	Dysphania pumilio	Small Crumbweed		
*	*Echium plantagineum*	Salvation Jane		
	Einadia nutans ssp.	Climbing Saltbush		
	Enchylaena tomentosa var.	Ruby Saltbush		
	Enchylaena tomentosa var. *tomentosa*	Ruby Saltbush		
	Enneapogon intermedius	Tall Bottle-washers		
	Enneapogon nigricans	Black-head Grass		
*	*Eragrostis minor*	Small Stink-grass		
*	*Erodium botrys*	Long Heron's-bill		
*	*Erodium botrys*	Long Heron's-bill		
*	*Erodium cicutarium*	Cut-leaf Heron's-bill		
	Erodium sp.	Heron's-bill/Crowfoot		
	Eucalyptus camaldulensis ssp.	River Red Gum		
	Eucalyptus leucoxylon ssp. *pruinosa*	Inland South Australian Blue Gum		
	Eucalyptus odorata	Peppermint Box		
	Eucalyptus porosa	Mallee Box		
	Euphorbia drummondii group			
	Glycine sp.	Glycine		
	Goodenia pinnatifida	Cut-leaf Goodenia		
*	*Heliotropium europaeum*	Common Heliotrope		
*	*Holcus lanatus*	Yorkshire Fog		
	Isolepis cernua	Nodding Club-rush		
	Juncus kraussii	Sea Rush		
	Juncus pallidus	Pale Rush		
*	*Medicago* sp.	Medic		
	Mimulus gracilis	Slender Monkey-flower		
*	*Polypogon monspeliensis*	Annual Beard-grass		
*	*Rorippa nasturtium-aquaticum*	Watercress		
	Rytidosperma sp.	Wallaby-grass		
*	*Salvia verbenaca* var.	Wild Sage		
	Schenkia australis	Spike Centaury		

Introduced	Scientific Name	Common Name	Conservation Status	
			EPBC Act	NPW Act
	Schoenoplectus pungens	Spiky Club-rush		
	Schoenoplectus tabernaemontani	River Club-rush		
*	*Solanum elaeagnifolium*	Silver-leaf Nightshade		
*	*Sonchus oleraceus*	Common Sow-thistle		
	Triglochin striata	Streaked Arrowgrass		

Conservation Status: EPBC Act (*Environment Protection and Biodiversity Conservation Act 1999*). **NPW Act**: South Australia (*National Parks and Wildlife Act 1972*). **Conservation codes: CE**: Critically Endangered. **EN/E**: Endangered. **VU/V**: Vulnerable. **R**: Rare.

9.3. Appendix 3 – Fauna species recorded by the field survey

Introduced	Scientific Name	Common Name	'Scattered Tree' – Using Wildlife	Conservation Status	
				EPBC Act	NPW Act
AVES					
	Acanthiza chrysorrhoa	Yellow-rumped Thornbill	LC (common)		
	Alauda arvensis arvensis	Eurasian Skylark			
	Anas gracilis gracilis	Grey Teal	LC (common)		
	Anas superciliosa	Pacific Black Duck	LC (common)		
	Anthus australis australis	Australian Pipit			
	Aquila audax audax	Wedge-tailed Eagle	LC (common)		
	Ardea pacifica	White-necked Heron	MN: Near threatened (uncommon) MM: Rare		
	Artamus cyanopterus	Dusky Woodswallow	MN: Near threatened (uncommon) MM: LC (common)		
	Chenonetta jubata	Australian Wood Duck	LC (common)		
	Cincloramphus cruralis	Brown Songlark			
	Climacteris picumnus	Brown Treecreeper	Near threatened (uncommon)		
	Corvus coronoides	Australian Raven	MN: LC (common) MM: Near threatened (uncommon)		
	Corvus mellori	Little Raven	LC (common)		
	Corvus sp.	Crows			
	Coturnix pectoralis	Stubble Quail			
	Dacelo novaeguineae novaeguineae	Laughing Kookaburra	LC (common)		
	Eolophus roseicapilla	Galah	LC (common)		
	Epthianura albifrons	White-fronted Chat			
	Falco berigora berigora	Brown Falcon	LC (common)		
	Falco cenchroides cenchroides	Nankeen Kestrel	LC (common)		
	Gavicalis virescens	Singing Honeyeater	LC (common)		
	Glossopsitta concinna	Musk Lorikeet	MN: Near threatened (uncommon) MM: LC (common		
	Grallina cyanoleuca cyanoleuca	Magpielark	LC (common)		
	Gymnorhina tibicen	Australian Magpie	LC (common)		
	Hirundo neoxena neoxena	Welcome Swallow			
	Manorina flavigula	Yellow-throated Miner	LC (common)		
	Merops ornatus	Rainbow Bee-eater	LC (common)		
	Ocyphaps lophotes lophotes	Crested Pigeon	LC (common)		
	Pardalotus striatus	Striated Pardalote	LC (common)		

Introduced	Scientific Name	Common Name	'Scattered Tree' – Using Wildlife	Conservation Status	
				EPBC Act	NPW Act
	Parvipsitta porphyrocephala	Purple-crowned Lorikeet	Near threatened (uncommon)		
	Passer domesticus domesticus	House Sparrow			
	Petrochelidon ariel	Fairy Martin			
	Petrochelidon nigricans	Tree Martin	LC (common)		
	Platycercus elegans	Crimson Rosella	MN: LC (common) MM: Near threatened (uncommon)		
	Psephotus haematonotus	Red-rumped Parrot	LC (common)		
	Ptilotula penicillata	White-plumed Honeyeater	LC (common)		
	Rhipidura leucophrys leucophrys	Willie Wagtail	LC (common)		
	Stagonopleura guttata	Diamond Firetail	MN: VU MM: VU		
	Sturnus vulgaris vulgaris	Common Starling			
	Tachybaptus novaehollandiae novaehollandiae	Australasian Grebe			
REPTILIA					
	Tiliqua adelaidensis	Pygmy Bluetongue Lizard		EN	E
	Tiliqua scincoides	Eastern Blue-tongue lizard			
MAMMALIA					
	Lasiorhinus latifrons	Southern Hairy-nosed Wombat			
	Macropus robustus	Euro Wallaby			
	Macropus fuliginosus	Western grey Kangaroo			
*	*Vulpes vulpes*	Red Fox			

Conservation Status: EPBC Act (*Environment Protection and Biodiversity Conservation Act 1999*). **NPW Act**: South Australia (*National Parks and Wildlife Act 1972*). **Conservation codes: CE**: Critically Endangered. **EN/E**: Endangered. **VU/V**: Vulnerable. **R**: Rare. *Denotes introduced species. MN: Mid North, MM: Murray Mallee. LC: Least Concern (Common), NT: Near threatened (Uncommon).

9.4. Appendix 4 – Scattered Trees Photo File

Photo 1 **Tree 1 (*Eucalyptus porosa*)**

Photo 2 **Tree 2 (*Eucalyptus porosa*)**

Photo 3 **Tree 3 (*Eucalyptus porosa*)**

Photo 4 **Tree 4 (*Eucalyptus leucoxylon pruinosa*)**

Photo 5 **Tree 5 (*Eucalyptus leucoxylon pruinosa*)**

Photo 6 **Tree 6 (*Eucalyptus leucoxylon pruinosa*)**

Photo 7 **Tree 7 (*Eucalyptus leucoxylon pruinosa*)**

Photo 8 **Tree 8 (*Eucalyptus leucoxylon pruinosa*) – 2 in group**

Photo 9 **Tree 9 (*Eucalyptus leucoxylon pruinosa*)**

Photo 10 **Tree 10 (*Eucalyptus leucoxylon pruinosa*)**

Photo 11 **Tree 11 (*Eucalyptus porosa*)**

Photo 12 **Tree 12 (*Eucalyptus porosa*)**

Photo 13 **Tree 13 (*Eucalyptus leucoxylon pruinosa*)**

Photo 14 **Tree 14 (*Eucalyptus leucoxylon pruinosa*)**

Photo 15 **Tree 15 (*Eucalyptus leucoxylon pruinosa*)**

Photo 16 **Tree 16 (*Eucalyptus leucoxylon pruinosa*)**

Photo 17 **Tree 17 (*Eucalyptus leucoxylon pruinosa*)**

Photo 18 **Tree 18 (*Eucalyptus leucoxylon pruinosa*)**

Photo 19 **Tree 19 (*Eucalyptus leucoxylon pruinosa*)**

Photo 20 **Tree 20 (*Eucalyptus leucoxylon pruinosa*)**

Photo 21 **Tree 21 (*Eucalyptus leucoxylon pruinosa*)**

Photo 22 **Tree 22 (*Eucalyptus leucoxylon pruinosa*)**

Photo 23 **Tree 23 (*Eucalyptus leucoxylon pruinosa*)**

Photo 24 **Tree 24 (*Eucalyptus leucoxylon pruinosa*)**

Photo 25 **Tree 25 (*Eucalyptus leucoxylon pruinosa*)**

Photo 26 **Tree 26 (*Eucalyptus odorata*)**

Photo 27 **Tree 27 (*Eucalyptus leucoxylon pruinosa*)**

Photo 28 **Tree 28 (*Eucalyptus leucoxylon pruinosa*)**

Photo 29 **Tree 29 (*Eucalyptus leucoxylon pruinosa*)**

Photo 30 **Tree 30 (*Eucalyptus leucoxylon pruinosa*)**

Photo 31 **Tree 31 (*Eucalyptus leucoxylon pruinosa*)**

Photo 32 **Tree 32 (*Eucalyptus leucoxylon pruinosa*)**

Photo 33 **Tree 33 (*Eucalyptus leucoxylon pruinosa*)**

Photo 34 **Tree 34 (*Eucalyptus leucoxylon pruinosa*)**

9.5. Appendix 5 – Likelihood of Occurrence Assessment

Scientific name	Common name	Conservation status		Source of information	Last sighting (year)/ PMST Occurrence	Habitat Preferences	Likelihood of occurrence within Development Area
		Aus	SA				
Flora							
Acacia glandulicarpa	Hairy-pod Wattle	VU		1	May occur	Discontinuous, occurring in the Burra Gorge, Hanson and Bordertown areas, S.A. Red Mallee (*Eucalyptus socialis*). Grows in open scrub vegetation and shrubland on hard, alkaline red duplex soils on rocky hillside Associated with *E. brachycalyx* and *Callitris gracilis* (Davies 1986) Whibley and Symon (1992).	**Unlikely** – no historical records and not observed during field surveys.
Acacia iteaphylla	Flinders Ranges Wattle		R	2	2002	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 (DEWNR 2023a).	**Possible** – historical record. Suitable habitat within the Development Area. Not observed during field survey. Unlikely to be naturally occurring (i.e. planted or naturalized from planted specimens).
Acacia menzelii	Menzel's Wattle	VU		1	May occur	Endemic to South Australia and found in a small area in the Murray region near Monarto and in the Flinders Ranges. Occurs in open scrub, often associated with *Eucalyptus socialis* and *Eucalyptus incrassata*, on grey-brown calcareous loamy soils (DEWNR 2023b).	**Unlikely** – no historical records and not observed during field surveys.
Acacia spilleriana	Spiller's Wattle	EN		1	May occur	Restricted to the North Mt Lofty Ra., S.A., from Burra Hill S to Tarlee. Grows on rocky hills, commonly along watercourses (B.R Maslin).	**Unlikely** – no historical records and not observed during field surveys.

Scientific name	Common name	Conservation status		Source of information	Last sighting (year)/ PMST Occurrence	Habitat Preferences	Likelihood of occurrence within Development Area
		Aus	SA				
Austrostipa breviglumis	Cane Spear-grass		R	2	2011	Found in the Flinders Ranges and the Mount Lofty Ranges in South Australia growing in hills and ridges on sandy loam soils (DEWNR 2023c).	**Likely** – historical record. Suitable habitat within the Development Area. Not observed during field survey.
Caladenia argocalla	White-beauty Spider-orchid	EN		1	Likely to occur	S.A. (Lofty Ranges, Barossa Valley, Murray region); 200–350 m altitude. Highly localised and rare; previously more widely distributed and common (once abundant around Adelaide), but now restricted to relict patches of vegetation. Found growing among shrubs and grass on sheltered slopes in open forest in freely draining, fertile loam (D.L Jones).	**Unlikely** – no historical records and not observed during field surveys. Development Area highly degraded due to cropping, grazing and incursion of weeds.
Caladenia concolor	Crimson Spider-orchid	VU		1	May occur	The Crimson Spider-orchid flowers in August to late October and grows in sclerophyll forest on clay loams and gravelly soil. This species also occurs in dry eucalypt forest, heathland and closed scrub and grassland.	**Unlikely** – no historical records and not observed during field surveys. Development Area highly degraded due to cropping and grazing.
Caladenia tensa	Greencomb Spider-orchid	EN		1	Likely to occur	S.A. (E mallee area), Vic. (Little Desert, Big Desert); 80–200 m altitude. Locally common; growing among shrubs and tussocks in woodland dominated by yellow gum and Rottnest Island Pine (*Callitris preissii*) 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 (D.L Jones).	**Unlikely** – no historical records and not observed during field surveys. Development Area highly degraded due to cropping and grazing.
Cryptandra campanulata	Long-flower Cryptandra		R	2	2015	This Cryptandra grows in shallow soil over rocks, mostly in grassland but also heath and shrubland, and occurs in the southern Flinders Ranges and the northern Mount Lofty Ranges (Kellerman 2020).	**Likely** – historical record. Suitable habitat within the Development Area. Not observed during field survey.
Dodonaea procumbens	Trailing Hop-bush	VU		1	Likely to occur	This species grows in low-lying, often winter wet areas in woodland, low open forest, heathland and grasslands, on sands and clays (Duretto 1999)	**Unlikely** – no historical records and not observed during field surveys. Development Area highly

Scientific name	Common name	Conservation status		Source of information	Last sighting (year)/ PMST Occurrence	Habitat Preferences	Likelihood of occurrence within Development Area
		Aus	SA				
							degraded due to cropping and grazing.
Dodonaea subglandulifera	Peep Hill Hop-bush	EN		1	Likely to occur	Endemic to South Australia and found on the east side of the Mount Lofty Ranges and on Yorke Peninsula, growing on low hills on loamy soils associated with rocky outcrops in open woodland, open shrubland and mallee (Moritz and Bickerton 2010).	**Possible** – no historical records and not observed during field surveys. Suitable habitat exists along the TL Route.
Eucalyptus behriana	Broad-leaf Box		R	2	2018	Found on southern Eyre Peninsula, southern Flinders Ranges, northern Mount Lofty Ranges and upper South-east in South Australia, growing on heavy soils in slight depressions or in gently undulating terrain (G.W Chippendale).	**Likely** – historical record. Suitable habitat within the Development Area. Not observed during field survey.
Euphrasia collina subsp. *osbornii*	Osborn's Eyebright	EN		1	May occur	Confined to South Australia in the Upper South-East, Kangaroo Island (Dudley Peninsula), Fleurieu, Yorke and Eyre Peninsulas, and in the Flinders Ranges apparently as far north as Burra in the Mid North. Recorded mainly from the mallee (*Eucalyptus*) woodlands common throughout most of its range. In higher parts of the Mount Lofty Ranges, it occurs in heathy openings in wet sclerophyll forest (W.R (Bill) Barker).	**Unlikely** – no historical records and not observed during field surveys. Development Area highly degraded due to cropping and grazing.
Maireana excavata	Bottle Fissure-plant		V	2	2022	Found in south-eastern S.A. Grows in heavy soil (Wilson, P, G 1999a).	**Likely** – historical record. Suitable habitat within the Development Area. Not observed during field survey.
Maireana rohrlachii	Rohrlach's Bluebush		R	2, 3	2017	Found from northern Eyre Peninsula, S.A. Usually growing in loamy soils (Wilson, P, G 1999b).	**Known** – this species was observed scattered throughout the Development Area.
Olearia pannosa subsp. *pannosa*	Silver Daisy-bush	VU		1	Likely to occur	Endemic to South Australia and found scattered in the southern part using on roadsides and with few individuals (SSCC 2018).	**Unlikely** – no historical records and not observed during field surveys.

Scientific name	Common name	Conservation status		Source of information	Last sighting (year)/ PMST Occurrence	Habitat Preferences	Likelihood of occurrence within Development Area
		Aus	SA				
							Development Area highly degraded due to cropping and grazing.
Prasophyllum pallidum	Pale Leek-orchid	VU		1	Likely to occur	S.A. (S Flinders Ranges, Mt Lofty Ranges, Adelaide Hills and N Fleurieu Peninsula); 200–400 m altitude. Relatively widespread, but disjunct; found growing in grassy forest and heathy forest in freely draining loam (Jones 2018).	**Unlikely** – no historical records and not observed during field surveys. Development Area highly degraded due to cropping and grazing.
Pterostylis xerophila	Desert Greenhood	VU		1	May occur	The Desert Greenhood is endemic to inland south-eastern Australia, where it occurs in Victoria and South Australia, in the Murray-Darling Depression, Eyre-York Block, Gawler, and Great Victoria Desert IBRA bioregions (sensu DEH 2000). In South Australia, P. xerophila occurs in dry woodland on fertile red loamy soils (Bates & Weber 1990), on or around granite or quartzite rock outcrops (Jessop & Toelken 1986). Species commonly found in areas where P. xerophila occurs on the Eyre Peninsula include Broombush Melaleuca uncinata, Ridge-fruited Mallee Eucalyptus incrassata, Beaked Red Mallee Eucalyptus socialis and/or Narrow-leaf Red Mallee Eucalyptus leptophylla (Pobke 2007).	**Unlikely** – no historical records and not observed during field surveys. Development Area highly degraded due to cropping and grazing.
Ptilotus erubescens	Hairy-tails		R	2	2017	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 (Seeds of South Australia 2018).	**Likely** – recent record and suitable habitat within the Development Area.
Rumex dumosus	Wiry Dock		R	2	2011	West to the Eyre Peninsula of SA. In grasslands and disturbed grassy areas; mostly on clayey soils (SSCC 2018).	**Likely** – historical record. Suitable habitat within the Development Area. Not observed during field survey.
Sclerolaena muricata var. *villosa*	Five-spine Bindyi		R	2	2017	South-eastern S.A. Common on overgrazed or overstocked areas on heavier soils and occasionally	**Likely** – historical record. Suitable habitat within the

Scientific name	Common name	Conservation status		Source of information	Last sighting (year)/ PMST Occurrence	Habitat Preferences	Likelihood of occurrence within Development Area
		Aus	SA				
						naturalized in coastal and Tableland districts (SSCC 2018).	Development Area. Not observed during field survey.
Senecio macrocarpus	Large-fruit Fireweed	VU		1	May occur	Occurs from Ardrossan in southeast South Australia southeast to Yan Yean in south-central Victoria, with an outlier recently collected at Gundaroo in New South Wales. There are a few old records from Tasmania, but it is now presumed extinct in that state. Grows in low-lying areas on basalt-derived clay or clay-loam soils, in grassland, sedgeland and woodland (Thompson 2011).	**Unlikely** – no historical records and not observed during field surveys. Development Area highly degraded due to cropping and grazing.
Swainsona behriana	Behr's Swainson-pea		V	2	May occur	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 historical records and not observed during field surveys. Development Area highly degraded due to cropping and grazing.
Swainsona pyrophila	Yellow Swainson-pea	VU		1	2011	Found in South Australia in Eyre Peninsula with a few records from Yorke Peninsula and the Murray region. Native. Very rare in South Australia. The Yellow Swainson-pea grows in mallee scrub on sandy or loamy soil and is usually found to germinate only after fire and subsequent rain (Jeanes 1996; Tonkinson & Robertson 2010a).	**Possible** – historical record. Suitable habitat within the Development Area. Not observed during the field survey.
Fauna							
Actis hypoleucos	Common Sandpiper	Mi (W)		1	May occur	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 Inhabit in Salt-water and fresh-water ecosystems.	**Unlikely** – no suitable habitat within the Development Area.
Amytornis striatus howei	Murray Mallee Striated Grasswren	EN		1	May occur	In SA, Striated Grasswren subspecies *howei* occur in the Murray Mallee region where they now occur patchily through the Riverland Biosphere Reserve. Only occasionally sightings have been recorded, located in	**Unlikely** – no historical records and not observed during field surveys. No suitable mallee habitat

Scientific name	Common name	Conservation status		Source of information	Last sighting (year)/ PMST Occurrence	Habitat Preferences	Likelihood of occurrence within Development Area
		Aus	SA				
						reliable reserves including Gluepot and Calperum reserves and Danggali Conservation Park (DCCEEW 2024b).	located within the Development Area.
Aphelocephala leucopsis leucopsis	Southern Whiteface	VU		1	Known to occur	Occurs in semi-arid woodlands, mallee, mulga, dry-country scrublands. Southern Whiteface favour habitat with low tree densities and an herbaceous understory litter cover. They live in a wide range of open woodlands and shrublands which are dominated by acacia, mallee, mulga and eucalyptus species (DCCEEW 2024b).	**Possible** – no historical records and not observed on site. However, suitable habitat does exist within this Development Area.
Aprasia pseudopulchella	Flinders Ranges Worm-lizard	VU		1	Likely to occur	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 surface, but has also been found sheltering in soil beneath sones and rotting stumps (Commonwealth Government, 2008). The Flinders Ranges Worm-lizard is known from the Flinders Ranges of South Australia, extending south to the western slopes and northern and central Mount Lofty Ranges. It occurs in open woodland, native tussock grassland, riparian habitats and rocky isolates (DEWHA 2008b).	**Possible** – no historical records and not observed on site. However, suitable habitat does exist within this Development Area.
Apus pacificus	Fork-tailed Swift	Mi (Ma)		1	Likely to occur	In South Australia the Fork-tailed Swift is widespread from the Victorian border west to the Spencer Gulf. It is also common in coastal parts of Eyre Peninsula as far west as Franklin Island, off Streaky Bay and north to 32° S. There have been a few recently published records beyond these bounds, such as in Flinders Ranges and the Lake Eyre Drainage Basin from Billa Kallina Station, Lake Eyre South and Marree. Sightings have also been recorded north to Moorayepe and east to Innamincka and Moomba (Higgins 1999). They mostly occur over dry or open habitats, including	**Unlikely** – the Development Area is outside of this species normal distribution.

Scientific name	Common name	Conservation status		Source of information	Last sighting (year)/ PMST Occurrence	Habitat Preferences	Likelihood of occurrence within Development Area
		Aus	SA				
						riparian woodland and tea-tree swamps, low scrub, heathland or saltmarsh. They are also found at treeless grassland and sandplains covered with spinifex, open farmland and inland and coastal sand-dunes. The sometimes occur above rainforests, wet sclerophyll forest or open forest or plantations of pines (Higgins 1999).	
Ardea intermedia plumifera	Plumed Egret		R	2	2010	Inhabits flooded areas with short emergent vegetation such as rice fields, cattle pastures, sewage farms and saltwater lakes.	**Unlikely** – a recent record however not suitable habitat within the Development Area.
Botaurus poiciloptilus	Australasian Bittern	EN		1	May occur	Occurs in coastal and sub coastal SE South Australia in or over water in tall reedbeds, sedges, rushes, lignum and occasionally in saltmarsh (Pizzey and Knight, 2007). Occurs in freshwater wetlands and, rarely, in estuaries or tidal wetlands, favouring areas with tall dense, vegetation (DCCEEW 2024b).	**Unlikely** – no historical records and not observed during field surveys. The Development Area is northern SA and outside normal distribution for this species.
Calidris acuminata	Sharp-tailed Sandpiper	VU, Mi (W)		1	May occur	Inhabits tidal mudflats, salt marshes and shallow fresh, brackish or saline wetlands and flood waters (Pizzey and Knight 2007). 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 2024b).	**Unlikely** – no historical records and not observed during field surveys. No suitable habitat located within the Development Area.
Calidris ferruginea	Curlew Sandpiper	CE, Mi (W)		1	May occur	In Australia, Curlew Sandpipers occur around the coasts and are also quite widespread inland, though in smaller numbers. Curlew Sandpipers mainly 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	**Unlikely** – no historical records and not observed during field surveys. The Development Area is northern SA and outside normal distribution for this species.

Scientific name	Common name	Conservation status		Source of information	Last sighting (year)/ PMST Occurrence	Habitat Preferences	Likelihood of occurrence within Development Area
		Aus	SA				
						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 (DCCEEW 2024b). Curlew Sandpipers mainly occur on intertidal mudflats in sheltered coastal areas, such as estuaries, bays, inlets and lagoons. They occur in both fresh and brackish waters (Morcombe 2021).	
Calidris melanotos	Pectoral Sandpiper	Mi (W)		1	May occur	In South Australia (SA), the Pectoral Sandpiper is found mostly in the south-east, from north to the Murray River and west to Yorke Peninsula (Higgins & Davies 1996). In Australasia, the Pectoral Sandpiper prefers shallow fresh to saline wetlands. (Higgins & Davies 1996).	**Unlikely** – no historical records and not observed during field surveys. No suitable habitat located within the Development Area.
Corcorax melanorhamphos	White-winged Chough		R	2	1999	Found in open forests and woodlands, preferring wetter areas with lots of leaf litter	**Likely** – This species is likely to utilise the woodland habitat within the Development Area.
Falco hypoleucos	Grey Falcon	VU		1	Likely to occur	The species occurs in arid and semi-arid Australia, including the Murray-Darling Basin, Eyre Basin, central Australia and WA. Preferred habitat includes lightly treed inland plains, sand ridges and pastoral plains. (Pizzey and Knight 2007). This species is mainly found where annual rainfall is less than 500 mm and is essentially confined to the arid and semi-arid zones at all times. The species frequents timbered lowland plains, particularly acacia shrublands that are crossed by tree-lined water courses (Schoenjahn 2018).	**Unlikely** – No historical records and not observed during field surveys. No suitable habitat located within the Development Area.
Falco peregrinus macropus	Peregrine Falcon		R	2, 4	2009/2022	Found across most habitats and well adapted to the urban environment.	**Known** – species was observed during a BUS in 2022.

Scientific name	Common name	Conservation status		Source of information	Last sighting (year)/ PMST Occurrence	Habitat Preferences	Likelihood of occurrence within Development Area
		Aus	SA				
Falco subniger	Black Falcon		R	2, 4	1999/2021	Found along tree-lined watercourses, mainly in arid and semi-arid areas.	**Known** – species was observed during a BUS in 2021.
Galaxias rostratus	Flathead Galaxias	CE		1	May occur	The flathead galaxias inhabits a variety of habitats including billabongs, lakes, swamps and rivers, with a preference for still or slow flowing waters. The species has a preference for schooling in midwater	**Unlikely** – No historical record. Although rivers and draining lines exist within the Development Area, they do not provide suitable habitat for this species.
Gallinago hardwickii	Latham's Snipe	VU, Mi (W)		1	May occur	Latham's Snipe is a non-breeding visitor to south-eastern Australia, including the Adelaide plains, MLR and EP. They usually inhabit open, freshwater wetlands with low, dense vegetation (DCCEEW 2024b).	**Unlikely** – No historical records and not observed during field surveys. Development Area is outside of normal distribution for this species.
Grantiella picta	Painted Honeyeater	VU		1	Likely to occur	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. (Birdlife International 2021). Forest, woodland, dry scrub, often with abundant mistletoe. Dependent on mistletoe berries (Morecombe eGuide 2020).	**Possible** – No historical records and not observed during field surveys. Suitable habitat may occur in the woodland vegetation within the Development Area.
Leipoa ocellata	Malleefowl	VU		1	Likely to occur	In SA, the Malleefowl is distributed from the south-east, north to the Murray-Mallee region and west to Streaky Bay. Occupies shrublands and low woodlands that are dominated by mallee vegetation. It also occurs in other habitat types including eucalypt or native pine Callitris woodlands, Acacia shrublands, or coastal heathlands (Benshemesh 2007). Inhabits semi-arid regions of southern Australia. In SA, the Malleefowl is distributed from the south-east, north to the Murray-Mallee region and west to Streaky Bay. Occupies shrublands and low woodlands that are dominated by mallee vegetation. It also occurs in other habitat types including eucalypt or	**Unlikely** – No historical records and not observed during field surveys. No suitable habitat located within the Development Area.

Scientific name	Common name	Conservation status		Source of information	Last sighting (year)/ PMST Occurrence	Habitat Preferences	Likelihood of occurrence within Development Area
		Aus	SA				
						native pine Callitris woodlands, Acacia shrublands, or coastal heathlands. (Benshemesh 2007).	
Litoria raniformis	Southern Bell Frog	VU		1	May occur	Three distinct groups of records in SA. One group is located in the far south-east of the state, one group along the Murray River from Victoria to the coast, and a small group in the Mt Lofty Ranges. This species is found mostly amongst emergent vegetation, including *Typha* sp. (bullrush), *Phragmites* sp. (reeds) and *Eleocharis* sp. (sedges), in or at the edges of still or slow-flowing water bodies This species occurs in: clays or well-watered sandy soils; open grassland, open forest, and ephemeral and permanent non-saline marshes and swamps; steep-banked water edges (like ditches and drains) and gently graded edges containing fringing plants; and formerly, areas of high altitudes (DCCEEW 2024b).	**Possible** – No historical records and not observed during field surveys. However suitable habitat may exist in VA A4 (*Juncus* sedgeland).
Lophochroa leadbeateri leadbeateri	Major Mitchell's Cockatoo (eastern)	EN		1	May occur	The Major Mitchell's Cockatoo occurs only in Australia, where it usually inhabits semi-arid and arid regions, mainly inland, but in some coastal areas. They usually inhabit dry woodlands in arid and semi-arid areas, where eucalypts or acacias dominate the vegetation. They require old trees which support hollows that are large enough to be suitable for nesting in (Birdlife Australia 2024).	**Unlikely** – No historical records and not observed during field surveys. No suitable habitat located within the Development Area.
Melanodryas cucullata cucullata	South-eastern Hooded Robin	EN	R	1, 2	2015 Known to occur	Utilises woodland of eucalypt, mallee, mulga; coastal heath; semi cleared farmland. Sub-populations in SA are recorded from the Barossa, Monarto, Onkaparinga River, Ashbourne, Port Willunga areas as well as isolated records from elsewhere in the hills and Fleurieu. Requires large remnants (>50 ha) with open areas, young eucalypts or shrubs for nesting and numerous perches for foraging (DEH, 2008). Occurs across south-eastern Australia, most of NSW, VIC and south-eastern SA. South-eastern subspecies found in	**Likely** – Recent record and suitable habitat within the Development Area.

Scientific name	Common name	Conservation status		Source of information	Last sighting (year)/ PMST Occurrence	Habitat Preferences	Likelihood of occurrence within Development Area
		Aus	SA				
						Eucalypt woodland and mallee and Acacia shrubland (Willson and Bignall 2009).	
Merops ornatus	Rainbow Bee-eater	Ma		3		The Rainbow Bee-eater occurs mainly in open forests and woodlands, shrublands, and in various cleared or semi-cleared habitats, including farmland and areas of human habitation (Higgins 1999). It usually occurs in open, cleared or lightly-timbered areas that are often, but not always, located near permanent water.	**Known -** this species was observed during the field survey in 2024.
Motacilla cinerea	Grey Wagtail	Mi (T)		1	May occur	European and Asian species. Migrates south in winter, usually to Indonesia and NG. Rarely reaches Australia, but when it does, favors habitat near freshwater streams, also mown grass, ploughed land or near sewage ponds. (Carter 1993)	**Unlikely** – no recent records and no suitable habitat within the Development Area.
Motacilla flava	Yellow Wagtail	Mi (T)		1	May occur	The Yellow Wagtail M flava is considered a regular visitor to marshes of northern Australia between August and April, overflying normal wintering grounds (Johnstone 1982).	**Unlikely** – no recent records and no suitable habitat within the Development Area.
Myiagra cyanoleuca	Satin Flycatcher	Mi (T)		1	May occur	In South Australia, they are occasionally recorded, mostly in the lower south-east, occasionally as far north as Naracoorte (Blakers et al. 1984). There have been six records at scattered sites in the area from Langhorne Creek, west to eastern Kangaroo Island and north to Sandy Creek. Satin Flycatchers inhabit heavily vegetated gullies in eucalypt-dominated forests and taller woodlands, and on migration, occur in coastal forests, woodlands, mangroves and drier woodlands and open forests.	**Unlikely** – no recent records and no suitable habitat within the Development Area.
Myiagra inquieta	Restless Flycatcher		R	2	1999	Open forests, woodlands and farmland	**Likely** – Suitable habitat exits across entire Development Area
Neophema chrysostoma	Blue-winged Parrot	VU	V	1,2,4	2011	This species mainly occurs in Tasmania and Victoria, particularly in southern Victoria and the midlands and	**Known** – this species was observed during the

Scientific name	Common name	Conservation status		Source of information	Last sighting (year)/ PMST Occurrence	Habitat Preferences	Likelihood of occurrence within Development Area
		Aus	SA				
					Known to occur	eastern areas of Tasmania however sparser populations are also found in western New South Wales and eastern South Australia, extending to south-west Queensland and occasionally into the Northern Territory. Prefers grasslands and grassy woodlands but will inhabit a range of habitats from coastal, sub-coastal and inland areas, right through to semi-arid zones (Birdlife Australia 2024).	baseline flora and fauna survey in 2015.
Neophema elegans elegans	Elegant Parrot		R	2	1999	Open forests, woodlands, mallee mulga and salt marsh	**Possible** – woodland may provide suitable habitat in Development Area.
Pedionomus torquatus	Plains-wanderer	CE		1	May occur	The Plains-wanderer occurs at scattered sites in NSW and Victoria and more marginal habitat in QLD and SA. Inhabits sparse, treeless, lowland native grasslands with approximately 50% bare ground, most vegetation less than 5 cm in height, with some widely-spaced plants up to 30 cm high (DAWE, 2021b). Present in very small numbers in SE South Australia occurring in sparse, treeless native grasslands and/or low shrubland (Pizzey and Knight 2007).	**Unlikely** – No historical records and not observed during field surveys. No suitable habitat located within the Development Area.
Polytelis anthopeplus monarchoides	Regent Parrot (eastern)	VU		1	Likely to occur	The eastern Regent Parrot occurs in the lower Murray-Darling basin region of South Australia, New South Wales and Victoria. The Regent Parrot breeds almost entirely in River Red Gum forest and woodland, and all known breeding colonies are located along the Murray River. Typically occur within 100 km of the River in non-breeding season and can forage in mallee habitats (Baker-Gabb & Hurley 2011).	**Unlikely** – No historical records and not observed during field surveys. No suitable habitat located within the Development Area.
Pteropus poliocephalus	Grey-headed Flying-fox	VU		1	May occur	Grey-headed Flying-foxes forage up to 40 km from their roost at Botanic Park each night. Food plants are typically planted trees, both native and exotic, which provide fruit or a rich source of nectar (DCCEEW 2024b).	**Unlikely** – No historical records and not observed during field surveys. No suitable habitat located

Scientific name	Common name	Conservation status		Source of information	Last sighting (year)/ PMST Occurrence	Habitat Preferences	Likelihood of occurrence within Development Area
		Aus	SA				
							within the Development Area.
Rostratula australis	Australian Painted Snipe	EN		1	Known to occur	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 (DCCEEW 2024b).	**Unlikely** – No historical records and not observed during field surveys. No permanent source of water within the Development Area.
Stagonopleura guttata	Diamond Firetail	VU	V	1, 2, 3	2018 Known to occur	Diamond firetails occur in eucalypt, acacia or casuarina woodlands, open forests and other lightly timbered habitats, including farmland and grassland with scattered trees (Higgins et al. 2007). They prefer areas with relatively low tree density, few large logs, and little litter cover but high grass cover (Antos et al. 2008).	**Known** – this species was observed during the field survey.
Tiliqua adelaidensis	Pygmy Blue-tongue Lizard	EN	E	1, 3, 4	Known to occur	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 (Duffy et al. 2012).	**Known** – this species was observed during the historical field surveys and 2024 survey.
Tringa nebularia	Common Greenshank	EN, Mi (W)		1	2021 Likely to occur	This species is found in a wide variety of inland wetlands and sheltered coastal habitats of varying salinity. It occurs in sheltered coastal habitats, typically with large mudflats and saltmarsh, mangroves or seagrass. Habitats include embayment's, harbours, river estuaries, deltas and lagoons and are recorded	**Unlikely** – No historical records and not observed during field surveys. No suitable habitat located

Scientific name	Common name	Conservation status		Source of information	Last sighting (year)/ PMST Occurrence	Habitat Preferences	Likelihood of occurrence within Development Area
		Aus	SA				
						less often in round tidal pools, rock-flats and rock platforms. The species uses both permanent and ephemeral terrestrial wetlands, including swamps, lakes, dams, rivers, creeks, billabongs, waterholes and inundated floodplains, claypans and salt flats. It will also use artificial wetlands, including sewage farms and saltworks dams, inundated rice crops and bores (Higgins & Davies 1996).	within the Development Area.

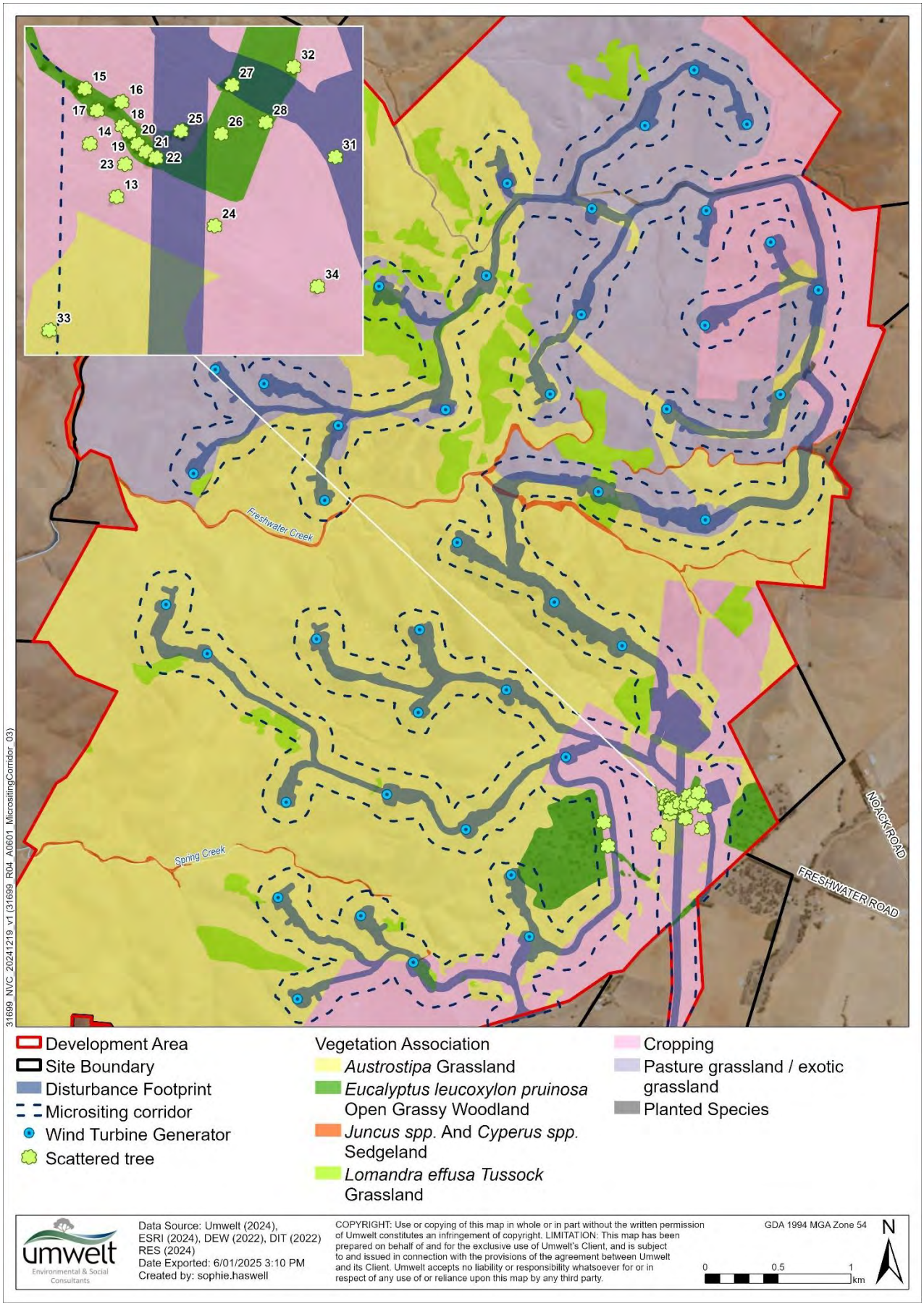
Conservation status

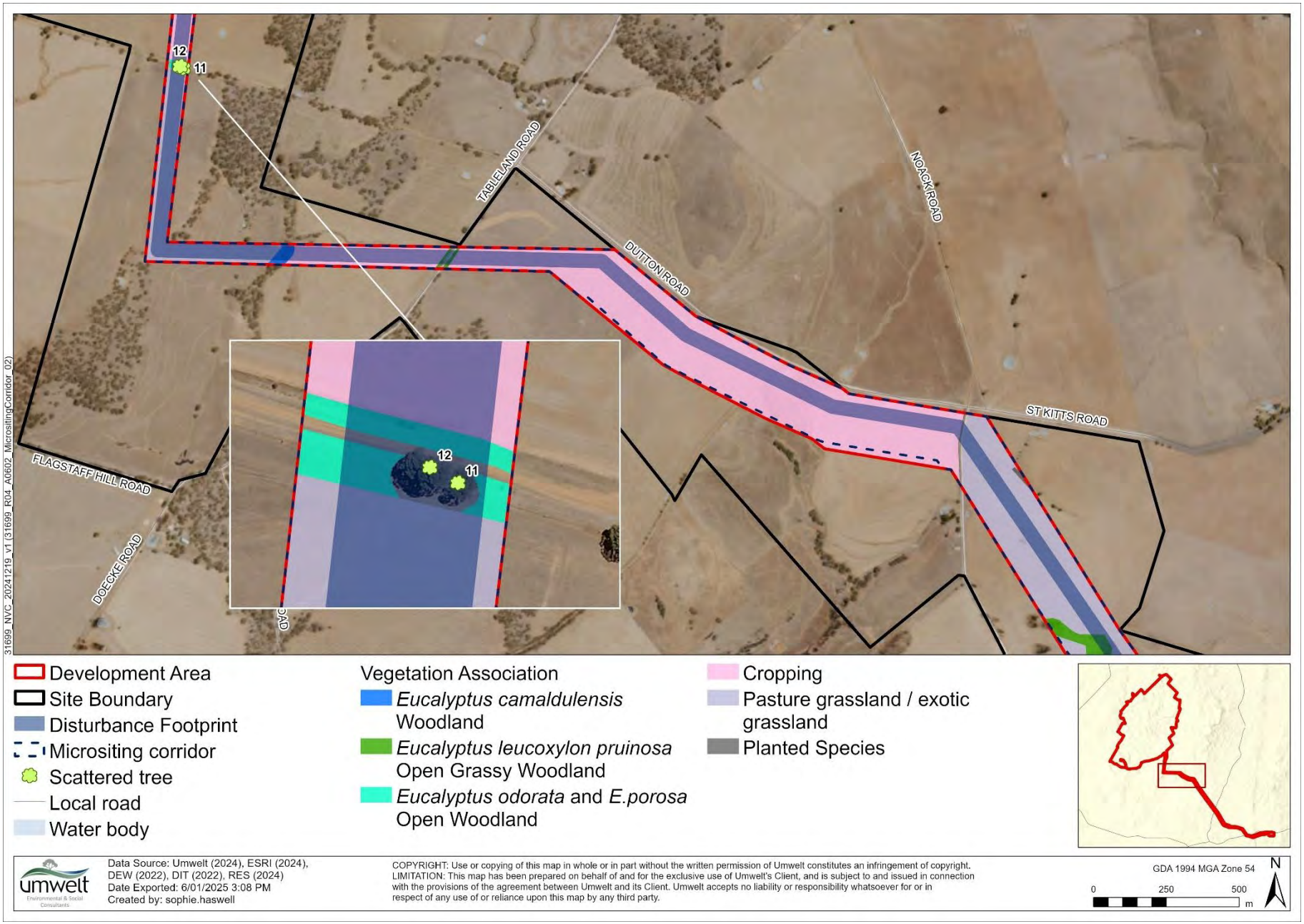
EPBC Act (*Environment Protection and Biodiversity Conservation Act 1999*). **NPW Act** (*National Parks and Wildlife Act 1972*). **Conservation Codes**: **CE**: Critically Endangered. **EN/E**: Endangered. **VU/V**: Vulnerable. **R**: Rare. **ssp**.: the conservation status applies at the sub-species level. **Mi**: listed as migratory under the EPBC Act. **Ma**: listed as marine under the EPBC Act.

Source of Information

1. EPBC Act Protected Matters Report (DCCEEW 2024) – 5 km buffer applied to Development Area.
2. Biological Database of South Australia data extract (DEW 2023a) - 5 km buffer applied to Development Area.
3. Observed during the field survey.
4. Observed during previous EBS surveys (2015 – 2017).

9.6. Appendix 6 – Micrositing corridor within the Development Area




12
11
TABLELAND ROAD
NOACK ROAD
DUTTON ROAD
ST KITTS ROAD
FLAGSTAFF HILL ROAD
DOECKE ROAD
31699_NVC_20241219_v1 (31699_R04_A0602_MicrositingCorridor_02)
Development Area
Site Boundary
Disturbance Footprint
Micrositing corridor
Scattered tree
Local road
Water body
Vegetation Association
Eucalyptus camaldulensis Woodland
Eucalyptus leucoxylon pruinosa Open Grassy Woodland
Eucalyptus odorata and E.porosa Open Woodland
Cropping
Pasture grassland / exotic grassland
Planted Species
Data Source: Umwelt (2024), ESRI (2024), DEW (2022), DIT (2022), RES (2024)
Date Exported: 6/01/2025 3:08 PM
Created by: sophie.haswell
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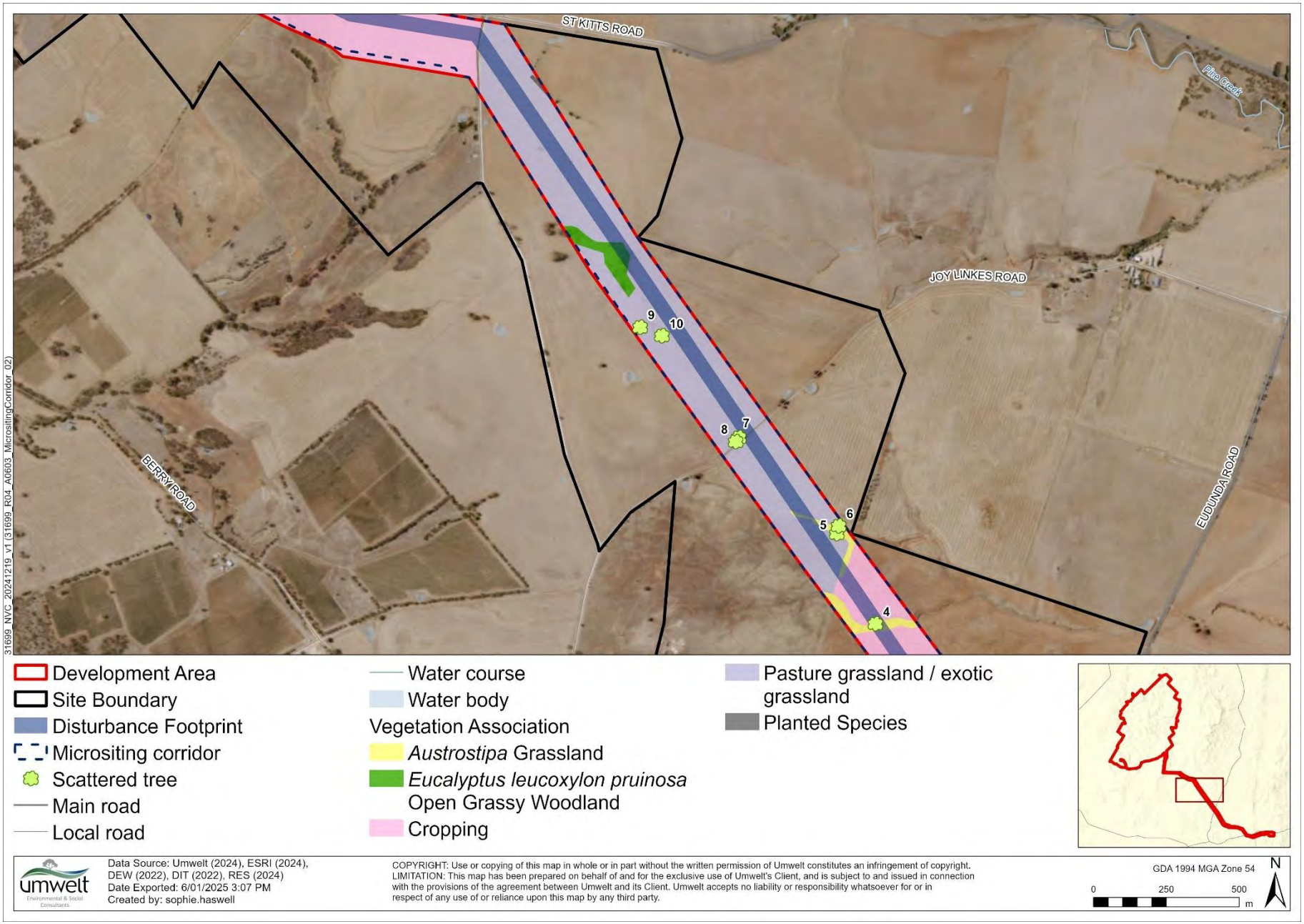
ST KITTS ROAD
Pins Creek
JOY LINKES ROAD
BERRY ROAD
EUDUNDA ROAD
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31699_NVC_20241219_v1 (31699_R04_A0603_MicrositingCorridor_02)
Development Area
Site Boundary
Disturbance Footprint
Micrositing corridor
Scattered tree
Main road
Local road
Water course
Water body
Vegetation Association
Austrostipa Grassland
Eucalyptus leucoxylon pruinosa Open Grassy Woodland
Cropping
Pasture grassland / exotic grassland
Planted Species
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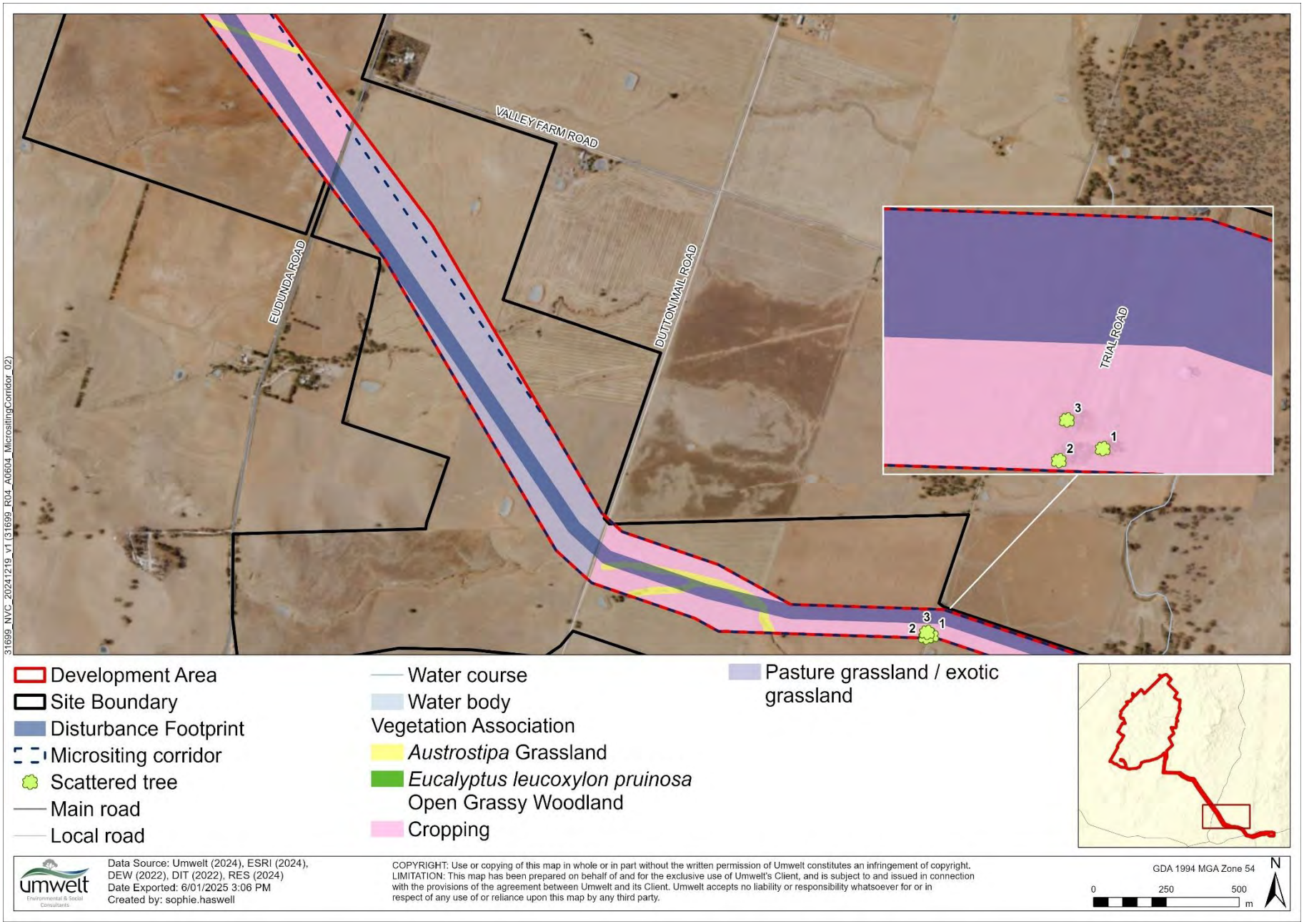
VALLEY FARM ROAD
EUDUNDA ROAD
DUTTON MAIL ROAD
TRIAL ROAD
1
2
3
31699_NVC_20241219_v1 (31699_R04_A0604_MicrositingCorridor_02)
Development Area
Site Boundary
Disturbance Footprint
Micrositing corridor
Scattered tree
Main road
Local road
Water course
Water body
Vegetation Association
Austrostipa Grassland
Eucalyptus leucoxylon pruinosa Open Grassy Woodland
Cropping
Pasture grassland / exotic grassland
Data Source: Umwelt (2024), ESRI (2024), DEW (2022), DIT (2022), RES (2024)
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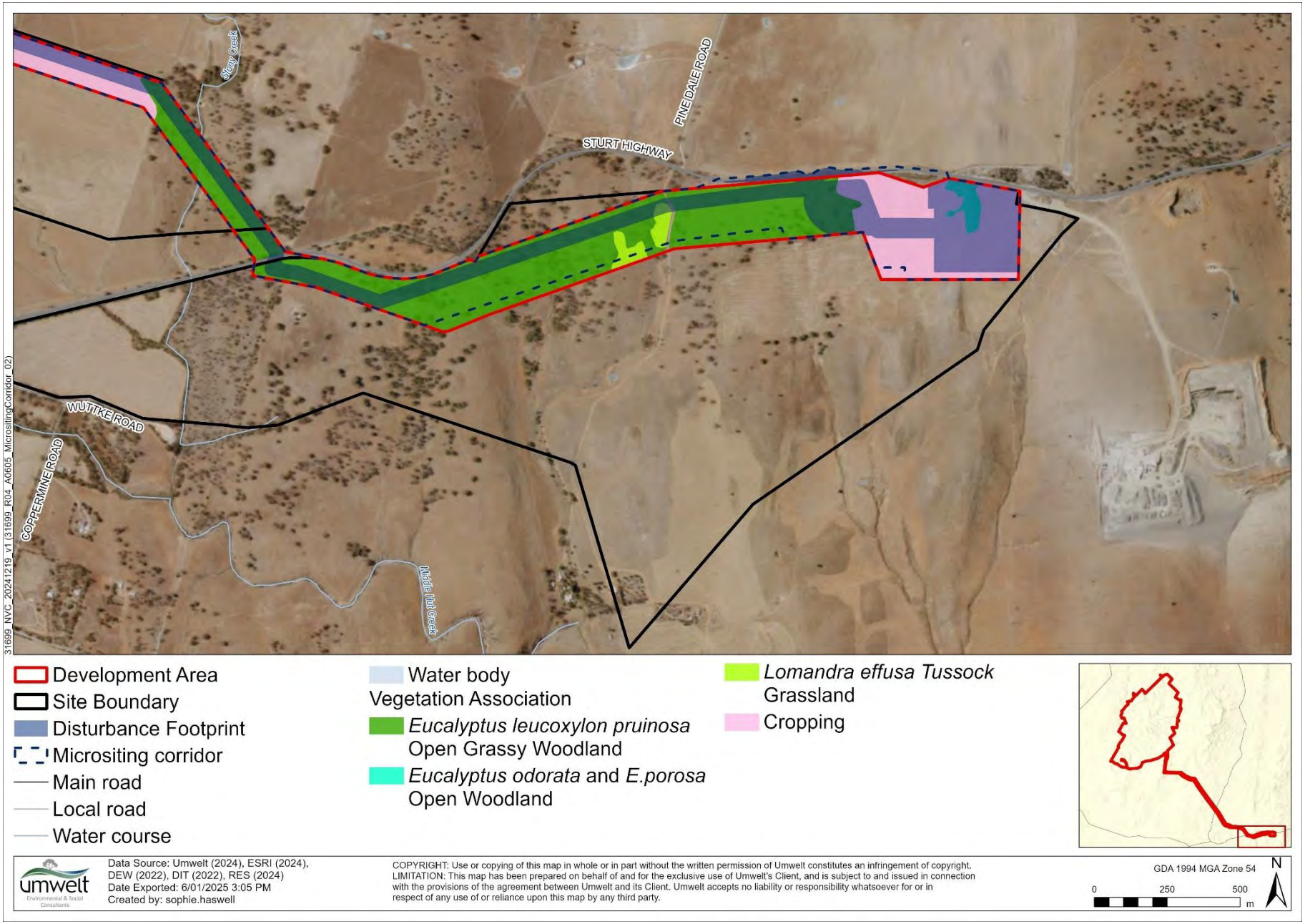
Stony Creek
PINE DALE ROAD
STURT HIGHWAY
WUTTKE ROAD
COPPERMINE ROAD
Middle Hut Creek
31699_NVC_20241219_v1 (31699_R04_A0605_MicrositingCorridor_02)
Development Area
Site Boundary
Disturbance Footprint
Micrositing corridor
Main road
Local road
Water course
Water body
Vegetation Association
Eucalyptus leucoxylon pruinosa Open Grassy Woodland
Eucalyptus odorata and E.porosa Open Woodland
Lomandra effusa Tussock Grassland
Cropping
Data Source: Umwelt (2024), ESRI (2024), DEW (2022), DIT (2022), RES (2024)
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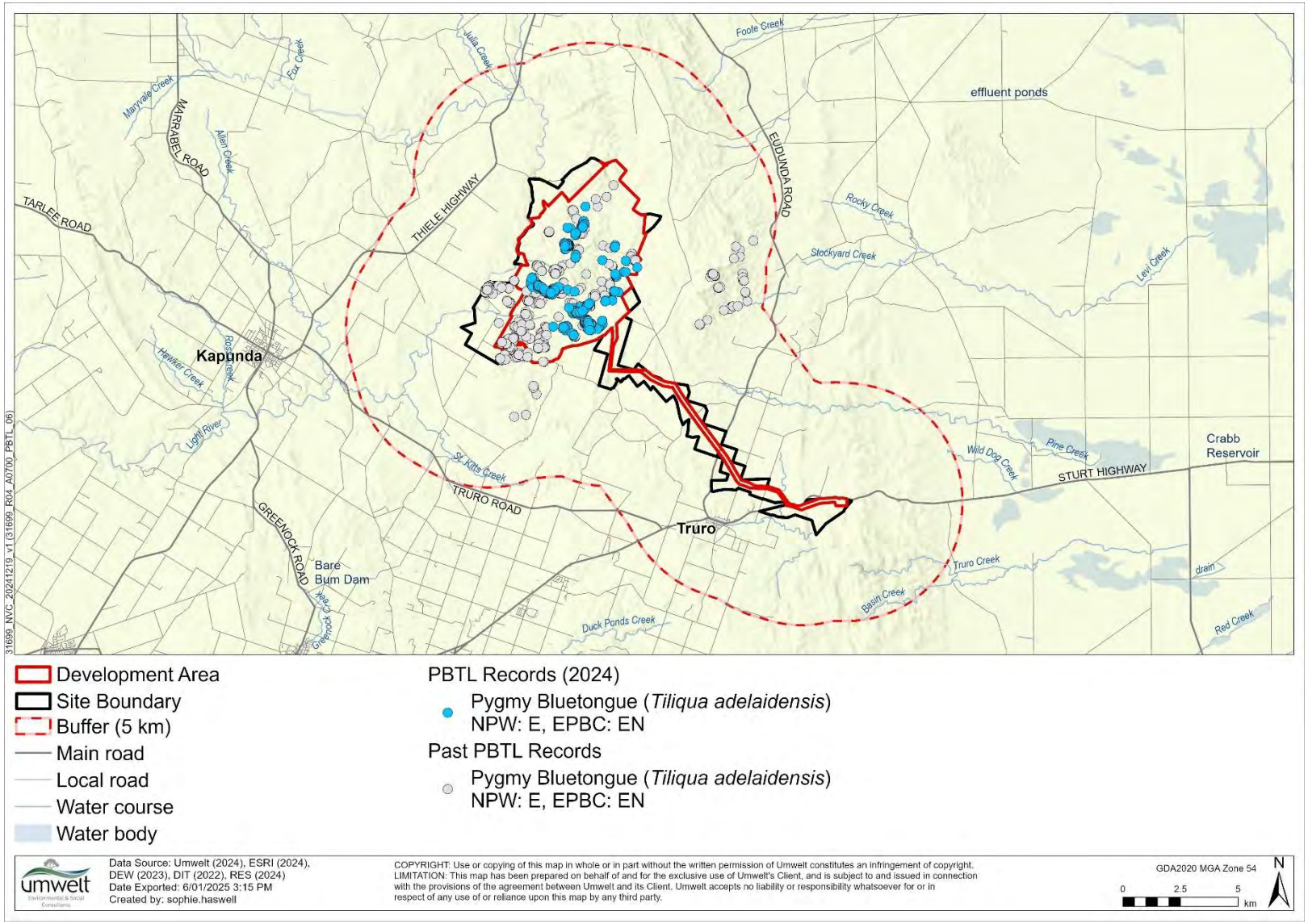
9.7. Appendix 7 – Pygmy Blue-tongue Lizard Records Located within the Development Area (2016, 2017 and 2024 Records)



9.8. Appendix 8 – SEB Management Plan PMST Report

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	2
Listed Threatened Species:	29
Listed Migratory Species:	9

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	15
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	1
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	5
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text	Buffer Status
Iron-grass Natural Temperate Grassland of South Australia	Critically Endangered	Community likely to occur within area	In feature area
Peppermint Box (Eucalyptus odorata) Grassy Woodland of South Australia	Critically Endangered	Community likely to occur within area	In feature area

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Aphelocephala leucopsis Southern Whiteface [529]	Vulnerable	Species or species habitat known to occur within area	In feature area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat may occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat may occur within area	In feature area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Melanodryas cucullata cucullata South-eastern Hooded Robin, Hooded Robin (south-eastern) [67093]	Endangered	Species or species habitat likely to occur within area	In feature area
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat known to occur within area	In feature area
Pedionomus torquatus Plains-wanderer [906]	Critically Endangered	Species or species habitat may occur within area	In buffer area only
Polytelis anthopeplus monarchoides Regent Parrot (eastern) [59612]	Vulnerable	Species or species habitat may occur within area	In feature area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area	In feature area
Stagonopleura guttata Diamond Firetail [59398]	Vulnerable	Species or species habitat known to occur within area	In feature area
FISH			
Galaxias rostratus Flathead Galaxias, Beaked Minnow, Flat-headed Galaxias, Flat-headed Jollytail, Flat-headed Minnow [84745]	Critically Endangered	Species or species habitat may occur within area	In buffer area only
FROG			
Litoria raniformis Southern Bell Frog,, Growling Grass Frog, Green and Golden Frog, Warty Swamp Frog, Golden Bell Frog [1828]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
MAMMAL			
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour may occur within area	In buffer area only
PLANT			
Acacia menzelii Menzel's Wattle [9218]	Vulnerable	Species or species habitat may occur within area	In feature area
Caladenia argocalla White-beauty Spider-orchid [54991]	Endangered	Species or species habitat may occur within area	In buffer area only
Caladenia tensa Greencomb Spider-orchid, Rigid Spider-orchid [24390]	Endangered	Species or species habitat likely to occur within area	In feature area
Dodonaea procumbens Trailing Hop-bush [12149]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Dodonaea subglandulifera Peep Hill Hop-bush [11956]	Endangered	Species or species habitat may occur within area	In feature area
Euphrasia collina subsp. osbornii Osborn's Eyebright [3684]	Endangered	Species or species habitat may occur within area	In feature area
Olearia pannosa subsp. pannosa Silver Daisy-bush, Silver-leaved Daisy, Velvet Daisy-bush [12348]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Prasophyllum pallidum Pale Leek-orchid [20351]	Vulnerable	Species or species habitat may occur within area	In feature area
Senecio macrocarpus Large-fruit Fireweed, Large-fruit Groundsel [16333]	Vulnerable	Species or species habitat may occur within area	In feature area
Swainsona pyrophila Yellow Swainson-pea [56344]	Vulnerable	Species or species habitat may occur within area	In feature area

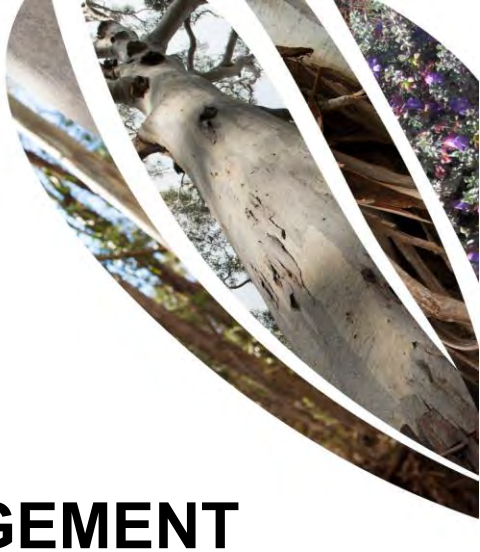
Scientific Name	Threatened Category	Presence Text	Buffer Status
REPTILE			
Aprasia pseudopulchella Flinders Ranges Worm-lizard [1666]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Tiliqua adelaidensis Pygmy Blue-tongue Lizard, Adelaide Blue-tongue Lizard [1270]	Endangered	Species or species habitat known to occur within area	In feature area

Listed Migratory Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat may occur within area	In feature area
Migratory Wetlands Species			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat may occur	In feature area

Native Vegetation Council



NATIVE VEGETATION MANAGEMENT PLAN

SEB Area Reference Name: St Kitts Offset Area

Registered Proprietor:

Period of Management Plan: 2027-2037

Plan authored by: J. Skewes and Dr T. How (Umwelt (Australia))

Native Vegetation Council
GPO Box 1047 (08) 8303 9777
Adelaide SA 5001 nvc@sa.gov.au

TABLE OF CONTENTS

1 RECITAL

1) In this Plan, unless the contrary intention appears –

   a) "Native fauna" means an animal or animals of a species indigenous to South Australia

   b) “Significant Environmental Benefit (SEB) Area” means an area of land that is protected and managed for conservation to provide a significant environmental benefit to offset the impacts of clearance of native vegetation that has been approved or may be approved sometime in the future

   c) "Owner" means the person who has executed this Agreement as the proprietor of the land containing the SEB Area and includes all successors in title and occupiers of the land. Where two or more persons are named as the Owner the rights and liabilities under this Agreement will pass to all such persons jointly and each of them severally

   d) “the Act” means the *Native Vegetation Act 1991*

   e) Words and phrases defined in the Act, shall for the purposes of this Agreement have the meanings defined in that Act.

2) This Management plan commences upon approval from the Native Vegetation Council (NVC) and may not be varied or terminated except by a written Agreement signed by both the NVC and the Owner.

3) This management plan is binding on, and enforceable against all owners and subsequent owners of the land described in Section 2 and remains operational in perpetuity or until it is rescinded by mutual agreement of the NVC and the Owner.

4) The obligations described in this management plan specifically apply to the land delineated as the “SEB Area” in Section 2.4.

5) The Owner shall notify the NVC if any activity on the land is likely to result in damage to the environment or biodiversity assets of the area or if there is any breach or potential breach of this Management Plan.

6) The NVC, any agent of the NVC or any employee or contractor of the Crown, authorised by the NVC may, at any reasonable time, having first notified the landholder (notice provision to be confirmed):

   a) enter the SEB Area for the purpose of inspecting the land or any fence on the land

   b) enter the SEB Area for the purposes of monitoring the conservation values and condition of the native vegetation and Native fauna protected by this Agreement.

7) If the Owner is in breach of this Management plan, the NVC may by notice in writing served on the Owner, specify the nature of the breach and require the Owner to remedy the breach within a reasonable period of time specified in the notice.

2 SEB OFFSET AREA

2.1 Landowner and Location Details

Property name	188 Whites Road, St Kitts	
Registered owner	Name: RES Australia Pty Ltd	
	Postal address: Suite 6.01 Level 6, 165 Walker Street, North Sydney, NSW 2060.	
Offset site manager / provider contact	Name: **Roberta Magoba**	
	Postal address: Suite 6.01 Level 6, 165 Walker Street, North Sydney, NSW 2060.	Phone: **0478 079 331**
		Mobile: **0478 079 331**
	Email: **roberta.magoba@res-group.com**	

Landscape Board region[1]	Northern and Yorke	**Local government area**	Light Regional Council
IBRA[2] **region**	Flinders Lofty Block	**Total Offset area (ha)**	25.371
IBRA sub-region	Broughton	**SEB points (total, if applicable)**	188.34
IBRA association(s)	Mopami		

2.2 Land Parcels

Parcels whole or in part which comprise the Offset area

Title	Volume	Folio	Parcel ID	Hundred
CT	5476	305	H160100 S190	Belvidere
CT	5485	289	F16260 A500	Belvidere
CT	5569	233	H160100 S239	Belvidere

[1] Landscape SA region, see https://landscape.sa.gov.au/
[2] IBRA = Interim Biogeographic Regionalisation of Australia

2.3 Introduction and Offset Area Description

Background/reason for establishing the Offset Area (e.g. give brief details of clearance application, credit application or grant project)
RES Australia Pty Ltd (RES; the Proponent) is developing the Twin Creek Wind Farm (TCWF; the Project) near Kapunda in the Mid North of South Australia (SA), approximately 90 kilometres (km) northeast of Adelaide. RES has sought and gained development authorisation (in 2019 – Development Application 422/E003/17) and approval for the clearance of native vegetation associated with Twin Creek Wind Farm on the 15th of December 2017 under Regulation 5(1)(d). Various extensions were granted to meet the NVC approval conditions (including the provision of the Native Vegetation Management Plan for the SEB Offset area). Since 2017, RES has undertaken further design development in an evolving energy market. To take advantage of the growth in wind turbine technology, RES have reviewed the approved wind farm and have optimised the Twin Creek Wind Farm and Energy Storage Project, particularly in terms of overall generating capacity, number, size and capacity of wind turbine generators. This new optimised Project has undergone extensive re-designs to mitigate impact to native vegetation and threatened species. RES has submitted a new development application for the optimised layout and prepared a new Native Vegetation Data Report. This NVC Data Report is anticipated to be lodged in October 2024 (Umwelt 2024). The Proponent purchased a ~153 ha property, '188 Whites Road, St Kitts' in 2021, which has been selected as an option to establish a portion (25.371 ha) of the on-ground SEB required for the Project (hereafter the 'Offset Area)'. The total SEB required to offset the clearance of 176.78 ha of native vegetation and 35 scattered trees results in a total of **5,652.07 SEB points** or **$4,108,821.03** into the NV fund. The Proponent plans to offset 188.34 SEB gain points with the Offset Area and the remaining will be paid into the NV fund.

Current and past land use history and events impacting the site/s (e.g. grazing, cropping, previous clearance, known fires; also list any existing covenants, caveats or agreements)
The total property size purchased by the Proponent is ~153 ha, of which 25.371 ha will be put aside for the Offset Area. The Offset Area is typical of land which has historically been used for stock grazing. The area retains an intact overstorey stratum of Peppermint Box trees (*E. odorata*) and Red Gum trees (*E. camaldulensis*) (in the creekline), however grazing has resulted in a depauperate understorey, lacking the pre-European diversity of grass, forb and herbaceous species, and instead proliferating in pasture weed species. The site is long unburnt, with no known fire history impacting the site.

General description of the features within the Offset Area (e.g. wetlands/creeks, soils, aspect, topography and rainfall)
The Interim Biogeographical Regionalisation of Australia (IBRA) identifies geographically distinct bioregions based on common climate, geology, landform, native vegetation, and species information. The bioregions are further refined into subregions and environmental associations (Thackway and Cresswell 1995). The St Kitts Offset Area is located within the Flinders Lofty Block IBRA Bioregion within the Broughton IBRA Subregion and the Mopami Environmental Association (EA). The Mopami EA contains approximately 6% (4,257 ha) remnant native vegetation, of which 2% (110 ha) is formally conserved. The Offset Area site is characterised by low hills with a 440 metre (m) maximum elevation in the southern area. A River Red Gum (*Eucalyptus camaldulensis*) lined creek runs north south in the eastern side of the Offset Area with the elevation dropping to 380-390 m in this area. The Offset Area is 25.371 ha in size and consists of predominantly Peppermint Box (*Eucalyptus odorata*) Low Grassy Woodland grading to River Red Gum Open Grassy Woodland in the riparian zone. The site is partially fenced and has a long history of stock grazing with adjacent areas cropped. The overstorey of the woodland is relatively intact with the understorey dominated by introduced grasses and herbs. One small dam occurs within the southern section of the woodland area, however, it will be excluded from the Offset Area and be fenced such that stock can still access it.

A fenced dam is also located adjacent to the northern section; however, it has access through an open gate on the western side, from the cropping land. This dam is not included in the Offset Area.

Scattered native understorey species occur within the Offset Area, with a higher abundance and diversity recorded in the northern section of the Offset, especially on the protected south-facing slope. The mid-storey is virtually non-existent and little regeneration was recorded across the site.

Summary of the conservation significance of the Offset Area

The Offset Area protects 21.174 ha of Peppermint Box Grassy Woodland and 4.197 ha of River Red Gum Riparian Open Woodland.

Peppermint Box Grassy Woodland is listed as a nationally threatened ecological community (TEC) under the *Environment Protection and Biodiversity Conservation Act* 1999 (EPBC Act). BAM site A2 meets the condition class B TEC requirements in its current condition, the implementation of this management plan will assist in significantly improving its condition. The management plan also aims to improve the condition of A1 (currently condition Class C, patches amendable to rehabilitation).

The Offset Area would also contribute to the total area under conservation management in the region. Approximately 6% of the of Mopami EA contains native vegetation and only 2% is within the Reserve System. Therefore, the Offset Area significantly contributes to the management of native vegetation in the region.

Site condition was scored using the Bushland Assessment Methodology (BAM) and scoring system derived from the Nature Conservation Society of South Australia's (NCSSA) Bushland Condition Monitoring (BCM) methodology (Croft et al, 2005-2009; Milne & McCallum [2012]; Milne & Croft [2012)]. Scoring uses a selection of key ecological attributes in relation to a Benchmark 'pre-European' community from which the vegetation association is derived. These measures provide scores assessing vegetation cover, conservation value and landscape context which combine to provide a Unit Biodiversity Score (UBS) (per hectare).

BAM A1 (Peppermint Box Grassy Woodland) UBS 39.05 – 14.019 ha

BAM A2 (Peppermint Box Open Grassy Woodland) UBS 90.66 – 7.155 ha

BAM A3 (River Red Gum Riparian Open Woodland) UBS 27.35 – 4.197 ha

Summary of the conservation significance of the Offset Area
Additionally, the Offset Area provides some connectivity between patches and corridors of vegetation within an environment where extensive clearance has occurred. The southern portion adjoins a neighbouring patch of vegetation and the drainage line area continues through the neighbouring property. The area retains an intact mature overstorey stratum and is amenable to rehabilitation.

2.4 Offset Area Map

Figure 1 shows the property that is owned by RES Australia whilst Figure 2 shows the location of the Offset Area, the vegetation associations and BAM sites.

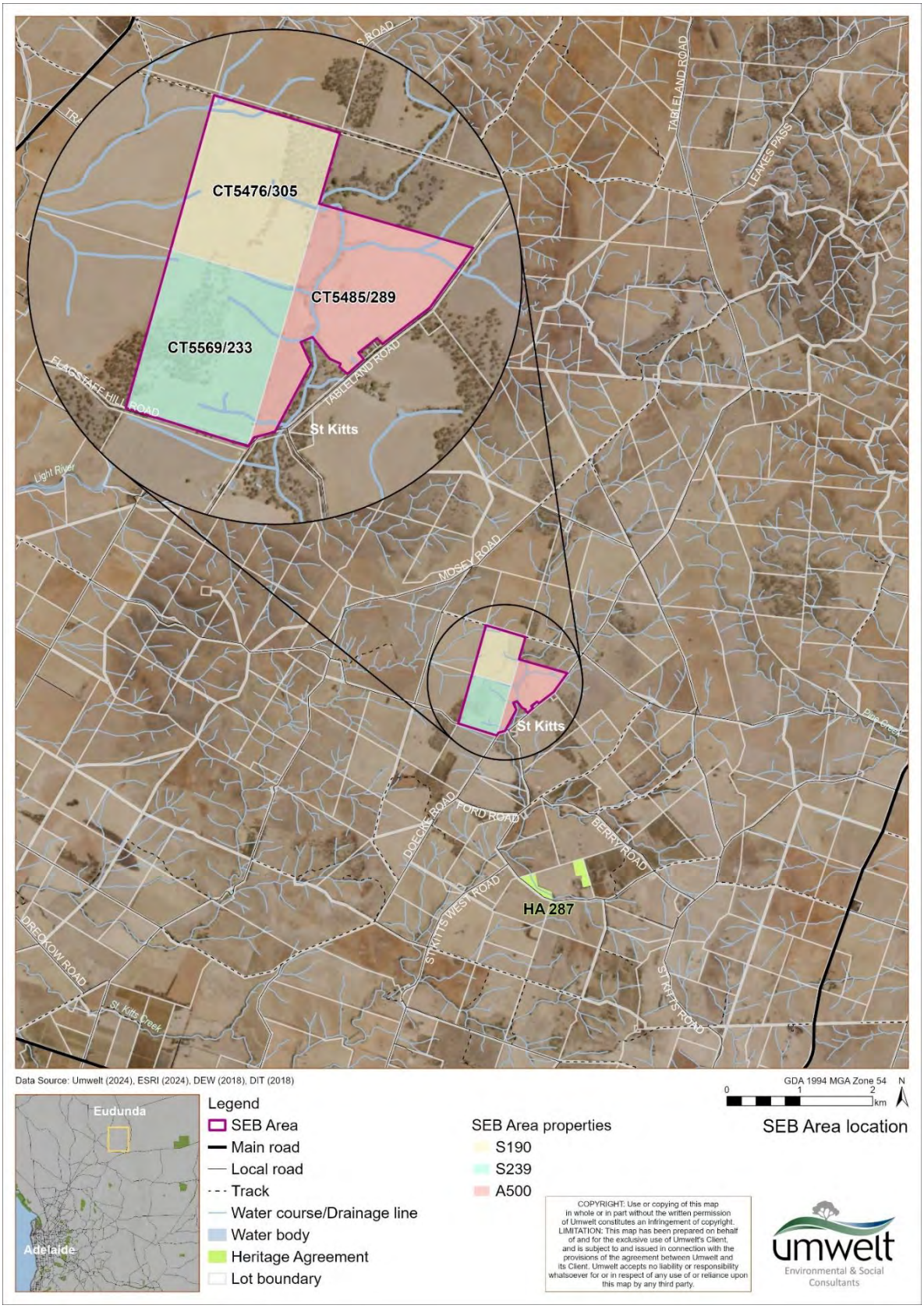


Figure 1. Location of the SEB Area

Figure 2. Offset Area location, vegetation associations and BAM survey site locations

3 BIODIVERSITY

3.1 Pre-European vegetation associations

The dominant original vegetation structure of the Light Region was Mallee Box (*Eucalyptus porosa*) or Peppermint Box (*E. odorata*) Open Grassland, with River Red Gum (*E. camaldulensis*) dominating the riparian areas.

The impacts of clearance for agriculture and long-term grazing, along with weed invasion has compromised the composition and structure of these vegetation associations and significantly reduced native species diversity.

3.2 Existing native vegetation associations and condition

The Offset Area comprises a total of 25.371 hectares of vegetation and 188.34 SEB points as outlined in the following tables. SEB points are calculated from a vegetation assessment undertaken on 6th of August 2021 by Jessica Skewes and Holly Whittenbury, Umwelt (Australia) (formerly EBS Ecology). A plant species list including all native flora observed across the site is given in Appendix 1.

Native vegetation within the Offset Area consists of two broad vegetation associations (Figure 2):

- Peppermint Box (*E.odorata*) Low Grassy Woodland with mixed understorey of native grass and weedy species, with open patches of grassland. Two areas of this community were mapped of two conditions.
- River Red Gum (*E. camaldulensis var. camaldulensis*) Open Woodland over mixed native grasses and weedy species within a drainage line, varying from steep, to gently sloping grassy banks.

The condition of the patches of vegetation varied, however it appears that the same historical land use was applied across the broader area. Vegetation communities weren't divided further into management zones as the management required across the Offset Area will be similar.

Site Number	Vegetation Association	Area (ha)	SEB pts
1	*Eucalyptus odorata* (Peppermint Box) open woodland over *Austrostipa* sp. (Spear-grass) and *Rytidosperma* sp. (Wallaby Grass)	**14.019**	**98.81**

General description

Peppermint Box (*E.odorata*) Low Open Woodland over mixed native grass and exotic understorey in poor to fair condition.

Site consists of widely scattered large remnant Peppermint Box trees intermixed with no observable regeneration. A native shrub mid-stratum is entirely absent from the site and the ground cover varies from moderate condition native grassland to weed dominated.

No significant infestations of woody weeds or serious environmental weeds were recorded within this community, except for scattered Dog Rose (*Rosa canina*). The remaining weed species are common weeds that occur throughout the region including introduced grasses, Soursob (*Oxalis pes-caprae*) and Wild Sage (*Salvia verbenaca*).

Figure 3. Representative photo of Peppermint Box woodland showing weedy ground covering

Figure 4. Representative photo of Peppermint Box woodland

Site Number	Vegetation Association	Area (ha)	SEB pts
2	*Eucalyptus odorata* (Peppermint Box) open woodland over *Austrostipa* sp. (Spear-grass) and *Rytidosperma* sp. (Wallaby Grass)	**7.155**	**63.22**

General description

Peppermint Box (*E.odorata*) Low Open Woodland over Spear Grass (*Austrostipa* spp.) and introduced grasses in fair condition.

Site consists of widely scattered large remnant Peppermint Box trees intermixed with various age classes of naturally regenerated single stemmed Peppermint Box. A native shrub mid-stratum is absent from the site except for several singular shrubs (i.e. *Rhagodia parabolica*). The ground cover varies from moderate condition native grassland to weed dominated.

No significant infestations of woody weeds or serious environmental weeds were recorded within this community, except for a singular Bridal Creeper (*Asparagus asparagoides*) plant and scattered Dog Rose (*Rosa canina*). The remaining weed species are common weeds that occur throughout the region including introduced grasses, Soursob (*Oxalis pes-caprae*) and Wild Sage (*Salvia verbenaca*).

Figure 5. Representative photo of Peppermint Box Woodland showing weedy ground covering.

Figure 6. Isolated Bridal Creeper was recorded within the Peppermint Box Woodland.

Site Number	Vegetation Association	Area (ha)	SEB pts
3	*E. camaldulensis var. camaldulensis* (River Red Gum) woodland +/- *E. odorata* (Peppermint Box)	**4.197**	**26.31**

General description

Riparian area including the creekline and banks ~25m either side. Riparian zone exhibited a similar mix of native and weedy species to A1 and A2 but the overstorey was dominated by River Red Gum (*E. camaldulensis*). Several significant weed species were recorded within this area including Dog Rose (*Rosa canina*) and a singular large African Boxthorn (*Lycium ferocissimum*). Some areas of old erosion were present as well as a section of active gully erosion.

The southern boundary fence across the creekline, to a neighboring a property which is not managed for agriculture (pers. comms with current property manager), showed a significant improvement in understorey condition, structure and species diversity, including species such as *Acacia pycnantha*, *Bursaria spinosa* and *Themeda triandra* (Figure 10). The stark difference in condition highlights the improvement potential of this area under management as an offset.

Figure 7. Representative photo of the River Red Gum creekline

Figure 8. One large Boxthorn was recorded within the River Red Gum creekline.

Figure 9. Active erosion was recorded at several locations within the River Red Gum creekline

Figure 10. Neighbouring property creekline with denser understorey shrubs, native grasses, rushes and sedges.

3.3 Threatened flora and fauna

A detailed ecological assessment has not been undertaken for the Offset Area. However, a Protected Matters Search Tool (PMST) report generated on the 17 of September 2024, identified 2 TEC, 29 threatened species (10 flora and 19 fauna species) and 9 migratory species that may occur within 5 km of the Offset Area (Appendix 8). An additional NatureMaps (DEW 2024) identified an additional five species (four flora and one fauna) that may occur within 5 km of the Offset Area.

The following threatened flora species occur within woodland and open woodland and suitable habitat may exist in the Offset Area, this includes:

- *Dodonaea procumbens* (Trailing Hop-bush) – EPBC Act and NPW Act: Vulnerable
- *Dodonaea subglandulifera* (Peep Hill Hop-bush) - EPBC Act and NPW Act: Endangered
- *Senecio macrocarpus* (Large-fruit Fireweed) - EPBC Act and NPW Act: Endangered
- *Austrostipa breviglumis* (Cane Spear-grass) – NPW Act: Rare
- *Eucalyptus behriana* (Broad-leaf Box) – NPW Act: Rare
- *Maireana rohrlachii* (Rohrlach's Bluebush) – NPW Act: Rare
- *Rumex dumosus* (Wiry Dock) – NPW Act: Rare.

Of the 20 threatened fauna species species, five of these species are likely to have foraging or breeding habitat within the Offset Area. This includes:

South-eastern Hooded Robin (Melanodryas cucullata cucullata) – EPBC Act: Endangered and NPW Act: Rare

- Diamond Firetail (*Stagonopleura guttata*) – EPBC Act and NPW Act: Vulnerable
- Southern Whiteface (*Aphelocephala leucopsis*) – EPBC Act: Vulnerable
- Blue-winged Parrot (*Neophema chrysostoma*) – EPBC Act and NPW Act: Vulnerable
- White-winged Chough (*Corcorax melanorhamphos*) – NPW Act: Rare

No species of state or national conservation significance were recorded within the Offset Area during the field survey.

Additional unlisted fauna and flora species are likely to occur within the Offset Area, either as annual species (flora species not identifiable at the time of the survey), permanent residents (small reptiles), or occasional migrants (bird species), but their likelihood is not presented in this report. Restoration works are likely to have positive implications for these more widespread and generalist species.

3.4 Bushland restoration principles

There are various methods used to facilitate bushland restoration in Australia. Generally, the preferred way to undertake bushland restoration is to work from areas of highest quality to areas of lower quality. In order of importance, bushland restoration should be undertaken as follows:

1) Retain existing remnant vegetation
2) Protect existing native vegetation from degradation by managing threats
3) Actively manage degraded vegetation by ongoing weed control and revegetation

Where possible, management should aim to assist in facilitating natural regeneration of species already existing at a site, however, where species diversity is severely lacking after long periods of disturbance, revegetation can be used to re-establish pre-European diversity.

In an area of native vegetation, management should aim to reduce negative impacts of disturbance associated with management actions, and work with seasonal conditions to have the most effective outcome. For example (adapted from Robertson, 2005):

- Pull or grub weeds when soil is moist (i.e., in winter) - this makes it easier, and also enables the weed to be properly removed at the roots.
- Ensure any equipment used by bushland regenerators (including clothing and shoes) is free of weed seeds to prevent spreading weeds into new areas.
- Ensure seedlings are removed at the same time as parent plants.
- Minimise soil disturbance around pulled plants by pressing down soil and covering with leaf litter. Alternatively, remove parts of plant likely to regrow (seeds / fruits/ rhizomes / runners / bulbs), cut remaining plant into small pieces (or mulch), and cover disturbed soil to prevent weed reestablishment (woody weeds only).
- Ensure methods of weed removal are well understood and best practice methods and timing are utilised to maximise effectiveness of control.
- Ensure follow up management is scheduled appropriately to enable a gradual reduction in management requirements over time as bushland condition improves.

4 MANAGEMENT ISSUES AND ACTIONS

Whilst specific management zones haven't been developed, the site is divided into three areas:

- Site 1 (A1) is the area of Peppermint Box Grassy Woodland in the north of the Offset,
- Site 2 (A2) is the Peppermint Box Grassy Woodland in the south
- Site 3 (A3) is the Red Gum creekline on the eastern portion of the Offset (Figure 2).

4.1 Minimum Management Obligations

During the term of this Plan, the Offset Area is dedicated to the conservation of native vegetation and native fauna on the land and, subject to this Plan, shall not be used in a manner inconsistent with that dedication.

The landholder must not undertake, or permit to occur, any activity that is likely to damage, injure or endanger the native vegetation or native fauna on the Offset Area (except as provided for within this Management Plan, or where approved by the NVC).

In particular, the Owner shall not, without the written consent of the Native Vegetation Council, undertake or permit on the Offset Area (except as may be provided for within this Management Plan):

- the clearance of native vegetation
- the planting of exotic vegetation
- the construction of a building or other structure
- fertiliser application or artificial feeding
- cropping or soil disturbance
- dumping of rubbish, unwanted machinery or plant material
- new dams or drainage alterations
- removal of rocks
- removal of standing or fallen timber
- vehicle access beyond that which is required to manage and monitor the biodiversity value of the site
- any other activity that, in the opinion of the NVC, is likely to damage, injure or endanger the native vegetation or habitat of native fauna on the Offset Area.

Grazing

Stock are to be excluded from the Offset Area at all times. The exception to this may be the implementation of an ecologically beneficial grazing strategy within the Peppermint Box Woodland

areas. This has not been recommended as a strategy at this stage but may be required in the future. It will be dependent on the annual grass weed load that occurs seasonally. It was difficult to determine the abundance of native grass species / annual grassy weed species across the Offset Area at the time of the assessment. Therefore, it is unclear how beneficial implementing a grazing strategy will be.

It is likely that the southern section of the Peppermint Box Woodland has little native grass cover, as this area shows signs of a much higher grazing pressure. Until grazing has been removed for at least a season, it is an unknown the ratio of native to exotic grass cover will be. It is recommended that the use of a grazing for ecological reasons be reviewed at the end of the first year of this management plan. If deemed appropriate, a grazing strategy will need to be developed and approved by NVC prior to implementation.

Fencing

Fencing must be maintained in a stock proof condition. The Offset Area is partially fenced with high quality stock proof fencing. There is one section of fence that will require replacement, and several sections of new fencing will be required to ensure stock cannot not gain access to the Offset Area (Figure 11).

Controlling pests

The Owner is responsible for the control and, if possible, eradication of declared plant and animal pests pursuant to Section 192 (1) of the *Landscape South Australia Act 2019.* All methods used must minimise off-target damage, minimise soil disturbance and comply with the *Native Vegetation Act 1991* and the *Landscape South Australia Act 2019.* Monitoring should aim to detect any new weeds or pests and management action taken to prevent these from becoming established.

Overabundant native animals

If control of a native species is required due to negative impacts (e.g. excessive kangaroo grazing), it must be conducted under permit from the SA Department for Environment and Water (DEW) where applicable.

Fire prevention

The Owner will take all reasonable steps to prevent fire on their land, provided these steps are not inconsistent with their commitments under this Plan. All works must be compliant with the *Native Vegetation Act 1991* and the *Landscape South Australia Act 2019*.

4.2 Threats - Weeds and Pest Animals

4.2.1 Existing weed management issues

Environmental weeds are an ongoing threat to all ecosystems where disturbance and seed dispersal potential occurs. Riparian environments provide perfect conditions for the establishment of weeds spreading easily along pathways and waterways and taking advantage of the heightened nutrient availability from runoff, and water availability (Croft *et al*. 2007).

Weeds cause a range of environmental and management issues including:

- competition with native vegetation for space, sun, water, nutrients
- smothering native vegetation and preventing recruitment and establishment
- failure of revegetation efforts
- Loss of amenity value.

Within the Offset Area, twenty-one (21) weed species were recorded during the field survey, including three declared weeds and two environmental weeds (weed threat rating >3) (Table 1 and Table 2). It is likely that additional weed species may be present within the reserve, but not observed during the survey due to survey timing.

Woody weeds are scattered in both the Peppermint Box and Riparian habitats. The riparian zone hosts scattered Dog Rose, as well as a single large African Boxthorn, with non-woody weeds such as Artichoke Thistle and introduced grasses occupying the banks. As these infestations are scattered, it is recommended to undertake removal in one stage.

Weed species are rated in a variety of ways depending on their impacts at a national and local scale, and their potential for negative impacts on either the agricultural or natural environment. Declared weeds are those which are listed under the LSA Act and are recognised as being highly invasive and damaging to either agriculture, society, or the natural environment. Environmental weeds are those known to have a high impact on native vegetation and biodiversity, displacing native plants and impacting on habitat values. Within the Bushland Condition Monitoring Manual, weed species are given a rating from 1-5 within each Land Management Region in SA (i.e., N/Y, EP, MDB, SE, SMLR, KI), with higher scores recognising weeds of significance within a region. Generally, weeds with scores above 3 are recognised as posing a threat to native flora and fauna. Landowners have a legal responsibility to control declared weeds on their property.

Table 1. Weed species present that pose a threat to the flora/fauna[5].

Weed species	Common name	Declared (Y/N)	BCM threat rating	Site/s
Arctotheca calendula	Cape Weed	N	2	1, 2
Asparagus asparagoides	Bridal Creeper	Y	5	2
Cynara cardunculus	Artichoke Thistle	N	3	2
[1]*Lycium ferocissimum*	African Boxthorn	Y	4	3
[1]*Oxalis pes-capre*	Soursob	N	3	1, 2, 3
Piptatherum miliaceum	Rice Millet	N	2	2
Rosa canina	Dog Rose	Y	3	1, 2, 3

Table 2. Additional weed species observed on site which pose a lesser management threat.

Weed species	Common name	Declared (Y/N)	BCM threat rating	Site/s
Avena barbata	Bearded Oat	N	2	2
Bromus diandrus	Great Brome	N	1	1, 3
Erodium cicutarium	Storksbill	N	2	1, 2
Heliotropium sp.	Heliotrope	N	1	2
Hypochaeris glabra	Smooth Cat's Ear	N	1	2
Lepidium africanum	Common Peppercress	N	1	2
Malva parviflora	Small-flower Marshmallow	N	1	1
Moraea setifolia	Thread Iris	N	2	1, 2, 3
Rumex obtusifolius	Bitter Dock	N	2	2, 3
Salvia verbenaca	Wild Sage	N	2	1, 2
Scabiosa atropurpurea	Pincushion	N	3	1, 2
Stellaria media	Chickweed	N	1	1
Trifolium sp.	Clover	N	2	2
Vicia sp.	Vetch	N	2	2

Weeds pose an ongoing management challenge, and a variety of management methods are required to control various weed species. Table 3 lists the most important weeds for management within the Offset Area and describes their threat to biodiversity and preferred control methods. Methods of weed control are described in Appendix 3. Refer to Weed Control Handbook for Declared Plants in South Australia (PIRSA, 2024) or seek expert advice for details on recommended herbicide use and application.

Table 3. Offset Area priority weed species summaries

Weed species	Threat	Preferred Control Methods
African Boxthorn (Lycium ferocissimum) Declared	• exerts water stress on surrounding desirable vegetation including large trees • harbours pest animals (foxes, rabbits) • forms dense, impenetrable thickets	• mechanical removal (seedlings) • cut and swab (non-selective) • drill and fill (non-selective)
Artichoke Thistle *(Cynara cardunculus)* Declared	• perennial herb • seedlings germinate year-round, but particularly in autumn after rain • rapid growth in spring • seeds survive up to 5 years in soil	• manual removal of flower heads before seed set • selective herbicide use at rosette stage
Cape Weed (*Arctotheca calendula*)	• herbaceous annual • crowds out native species during growth • competes for nutrients • leaves bare patches once deceased in summer	• improve density of perennial native understorey species to outcompete the weed. • chemical control in creeklines (Site 3) is not recommended due to environmental sensitivity (potential for amphibians and fragile plants). • consider low-toxicity, highly biodegradable herbicide (i.e. Glyphosate) in Site 1 and high elevation areas of Site 2.
Dog Rose *(Rosa canina)*	• large, scrambling shrub with thorns • harbours pest fauna species (rabbits, foxes) and can form dense thickets. • outcompetes natives and can form a dense monoculture in large patches.	• cut and swab larger plants to minimise off target damage • spot spray smaller plants during active growth when healthy leaves are present, and the plant is not stressed. • Glyphosate or Triclopyr are effective options. • be careful of off-target damage during spraying; ensure heavy drip setting of wand nozzles to prevent spray overshooting plant in higher foliage.

Rice Millet (*Piptatherum miliaceum)*	• weed of disturbed areas and degraded woodlands • spread by seed including water, animals or machinery	• spot spray • hand-pull small infestations or individual plants
Sour Sob *(Oxalis pes-capre)*	• competitive weed of disturbed areas and invasive monoculture in bushland • displaces native species	• grubbing (just before flowering) • repeated broad-leaf selective herbicide spray such as Brush-Off (Metsulfuron-Methyl) preferably before flowering.

4.2.2 Future weed management issues

Bushland areas are under continual threat from weed invasion from surrounding and nearby areas. Weeds are dispersed through a landscape by a range of means including animal, wind and water. Future monitoring of the Offset Area will be critical in identifying new weed species in the area as well as additional infestations of known weeds. Once recorded, appropriate control measures will need to be implemented to ensure control of new infestations before they become established and widespread.

There is potential for an increase in weed cover to occur once grazing is removed from the Offset Area. It is recommended that the use of a grazing for ecological reasons be reviewed at the end of the first year of this management plan, dependent on the level of growth and weed species present. Any use of grazing as a weed management tool would require protocols to be implemented to guide stock levels, grazing duration and timing, and would likely be dependent on seasonal parameters. Grazing would primarily be used to reduce introduced grass density and allow native grass and herb species to increase. However, a reasonable abundance of native grass and herb species needs to be present in the area for this strategy to be effective.

4.2.3 Pest animals

Pest animals present an ongoing management threat to all natural areas, where they reduce survivorship of native fauna, and impact on native vegetation through grazing. Within the Offset Area one species of pest animal, rabbit (*Oryctolagus cuniculus*), was observed during the field survey, outlined in Table 4. It is likely that additional pest animal species, such as foxes (*Vulpes vulpes*) and feral cat (*Felis cattus*) would occur within the Offset Area (Table 5).

Agricultural lands provide refuges for animals which are able to exploit resources such as rabbits and foxes. Introduced predators, such as foxes, pose significant threats to any wildlife remaining

in the patch, with reduced vegetation and ground shelter (logs and rocks) features minimising the amount of protection native animals can find.

Rabbits are an environmental and agricultural pest. Even small populations pose a threat to the reestablishment of native vegetation, through burrowing, browsing on vegetation (especially fresh regrowth) and causing soil erosion issues. Rabbit populations should be managed prior to undertaking revegetation works to reduce potential negative impacts to success of the program.

Table 4. Pest animal species observed during field assessment

Pest animal species (declared)	Common name	Recorded on site/s (Y/N)	Likely to occur at site/s (Y)	Site/s
Oryctolagus cuniculus	Rabbit	Y (seen)	Y	1,2

Table 5. Pest animal species likely to occur in Offset Area

Pest animal species (declared)	Common name	Recorded on site/s (Y/N)	Likely to occur at site/s (Y)	Site/s
Alauda arvensis arvensis	Eurasian Skylark	N	Y	1,2,3
Columbia livia	Feral pigeon	N	Y	1,2,3
Canis lupus familiaris	Domestic Dog	N	Y	1,2,3
Felis cattus	Feral Cat	N	Y	1,2,3
Lepus capensis	Brown Hare	N	Y	1,2,3
Passer domesticus domesticus	House Sparrow	N	Y	1,2,3
Sturnus vulgaris vulgaris	Common Starling	N	Y	1,2,3

4.3 Other Threats and Issues Impacting, or likely to impact the Offset Area

Threat or Issue	Description of sites / species affected and the severity of impact (where known)
Inappropriate total grazing pressure (e.g. stock access, feral grazing animals and/or kangaroos)	Stock grazing is currently undertaken within the majority of the site with no grazing occurring in the northern section woodland in recent times. Sections of new and replacement fencing will be required to ensure stock grazing is prevented in the future. A small number of Western Grey Kangaroos (*Macropus fuliginosus*) and evidence of scats were observed during the field assessment, and it is likely that grazing by Kangaroos occurs in the Offset Area, however, Kangaroos are likely to be in low numbers, and there were minimal grazing impacts observed at the site. Rabbits were observed on the site, and there was some evidence of diggings. Currently there is very little cover for rabbits provided by a shrub layer, however with the implementation of revegetation, this site may become more suitable for them, and management actions should be considered to remove them from the site.
Artificial water source(s)	Two dams occur within the property. One has been excluded from the Offset Area and is fenced with access from cleared cropping land through a gate. This dam can remain operational without any impact to the Offset Area. The second dam will also be excluded from the Offset Area and requires fencing off and a gate installed to allow access for stock but prevent their access to the adjoining offset Area.
Areas with a lack of native vegetation due to past disturbance	There are several patches within the Offset Area which contain minimal native vegetation, maintaining only some native vegetation in the grassy layer.

Threat or Issue	Description of sites / species affected and the severity of impact (where known)
	One location of gully erosion occurs which is primarily devoid of native vegetation.
Changed hydrology, salinity, acidity or waterlogging	Historic vegetation clearance and agricultural practices have resulted in gully erosion in one location along the creekline. No other water management issues are present within the site.
Inappropriate fire regime	The area doesn't appear to have been burnt for some time. However, given the rural nature of the property and surrounding agricultural land (grazing and cropping), fire management is not regarded as a major threat / issue.
Damage from public access (e.g. use of bike trails, off-road vehicles, rubbish dumping, pollution)	Historically tyres have been used to help stabilise the erosion gully, this appears to be relatively stable and therefore should be left in situ. No other public access issues have been identified.
Disease (e.g. *Phytophthora*)	No.
Buildings	An old, dilapidated building occurs within the Offset Area.

4.4 Management Goals and Objectives

- The goal(s) below outline the intent / desired outcome(s) of managing the Offset Area over the long term.
- The management objectives define the strategies that must be undertaken in the first 10 years to address threats/issues and progress towards achieving the overall goal.
- The targets and indicators of success clarify what is expected to be achieved and/or observable at the site with 10 years of site management.
- Specific actions, methods and monitoring are detailed in later sections.

Goal 1: Reduce weed species cover across the Offset Area
Management objectives: 1.1. Remove African Boxthorn – PRIORITY. 1.2. Remove Bridal Creeper – PRIORITY. 1.3. Remove Dog Rose – PRIORITY. 1.4. Remove Artichoke Thistle. 1.5. Reduce herbaceous and grassy weed prevalence in understorey – i.e., Sour-sob, introduced grasses.
Targets/Indicators of success: • Elimination of woody weeds African Boxthorn, Bridal Creeper and Dog Rose. • Elimination of Artichoke Thistle. • Increased coverage of native grasses in Peppermint Box Woodland (as a result of reduced weed cover, more light infiltration and management to support native grass growth).

Goal 2: Increase natural regeneration, species diversity and native grass cover across the Offset Area.
Management objectives: 2.1. Establish seed bank from existing native vegetation population (local provenance) or engage a suitable contractor to grow local provenance seedlings. 2.2. Prepare sites for revegetation. 2.3. Undertake revegetation in designated areas. 2.4. Monitor / control woody, herbaceous and grassy weeds to reduce shading and increase seed set potential of native species (see 1.5).

Targets/Indicators of success:

- Increased species diversity in ground and mid layers.
- Natural regeneration of revegetated species recorded.
- Increased percentage of native ground cover across Offset Area.
- Recorded increase in natural regeneration of existing species (*E.odorata*).

Goal 3: Prevent and manage new infestations of non-native plants or animals

Management objectives:

3.1. Prevent establishment of new weed species into the Offset Area.

3.2. Control rabbits within Offset Area by undertaking rabbit baiting in conjunction with a local authorised officer.

3.3. Monitor pest animals and control as advised by local authorised officer.

Targets/Indicators of success:

- Any new weed or pest infestations are identified and controlled before becoming established.
- Rabbit population significantly reduced.

Goal 4: Prevent stock grazing

Management objectives:

4.1. Replace or install new fencing within nominated areas to prevent stock grazing.

4.2. Maintain existing good quality fences.

Targets/Indicators of success:

- New fencing completed.
- No stock access to Offset Area (reviewed after Year 1).

Goal 5: Rehabilitate and stabilise erosion gullies

Management objectives:

5.1. Revegetation of highlighted erosion gully.

5.2. Targeted revegetation within Peppermint Box Woodland areas.

Targets/Indicators of success:

- Native species cover across erosion gullies.
- No active erosion points along creekline.
- Increased diversity and abundance of native species within Offset Area.

4.5 Revegetation

Revegetation is a useful tool in areas which have become highly degraded over time and are severely lacking in pre-European diversity of species. Both vegetation associations identified in the Offset Area are highly degraded, with minimal diversity of herbaceous ground layer species, and a completely absent shrub layer.

Revegetation across the site will aim to fill gaps in overstorey species and will also aim to restore diversity into the ground layer vegetation.

Unless otherwise agreed by the NVC, any revegetation must:

- be with species indigenous to the local area;
- use seed or plant material collected from as close as possible to the planting site;
- aim to be representative of the structure and composition of the relevant pre-European vegetation benchmark community.

Benchmark goals are presented for each vegetation association in Table 6.

Table 6. Benchmark vegetation goals

Reveg Site ID	**Area of reveg** (ha)	**Current condition**	**Description of the key structure and composition of the relevant pre-European vegetation benchmark community** (e.g. type of vegetation that should be achieved in the longer term; open / dense / clumped distribution of trees, shrubs or groundcovers)
1 – Grassy Woodland	~4.0	*Poor*	*Eucalyptus odorata* Woodland (10-30% cover) over grassy and herbaceous understorey (20+ species) with sparse shrubs (<5% cover)
2 - Riparian	~0.5	*Poor*	Ephemeral creek woodland, grading from *E. odorata to E. camaldulensis +/- E. leucoxylon* with an open understorey of sedges, grasses and herbs and sparse shrubs.
Vegetation Condition Descriptions: *Excellent – very little or no sign of alien vegetation in the understorey, resembles pre-European condition* *Good – High proportion of native species and native cover in understoery, reasonable representation of pre-European vegetation* *Moderate – Substantial invasion of aliens but native understorey persists (i.e. low proportion of native species but high cover, or high proportion of native species but low cover)*			

Reveg Site ID	Area of reveg (ha)	Current condition	Description of the key structure and composition of the relevant pre-European vegetation **benchmark community** (e.g. type of vegetation that should be achieved in the longer term; open / dense / clumped distribution of trees, shrubs or groundcovers)
Poor – Understorey consists predominantly of alien species, although a small number of natives persist *Very Poor – Understorey consists only of alien species*			

4.5.1 Methods

Revegetation requires multiple approaches depending on the area of management and desired outcome. Three approaches will be used for revegetation across the Offset Area with the primary objectives to increase species diversity and restore structure to degraded areas.

1) Overstorey – sparse (>20m apart) plantings of overstorey species in open areas of the Peppermint Box Open Woodland.
2) Cluster diversity planting – small, easily managed clumps (~15 x 15 m) of shrub and understorey species, to facilitate reintroduction of native seedbank into the site.
3) Riparian restoration – planting above and around erosion gully to stabilise area

Suggested species to be revegetated

Method - T = Tubestock, M = Machine Direct Seed, H = Hand Direct Seed

Botanical Name	Common Name	Method	Target Density	Area	Planting Notes (e.g., Site ID)
CANOPY					
Eucalyptus odorata	Peppermint Box	T	10-30% cover	1, 2	Sparse plantings in open grassland >10m apart.
E. leucoxylon ssp. *pruinosa*	Inland SA Bluegum	T	Sparse	1, 2	Upper banks as sub-dominant.
Callitris gracilis	Southern Cypress Pine	T	Sparse	1,2	Upper banks, scattered trees. Low density.
SHRUBS					
Acacia acinacea	Wreath Wattle	T	Sparse (<5%)	1,2,3	Clustered plantings.
Bursaria spinosa	Sweet Bursaria	T	Sparse (<5%)	1,2,3	Clustered plantings.

Botanical Name	**Common Name**	**Method**	**Target Density**	**Area**	**Planting Notes** (e.g., Site ID)
Cryptandra amara	Long-flowered Cryptandra	T	Sparse (<5%)	1	Clustered plantings.
Cullen parvum / australasicum	Scurf-pea	T	Sparse (<5%)	1	Clustered plantings.
Dodonaea viscosa ssp. *spatulata*	Sticky Hop-bush	T	Sparse (<5%)	1,2,3	Clustered plantings.
Pultenaea largiflorens	Twiggy Bush-pea	T	Sparse (<5%)	3	Clustered plantings.
GROUND LAYER					
Aristida behriana	Brush Wire-grass	T, H	Up to 50% cover (total tussocks)	1,2,3	Clustered plantings. Direct seed in zone 6. Spread seed in bare patches.
Arthropodium fimbriatum/strictum	Nodding / Common Vanilla-lily	T	Up to 30% cover (total herbs)	1,2	Clustered plantings.
Austrostipa sp. *(densiflora, eremophila, gibbosa, nodosa, scabra, multispiculus)*	Spear-grass species	T, H	Up to 50% cover (total tussocks)	1,2,3	Clustered plantings. Direct seed in zone 6. Spread seed in bare patches.
Calostemma purpureum	Pink Garland-lily	T		3	Tolerant bulb, lower banks.
Carex bichenoviana	Notched Sedge	T		3	Creek banks.
Convolvulus remotus	Grassy Bindweed	T, H	<1% cover (twiners)	1,2,3	Clustered plantings.
Cymbopogon ambiguous	Lemon Grass	T, H		3	Upper banks, rocky areas.
Dianella revoluta var. *revoluta / longifolia*	Black-anther Flax-lily or Pale Flax-lily	T	Up to 10% cover (total tall tussocks)	1,2,3	Upper banks and outer zones.

Botanical Name	**Common Name**	**Method**	**Target Density**	**Area**	**Planting Notes** (e.g., Site ID)
Enneapogon nigricans	Black-head Grass	T, H	Up to 50% cover (total tussocks)	1,2,3	Clustered plantings. Direct seed in zone 6. Spread seed in bare patches.
Einadia nutans ssp*. nutans*	Climbing saltbush	T	Up to 30% cover (total herbs	1,2,3	Clustered plantings.
Goodenia willisiana	Mallee Goodenia	T	Up to 30% cover (total herbs	1,2	Clustered plantings.
Goodenia pinnatifida	Mother ducks	T	Up to 30% cover (total herbs	1,2	Clustered plantings.
Juncus subsecundus	Finger Rush	T		3	Banks.
Leptorhynchos spp*.*	Buttons	T	Up to 30% cover (total herbs	1,2	Clustered plantings.
Lomandra densiflora	Soft Tussock Mat-rush	T	Up to 10% cover (total tall tussocks)	1,2	Clustered plantings.
Lomandra effusa	Scented Mat-rush	T	Up to 10% cover (total tall tussocks)	1,2	Clustered plantings.
Oxalis perennans	Native Sorrel	T	Up to 30% cover (total herbs	1,2	Clustered plantings.
Ptilotus spathulatus	Pussy-tails	T	Up to 30% cover (total herbs	1,2	Clustered plantings.
Ptilotus angustifolius	Narrow-leaf yellow Tails	T	Up to 30% cover (total herbs	1, 2	Upper banks and clustered plantings.

Botanical Name	Common Name	Method	Target Density	Area	Planting Notes (e.g., Site ID)
Rytidosperma sp.	Wallaby Grass	T,H		1,2,3	Clustered plantings. Direct seed in zone 6. Spread seed in bare patches.
Teucrium racemosum	Grey Germander	T	Up to 30% cover (total herbs	1,2,3	Clustered plantings.
Themeda triandra	Kangaroo Grass	T, H	Up to 50% cover (total tussocks)	1,2,3	River banks and in revegetation clumps.
Vittadinia spp. *(cuneata, blackii, gracilis)*	New Holland Daisy	T, H	Up to 30% cover (total herbs	1,2,3	Clustered plantings.
Wahlenbergia stricta ssp. *stricta*	Tall bluebell	T, H	Up to 30% cover (total herbs	1, 2	Clustered plantings.

4.5.2 Considerations

Plant supply

All plants should be grown from seed collected on site, or from nearby remnant vegetation. Reputable suppliers within the Adelaide region include:

- Barossa Bush Gardens (Nuriootpa)
- Provenance Indigenous Plants (Salisbury Park)
- Trees For Life (Adelaide)
- Kersbrook Landcare Group (Williamstown).

Costing

All costing is approximate at the time of writing and may vary depending on supplier and availability of stock, as well as final revegetation design.

Component	Description	Approx. cost
Mulch	100mm layer of mulch over ~200m^2 for each accessible cluster planting	\$10 / m^2
Plants (~220 / cluster)	1 overstorey sp. / cluster plus trees at ~20 m spacing in open grassland areas. 1 shrub / 20m^2 (~5 / cluster) 1 ground cover / m^2	\$5-10 / tree seedling \$5-10 / shrub seedling \$2-5 / understorey seedling
Other	Tree guards plus stake Labour Maintenance	\$3 / each -

Preparation and weed control

Revegetation should not commence until adequate site preparation has been undertaken, and resources are available for ongoing care and weed management, at least for the first year after planting, until established. Planting locations should be spot sprayed with a knockdown herbicide taking care to avoid any native plant species.

Timing

Revegetation should be started following 1-2 years of intensive weed control. Removal of woody weeds before initiation of revegetation works allows easier access for initial weed removal and adequate time for preparation of the site for revegetation to be successful. Revegetation should commence in the winter of year two (following at least 12 months of weed control).

4.6 Management Action Implementation

The following table details the implementation of management actions within each of the management areas (Sites 1-3).

Management Action	Methods	Timing
Remove stock	De-stock property until fencing has been completed	At commencement
Initial weed control	All areas; woody weed control: Cut, drill and fill, spot spray, hand pull all woody weed species	Year 1 (Spring)
	All areas: Spot spray revegetation locations	Year 1 / 2 (2 operations)
	Site 3: Spot spray Artichoke thistle	Year 1 (Spring)
Initial pest control	Undertake rabbit baiting around entire Offset Area	Before revegetation begins.
Stock proof fencing	Replace existing along eastern side of Site 2 Install fencing along eastern side of Site 3 and small section in Site 1	Year 1
Seedling propagation / purchase	Purchase tube stock of target species if local stock is available or have then grown by supplier for project using species list provided in section 4.5	1 year prior to revegetation
Ground preparation	Use herbicides spray revegetation locations (2 operations)	Year 1 and 2
	Use auger to dig hole and create bowl for water retention (scattered trees)	Year 2-3
Plant establishment (tubestock)	Plant tubestock, water (especially in drier months) and use corflute tree guard and stakes to protect from grazing and weed encroachment	Year 2-3
Aftercare	Spray and / or hand pull weeds around each plant / cluster 2-3 times per year until plants are established. Remove tree guards after 18 months.	Ongoing after planting (Year 2-3 onwards)
Supplementary replanting	Monitor survival. If success of initial planting is low (<80% within 1 year) methods should be reviewed and replacement planting should be undertaken.	Ongoing after planting (Year 2-3 onwards)
Weed control	Annual weed control to remove any woody weeds or weeds of concern	Annually

4.7 Risk Management and Contingencies

This section identifies the major risks that have a potential to threaten the successful implementation of the Management Plan or the associated on-ground outcomes, the likelihood of such an event occurring (High, Medium and Low) and steps that will be taken to mitigate or address these risks.

Relevant mitigating actions identified here are included in the Action Table

Risk	Likelihood	Mitigating measures or contingency
Revegetation failure	Medium	Ensure thorough weed and pest control at all stages and ensure all major woody weed removal works are undertaken prior to revegetation commencing. Plant early in season to take advantage of winter rainfall. Water plants until established (~12 months). Ensure regular monitoring is undertaken in the first 12-18 months to quickly identify any issues and mitigate or undertake follow up planting.
Incursion of new weed species	Medium	Undertake regular monitoring and remove / treat new weed infestation as soon as possible. Develop a bush care group for the site to maximise likelihood of ongoing and regular maintenance and early detection of issues.

4.8 Action Table

This table lists the 10-year management objectives, associated actions and resources required to achieve the Management Goals. Costs are an approximate guideline only and relate to materials and contractor labour hours required to undertake the necessary work over the course of the 10-year management plan. It is likely that these costs will change over the course of the 10-year plan and should be used as an indication only. Ongoing maintenance costs are likely to be variable depending on success of early weed removal work. Detailed methods are included in the appendices.

10-Year Management Objective	Management Action	Methods	Approx. cost ($) GST excl.	Timing
Goal 1: Reduce weed species cover across the Offset Area	1.1 – 1.4 Remove woody weed species and Artichoke Thistle	Cut and swab (established plants) / drill and fill / basal bark spray. Spot spray small individuals	$10,000	Begin as soon as possible after commencement of plan. Spring / Summer (active growing time)
	1.5 Reduce herbaceous and grassy weed cover	Targeted control of herbaceous and grassy weed species using spot spray / bushcare techniques	$8,000	Annually in early spring
		Preparation of revegetation sites (targeted weed control in patches and establishment of mulch beds in accessible locations)	$6,000	Year 1 and Year 2

10-Year Management Objective	Management Action	Methods	Approx. cost ($) GST excl.	Timing
Goal 2: Increase natural regeneration, diversity, and cover of native species	2.1 Procure tubestock for revegetation	Engage with plant supplier	$5,000	12 months prior to revegetation
	2.2 Prepare sites for revegetation to maximise likelihood of success	Spot spray planting areas	*covered under Action 1.5	Year 1 / 2
	2.3 Undertake revegetation in designated areas	Tubestock planting of overstorey species in open areas Tubestock planting of mid / under storey species in cluster areas	$15,000	Year 2
	2.4 Monitor / control establishment of weeds around revegetation area	Spray out weed species within revegetation areas 2-3 times per year	$5000/year	Annually
Goal 3: Prevent and manage new infestations of	3.1 Prevent establishment of new weed species into Offset Area	Spot spray, grub or cut and swab any new weed infestations	$2500/year	Annually from year 2
	3.2 Control rabbits on site	Implement baiting program around Offset Area.	$3,000 /year	Initially every year but will be dependent on

10-Year Management Objective	Management Action	Methods	Approx. cost ($) GST excl.	Timing
non-native plants or animals				rabbit numbers or evidence of rabbits.
	3.3 Monitor pest animal activity (signs of scats, grazing, burrows, sightings)	Record any signs of the presence of pest animals.	$500 / year	Annually
Goal 4: Prevent stock grazing	4.1 Remove all stock	Remove all stock off entire property until fencing has been complete, stock can then be reintroduced to areas outside the Offset Area.		At commencement
	4.2 Replace or install new fencing within nominated areas to prevent stock grazing	Remove and replace old fencing on edge of Site 2. Install new fencing along eastern edge of Site 3 and small section of Site 2.	$7,000	Year 1
	4.3 Maintain and repair all fences	Inspect and repair fence lines to ensure they are stock proof.		Annually
Goal 5: Rehabilitate	5.1 Revegetate erosion gully	Revegetate section of Red Gum Creek that contains erosion using tubestock.	$9,000	Year 2

10-Year Management Objective	Management Action	Methods	Approx. cost ($) GST excl.	Timing
and stabilise erosion gully		Leave old tyres in situ, revegetate high side of gully and edges of gully to minimise future erosion		

4.9 Works Calendar Summary

Year(s) that each management action is to be carried out in order to achieve the 10-year Management Objectives, plus any monitoring and reporting required.

No.	Action Item	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Yr 9	Yr 10
1.1 – 1.4	Remove African Boxthorn, Bridal Creeper, Dog Rose and Artichoke Thistle.										
1.5	Reduce herbaceous and grassy weed cover										
2.1	Procure tubestock										
2.2	Preparation of revegetation sites										
2.3	Undertake revegetation works (monitor success and undertake additional revegetation if required)										
2.4	Monitor / control establishment of weeds around revegetation areas										
3.1	Prevent establishment of new weed species into Offset Area										
3.2	Control rabbits										
3.3	Monitor pest animal activity (signs of scats, grazing, burrows, sightings).										
4.1	Remove all stock										
4.2	Replace or install new fencing										
4.3	Maintain and repair all fences										
5.1	Revegetate erosion gully										

4.10 Management Action Map

These maps delineate the location of management issues (e.g. weed infestations, rabbit warrens) and the location of threat management works to be undertaken, and revegetation locations.

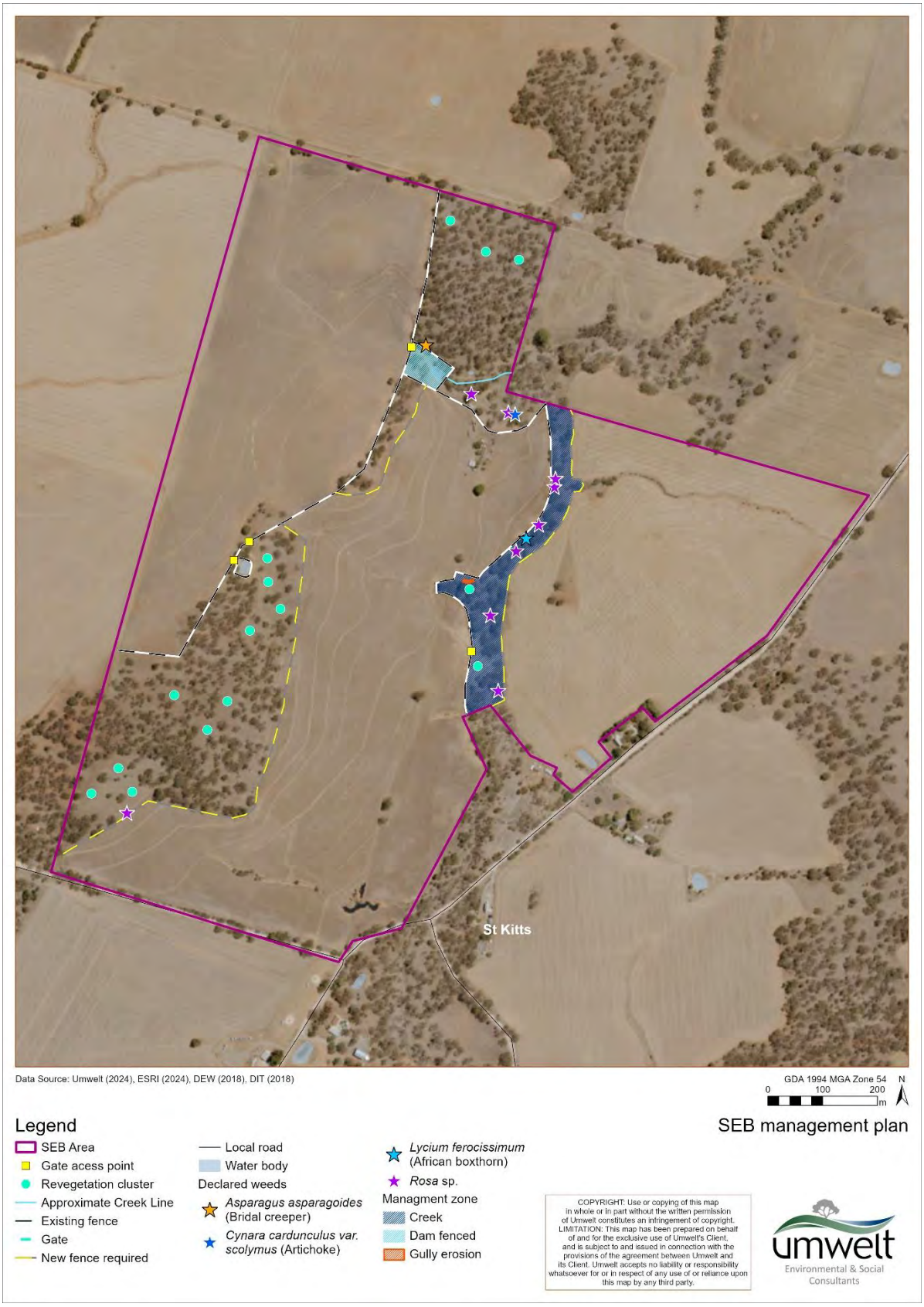


Figure 11. Threat management map indicating different management zones.

5 MONITORING AND REPORTING

5.1 Standard Monitoring

Observing, documenting, and analysing the outcomes of management actions are required. If monitoring shows that the goals of this Plan are not being achieved, the owner or the NVC may request a review and update of the Plan. The following standard monitoring data is required:

- Record of management actions undertaken.
- Photographs from at least one representative photographic monitoring site or 'photo-point' for each vegetation association (i.e. each 'site').
- A map and/or list showing the location of each photo-point and the photo direction.
- Annual photographs showing the same field of view as the first (baseline) photograph at each photo-point.
- Record of dominant species and species of interest occurring in the photographs with notes of key changes compared to the baseline.
- Record of seasonal conditions (e.g., rainfall) to assist with evaluating changes.

5.2 Additional Monitoring

If the number of SEB points generated is >150 points (or if stipulated by the NVC) additional assessments of vegetation condition will be undertaken by an accredited consultant at years 5 and 10 of the Management Plan. The method used will be the NVC's Bushland or Rangelands Assessment Method as appropriate, unless otherwise approved by the NVC.

5.3 Complimentary Monitoring

If **revegetation, management of threatened species** or an **ecological grazing/burning strategy** are a part of this plan, then the following sections outline the relevant monitoring goals and methods that will be used to guide management and document outcomes.

Monitoring goal/s (e.g. what questions will be answered by monitoring the site?)
1. Is there a reduction in woody weeds across the site? 2. Is there a reduction in weedy ground cover across the site? 3. Is there an increase in natural regeneration of native species across the site? 4. Is there a decrease in rabbit activity? 5. Is there increased native species diversity within the Offset Area? 6. Is there stabilisation of the erosion gully? 7. Is the revegetation program successful?

Ecological indicators

Monitoring goal no.	**Ecological indicators** (what is to be measured/observed)	**Methods** (how measurements/observations will be carried out, timing and recording)
1	Weed abundance and threat rating	BCM Sites (reduction in percentage cover) BAM A1 (reduction in percentage cover) BAM A2 (reduction in percentage cover) BAM A3 (Reduction in percentage cover) Before revegetation starts and in Year 5 and Year 10
2	Weed abundance and threat rating	BCM Sites (reduction in percentage cover) Year 5 and Year 10
3	Photo points	Qualitative assessment of photo points Year 5 and Year 10
3	Indicator 4 – regeneration	BCM Sites (increase in regeneration score) Year 5 and Year 10
4	Reduced activity rating	BCM Sites (increase in plant life form score) Year 5 and Year 10
5	Species diversity score	BCM Site 1 and 2 (increase) BAM A1 (increase) BAM A2 (increase) Year 5 and Year 10
6	Photo point	Qualitative assessment of photopoint Visual inspection Year 5 and Year 10
7	Survival	Count plants surviving each year following revegetation. Keep records.

Evaluation

Ecological indicator	**Year of Plan**	**Target** (e.g. desired state when monitored, possibly in comparison to a baseline, benchmark or control)
Weed abundance and threat rating	2	Significant reduction / elimination of woody weeds across site. All large woody weeds eliminated before revegetation starts (prevent difficulty with accessibility following rehabilitation works)
	5	No mature woody weeds, reduction in weed abundance and threat score and percentage cover for each BCM site. All sites: Very Poor (45) → Moderate (18-25)
	10	No mature woody weeds, reduction in weed abundance and threat score and percentage cover for each BCM site. All sites: Good (11-17) to Very Good (0-10)
Indicator 3 – B: Plant Life Forms	5	BCM Sites (increase in plant life form score) All sites: Moderate (11) → Good (12-14)
	10	BCM Sites (increase in plant life form score) All sites: Excellent (15+)
Indicator 4 - Regeneration	5	BCM Sites (evidence of tree regeneration) All sites: Very poor (0) → Moderate (1) Observation across whole site visible from Photo points
	10	BCM Sites (evidence of multiple species regeneration) All sites: Moderate (1) → Good (2) Also, with regeneration in shrub layer. Observation across whole site visible from Photo points
Indicator 3 – A: Ground Cover	5	BCM Sites have 'excellent' rating for groundcover (3-4), however this is dominated by weedy species. *Native: Exotic understorey* score over time. All sites: Native: Exotic Understorey score 2 → 3
	10	BCM Sites have 'excellent' rating for groundcover (3-4), however this is dominated by weedy species. Improvement would be indicated by an increase in the *Native: Exotic understorey* score over time. All sites: Native: Exotic Understorey score 3-5
Species diversity score	5	BCM Sites (increased native species diversity) Site 1: Very Poor (1-3) → Poor (4-8)
	10	BCM Sites (increased native species diversity) All sites: Moderate (9-15)
	10	BCM Site 1 and 2 (evidence reduced dieback) Site 1: Indicator 5 (Dieback) – Good Site 2: Indicator 5 (Dieback) – Good

		Site 1: Indicator 6 (Habitat) - Excellent (8-10) Site 2: Indicator 6 (Habitat) - Excellent (8-10) Observation across whole site visible from Photo points
Survival	5	>80% survival after year 1 >70% survival after year 5 (If less than anticipated survival rate at any monitoring period, threats identified and managed, and additional revegetation undertaken if required.
	10	>50% survival rate (depending on species), but evidence of natural regeneration present. If the population is declining without replacement, check for causes (e.g. weed competition, grazing, lack of seed set, low rainfall etc) and give attention to those factors which can be managed (e.g. reduce weeds and grazers).

Roles and responsibilities

Monitoring action	**Timing**	**Person(s) / organisation(s) responsible**
New weeds / pests	Annually	Site manager (to delegate)
Bushland Assessment	Years 2, 5 and 10	Accredited consultant
Revegetation monitoring	Each year following revegetation until year 5, and then again in year 10 (presuming revegetation successful)	Site manager / incorporated into Bushland Assessment
Review and, if required, update Management Plan	Year 5 and Year 10	Site manager / consultant

5.4 Reporting and review

Progress reports will be submitted to the NVC each year for the first 3 years and as requested by the NVC thereafter. Reports are to include:

- a description of works undertaken for the previous year for each Management Goal
- standard monitoring data as outlined in Section 5.1, photographs and evaluation of outcomes.

Year 5 and 10 assessment reports will be submitted to the NVC and include:

- summary of works undertaken to date
- an evaluation of the condition of the vegetation compared to the baseline/benchmark including photographs and monitoring data
- a review of whether management actions have achieved the management objectives to the extent expected
- suggested changes to management plan (if required).

Type of report	Report required to be sent to the NVC? (Y/N)	Due dates	Person(s) / organisation responsible
Progress	Y	2028, 2029, 2030	Accredited consultant
Year 5 Assessment	Y	2032	Accredited consultant
Year 10 Assessment	Y	2037	Accredited consultant

6 EXECUTION OF THE PLAN

Offset Area Reference Name: …….

Signed: ..... Date: .....

(“the Decision Date”)

Print Name: ……

☐ **PRESIDING MEMBER, NATIVE VEGETATION COUNCIL**

☐ **DELEGATE TO NATIVE VEGETATION COUNCIL**

Signature of Landowner(s) or seal of Company and authorised signatory:

Signed: ..... Date: .....

Print Name: ……..……..

Signed: ..... Date: .....

Print Name: ……..……..

7 REFERENCES

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8 APPENDICES

8.1 Appendix 1 – Native flora list from Offset Area

Species list is likely to be larger, however as the survey was undertaken in winter, annual species were not detected and grasses were unable to be identified to species.

Plant Species	Common Name
Acaena echinata	Sheep's Burr
Allocasuarina verticillata	Drooping Sheoak
Amyema miquelii	Box Mistletoe
Atriplex semibaccata	Berry Saltbush
Austrostipa sp.	Spear-grass
Bulbine sp.	Bulbine-lily
Bursaria spinosa ssp.	Bursaria
Calostemma purpureum	Pink Garland-lily
Calostemma sp.	Garland-lily
Cassinia laevis ssp. *laevis*	Curry Bush
Chamaescilla corymbosa var. corymbosa	Blue Squill
Enchylaena tomentosa var.	Ruby Saltbush
Erodium crinitum	Blue Heron's-bill
Eucalyptus camaldulensis ssp.	River Red Gum
Eucalyptus odorata	Peppermint Box
Exocarpos cupressiformis	Native Cherry
Geranium retrorsum	Grassland Geranium
Heliotropium sp.	Heliotrope
Lomandra effusa	Scented Mat-rush
Rhagodia parabolica	Mealy Saltbush
Rytidosperma sp.	Wallaby-grass

8.2 Appendix 2 – Native fauna observed during field assessment

Fauna Species	Common Name
Acanthiza chrysorrhoa	Yellow-rumped Thornbill
Aquila audax	Wedge-tailed Eagle
Cacatua galerita	Sulphur-crested Cockatoo
Climacteris picumnus	Brown Treecreeper
Colluricincla harmonica	Grey Shrikethrush
Corvus mellori	Little Raven
Dacelo novaeguineae	Laughing Kookaburra
Daphoenositta chrysoptera	Varied Sittella
Eolophus roseicapilla	Galah
Gymnorhina tibicen	Australian Magpie
Hirundo neoxena	Welcome Swallow
Manorina melanocephala	Noisy Miner
Pachycephala rufiventris	Rufous Whistler
Pardalotus punctatus	Spotted Pardalote
Petrochelidon nigricans	Tree Martin
Phaps chalcoptera	Common Bronzewing
Platycercus elegans	Crimson Rosella
Psephotus haematonotus	Red-rumped Parrot
Ptilotula penicillata	White-plumed Honeyeater
Rhipidura leucophrys	Willie Wagtail

8.3 Appendix 3 – Weed control methods

Weed control methods adapted from *Weed control handbook for declared plants in South Australia*, May 2024 Edition. (PIRSA, 2024)

Control Method	Method details	Uses	Timing
Non-herbicide control methods			
Hand-pull	• Seedlings: hold plant at ground level, pull with one hand while pushing down on soil with other hand to minimize soil disturbance. • Small woody plants: hold stem at ground level, rock back and forth to loosen soil, until plant comes out with roots. • Ensure lignotuber / roots are entirely removed to prevent re-establishment	Suitable for a small number of plants with shallow taproots, seedlings, herbaceous weeds, some grasses.	During winter when soil is soft to remove small woody plants and herbaceous weeds.
Hand-dig and grub	• Dig using a mattock, spade or hoe to dislodge taproot and / or cut it as low as possible in the soil. • Press down disturbed soil and cover with litter • Ensure follow up treatment for any regrowth	Suitable for weeds that have growing points at ground level or below the surface such as bulbs, rhizomes, fibrous roots.	During winter when soil is soft to remove small woody plants and herbaceous weeds.
Mechanical (mowing / slashing / brush-cutting/ ploughing / mulching)	• Cut annual non-native grasses medium-low to remove flowers but preserve leaves. • Do not slash if weed fruits or bulbils are present (avoid spreading seed) • Brush-cut smaller dense infestations and then spot spray (i.e. Phalaris)	For large, dense, or widespread infestations. Particularly useful tool for grasslands to facilitate regrowth of summer flowering native grasses.	Annual plants should be slashed before seeds of non-native grasses form (typically mid-late spring).
Herbicide control methods			
Foliar spray	• Involves spraying the foliage of a target plant before the point of runoff.	Herbaceous plants, shrubs, grasses, vines.	Active growth phase of plant (usually spring / summer).

	• Spot spraying (useful around areas of desired native vegetation) • Boom spraying – using selective herbicides to target species		
Cut-stump method (cut and swab)	• Cut main stem of trunk at base (as close to ground as possible) using chainsaw / axe / brushcutter / machete / secateurs etc. • **Immediately** apply herbicide mixture to cut area to point of runoff	Vines, multi-stemmed shrubs, medium and large trees.	Active growth phase of plant (usually spring / summer).
Stem inject (drill and fill)	• Frill and fill: use a narrow bladed axe to make a horizontal cut the width of the blade (5-7cm) at a 45-degree angle and immediately apply herbicide into cut. • Drill and fill: use a drill (9mm) to drill 45-degree holes around base of tree (~4cm deep depending on thickness of bark) at 5-10cm intervals. Immediately inject herbicide into each hole.	Woody trees and shrubs with a single stem and trunk diameter of 5-10cm or greater.	Active growth phase of plant (usually spring / summer).
Basal bark method	• Apply herbicide mixed with diesel or biodiesel to all sides of every stem from ground up to 30cm on dry stems with no debris.	Saplings and multi-stemmed shrubs and regrowth with a basal diameter of <5cm.	Active growth phase of plant (usually spring) 20–25-degree temperatures when plant isn't stressed.
Pellet or granular soil application	• Apply pellets evenly to soil under target weed, to 30cm beyond canopy drip line. • Apply prior to rain event.	Isolated outlying plants (without desirable vegetation around).	Active growth phase of plant (usually spring / summer).
Other considerations: - Apply herbicide when plants are actively growing - Do not apply when plant is under stress (ie from drought, extreme heat or cold, waterlogging or disease)			

- Do not spray when wet or windy weather is anticipated
- Use only to specifications on label
- Work from areas of higher conservation value to areas of lower value.